SatMagazine

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Cover image courtesy of Signalhorn

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Ramping Up Capacity for U.S. Gas Fields

SATCOM Digital Networks, LLC and HISPAMAR, the Brazilian affiliate of the HISPASAT Group, have reached an agreement for satellite capacity on the Amazonas 2 spacecraft located at the 61 degrees West orbital position.

The new multi-year agreement allows SATCOM Digital Networks to expand its Digistar VSAT platform, which delivers Voice and Data services to the gas fields in the Northeastern U.S., as well as new markets in the Gulf Coast and other growing areas of exploration. The new contract will provide SATCOM with a multi-transponder access plan for extended capacity and flexibility for its industry-leading VSAT platform.

The Digistar VSAT broadband service connects customers in some of the most remote regions and provides multiple solutions to their communication needs. Digistar satellite broadband services can be deployed almost anywhere, making them ideal for business continuity and connectivity in remote, hard to reach locations or temporary sites as found in the Gas and Oil exploration industry.

"After operating on the Amazonas 2 spacecraft for the past year, it is clear that this bird has a tremendous presence and HISPAMAR has been a great partner in expanding our reach in the gas and oil space," said SATCOM founder and CEO David Chisholm.

"The expansion of the satellite corporate network segment is a fundamental objective for the growth of the HISPASAT Group in the United States market," said Ruben iiiiiiii, HISPAMAR's Business manager for North America, Central America and the Caribbean.

Additional HISPASAT Group info: ***http://www.hispasat.com/***

SATCOM Digital Networks: ***http://www.satcomdn.com/***

InfoBeam

SES Brings Boeing in for SES-9 Satellite Build—Coverage for Asia + Maritime

Artistic rendition of the SES-9 satellite. Image is courtesy of Boeing.
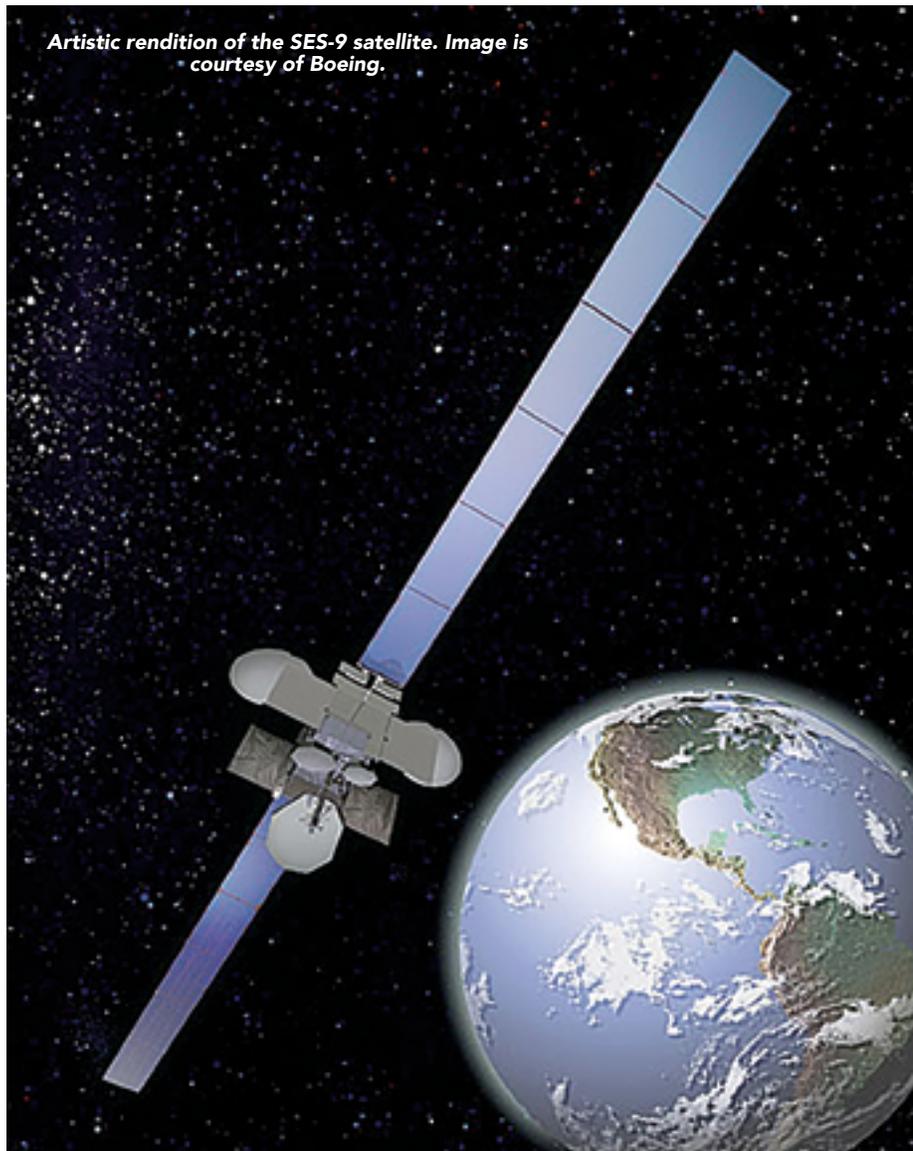
SES S.A. has selected Boeing to build a new communication satellite, SES-9, to serve the fast growing markets in Asia.

The new satellite, ordered through SES' affiliate company SES Satellite Leasing Ltd., will expand SES' capabilities to provide Direct-To-Home (DTH) broadcasting and other communications services in Northeast Asia, South Asia and Indonesia, as well as maritime communications for vessels in the Indian Ocean.

The spacecraft will be positioned at the orbital slot of 108.2 degrees East and will provide incremental, as well as replacement, capacity to this well established SES slot over Asia. SES-9 will be co-located with the existing SES-7 and NSS-11 satellites.

SES-9 will be built in Boeing's El Segundo Satellite Development Center and will be based on the Boeing 702HP platform. The satellite is designed to operate for 15 years in geosynchronous orbit with a 12.7 kilowatt payload and 57 high-power Ku-band transponders (equivalent to 81 x 36MHz transponders).

The spacecraft will carry a xenon ion propulsion system (XIPS) for all on-orbit maneuvering as well as a chemical bi-propellant system for initial orbit raising.

Boeing announced their 702HP satellite series in October of 1995. In 2009, the company introduced and launched their mid-range version, the 702MP. At that time, the Boeing 702, which has continuously evolved, was designated the Boeing 702HP for "high-power." The satellite can carry more than 100 high-power transponders, and deliver any communications frequencies that customers request.

The Boeing 702 design is specifically for customers' requests for a lower cost communications satellite.

Boeing has a 25-year relationship with SES. SES-9 is the 11th spacecraft that SES has ordered from Boeing and the contract includes an option for an additional satellite. Financial details are not being disclosed. Romain Bausch, President and CEO of SES, said, "SES-9 will greatly expand our transmission capacity over Asia, while adding increased flexibility and redundancy to a strategic orbital slot. SES is convinced that Boeing's 702HP will prove to be mission-critical in order to provide state-of-the-art, high-power satellite capacity to the thriving markets of Asia."

Craig Cooning, Chief Executive Officer of Boeing Satellite Systems International and Vice President and General Manager of Boeing Space & Intelligence Systems, said, "Boeing has continuously evolved the 702 design since it was introduced over 15 years ago, allowing us to provide SES a satellite that will be consistent with their business requirements."

SES infosite: ***http://www.ses.com/***

Boeing infosite:
http://www.boeing.com/boeing/bds/

InfoBeam

Satellite System Brings Remote Canada Within Reach... *by Jim Plouffe, Editor, The Lead South Australia*

A new satellite system developed in South Australia would enable inexpensive and more rapid monitoring of remote areas of the globe than ever before.

The developers of the Global Sensor Network say the proposed system would provide automatic monitoring of the environment and infrastructure from remote field-based sensors, which collect data and transmit it via low Earth orbit satellites.

Sensors attached to pipelines, for example, would instantly detect leaks and breakages and communicate their exact location to authorities.

Climate change-driven movements in sea ice, increases in meltwater and changes in seepage could all be detected no matter where they occur. The heights of lakes and rivers could be tracked daily during drought or flood, and the system could even provide a way to monitor the health of far distant forests.

The Global Sensor Network technology is the brainchild of the University of South Australia, and involves a unique international collaboration between Canadian and Australian researchers. Technology developed by researchers at the Institute for Telecommunications Research at the University of South Australia (ITR) has been field tested in collaboration with space hardware company COM DEV and vessel tracking organization exactEarth.

The system concept was demonstrated in 2013, when COM DEV and exactEarth provided technical support and access to their satellite and ground system for trials of the GSN conducted in South Australia.

Several months later, ITR researchers traveled to Canada to collaborate with COM DEV and exactEarth to conduct a trial for the University of Waterloo, Ontario to see how the system would perform in the real world.

Image is courtesy of the Institute of Telecommunications Research.

Ground terminals were placed in three remote sites across Canada, thousands of kilometres apart, to retrieve data on soil moisture, air temperature, wind speed and precipitation. This environmental data was successfully captured, stored and downlinked to a central ground station.

The Global Sensor Network connects low orbit satellites with thousands of remote, low cost sensors through some very clever software and system design elements. Developers say it provides a solution to the problem of expensive satellite monitoring in remote areas.

ITR Acting Director Mr. Jeff Kasparian presented the GSN at the 65th International Astronautical Congress in Toronto in September. He said Australia's challenge in managing huge areas of resource-rich yet often inaccessible and remote land and water, where monitoring technology is extremely expensive was the impetus for the technology.

Although satellite coverage is available, it is expensive and unsuitable for many purposes.

By contrast, Mr Kasparian said the GSN operates much more efficiently using advanced techniques and architectures, significantly lowering the cost per unit of each measurement taken and transmitted.

Also recently announced is that South Australia has just been awarded as the location for the 68th International Astronautical Congress in 2017.

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Jeff.Kasparian@unisa.edu.au

Information follow-up infopage:
https://www.itr.unisa.edu.au/projects/global-sensor-network

The Lead South Australia's infosite:
http://www.theleadsouthaustralia.com.au/

InfoBeam

Gilat Satcom POPs up in the U.S. for Congo Comms

Gilat Satcom has established a new POP in the U.S. that will provide a new direct satellite route for traffic between The Democratic Republic of Congo and the U.S.

Following a string of new connectivity contracts from operators and enterprises across Africa over the last year, this is Gilat Satcom's latest investment in its fiber and satellite infrastructure.

The new POP, which is located in Intelsat's teleport in Maryland on the east coast of the USA, was established to answer growing demand for international broadband connectivity. It means that traffic between the US and Africa will not need to travel via Europe and so latency rates will be significantly reduced and speeds and capacity increased. As a result, Gilat Satcom's customers will find it much easier to access online video and other rich content.

Gilat Satcom has a growing range of fiber routes in coastal and landlocked Africa and provides telcos, ISPs, Governments and businesses with fast and reliable broadband connectivity at a highly competitive price.

Gilat Satcom is among the first companies in Africa to offer non-stop East to West, coast-to-coast and international connectivity. Its MPLS network connects to the WACS, EASSy and SEACOM undersea cables via fiber local loops across Malawi, Mozambique, Namibia, Nigeria, Tanzania and Zambia and reaches the most remote areas of the continent.

Gilat Satcom's African headquarters is in Lagos and the company has a number of joint ventures across Africa including Microlink in Zambia and Raga in the DRC.

The Gilat Satcom infosite: *http://www.gilat.net/*

A COM DEV Int'l + Antrix Combo for exactEarth's M3M Satellite

Dr. V.S. Hegde, Chairman and Managing Director of Antrix (left) and Michael Pley, CEO of COM DEV International (right), at a signing ceremony held at the 65th International Astronautical Congress 2014 in Toronto on October 1, 2014. Antrix Corporation, the commercial arm of the Indian Space Research Organization, will launch the M3M satellite on the Polar Satellite Launch Vehicle from India in 2015.

COM DEV International Ltd. has signed a contract with the Antrix Corporation (the commercial arm of the Indian Space Research Organization (ISRO) to launch the M3M satellite on the Polar Satellite Launch Vehicle from India in 2015.

The M3M satellite was constructed by COM DEV under contract from the Canadian Space Agency/Public Works Government Services Canada for Defence Research and

Development Canada and is also subject to a commercial data sharing license with exactEarth Ltd., a joint venture between COM DEV International Ltd. (73 percent) and Hisdesat Servicios Estratégicos S.A. (27 percent).

Michael Pley, CEO of COM DEV International Ltd., said, "This contract reflects a monumental effort between COM DEV and Antrix, and between COM DEV and the CSA, to close out our original contract and secure the most rapid replacement launch for the M3M satellite, which was withdrawn from its original launch slot on the Russian Soyuz rocket in July this year."

Peter Mabson, President of exactEarth Ltd., added, "We applaud the Canadian government and COM DEV for moving so rapidly to address this issue and are pleased with the selection of ISRO, which also launched our NTS satellite in April of 2008, the world's first commercial AIS ship tracking satellite."

For further information, please visit the COM DEV infosite at *http://www.comdev.ca*

The Antrix infosite may be reached at *http://www.antrix.gov.in/*
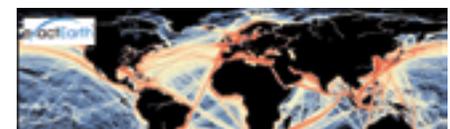
The exactEarth infosite may be accessed via *http://www.exactearth.com/*

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Bringing More Ocean Flooring to Light...
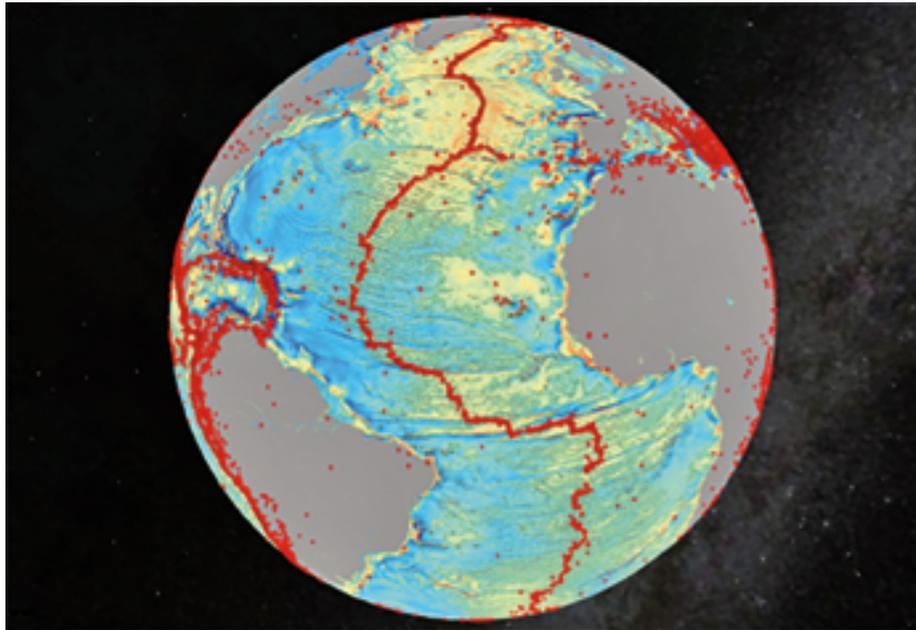
Gravity model of the North Atlantic; red dots are earthquakes.
Quakes are often related to seamounts.
Credit: David Sandwell, SIO
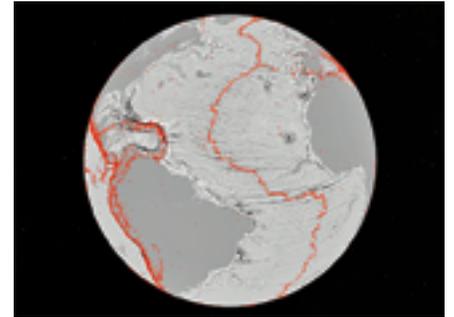
North Atlantic Ocean gravity gradient model showing plate tectonic history of rifting continents.
Credit: David Sandwell, SIO

Scientists have created a new map of the world's seafloor, offering a more vivid picture of the structures that make up the deepest, least-explored parts of the ocean.

The feat was accomplished by accessing two untapped streams of satellite data. Thousands of previously uncharted mountains rising from the seafloor, called seamounts, have emerged through the map, along with new clues about the formation of the continents.

Combined with existing data and improved remote sensing instruments, the map, described today in the journal Science, gives scientists new tools to investigate ocean spreading centers and little-studied remote ocean basins.

Earthquakes were also mapped. In addition, the researchers discovered that seamounts and earthquakes are often linked. Most seamounts were once active volcanoes, and so are usually found near tectonically active plate boundaries, mid-ocean ridges and subducting zones.

The new map is twice as accurate as the previous version produced nearly 20 years ago, say the researchers, who are affiliated with California's Scripps Institution of Oceanography (SIO) and other institutions.

"The team has developed and proved a powerful new tool for high-resolution exploration of regional seafloor structure and geophysical processes," said Don Rice, program director in the National Science Foundation's Division of Ocean Sciences, which funded the research. "This capability will allow us to revisit unsolved questions and to pinpoint where to focus future exploratory work."

Developed using a scientific model that captures gravity measurements of the ocean seafloor, the map extracts data from the European Space Agency's (ESA) CryoSat-2 satellite. CryoSat-2 primarily captures polar ice data but also operates continuously over the oceans. Data also came from Jason-1, NASA's satellite that was redirected to map gravity fields during the last year of its 12-year mission.

"The kinds of things you can see very clearly are the abyssal hills, the most common

landform on the planet," said David Sandwell, lead author of the paper and a geophysicist at SIO.

The paper's co-authors say that the map provides a window into the tectonics of the deep oceans. The map also provides a foundation for the upcoming new version of Google's ocean maps; it will fill large voids between shipboard depth profiles.

Previously unseen features include newly exposed continental connections across South America and Africa and new evidence for seafloor spreading ridges in the Gulf of Mexico. The ridges were active 150 million years ago and are now buried by mile-thick layers of sediment.

"One of the most important uses will be to improve the estimates of seafloor depth in the 80 percent of the oceans that remain uncharted or [where the sea floor] is buried beneath thick sediment," the authors state.

Co-authors of the paper include R. Dietmar Muller of the University of Sydney, Walter Smith of the NOAA Laboratory for Satellite Altimetry, Emmanuel Garcia of SIO and Richard Francis of ESA. The study also was supported by the U.S. Office of Naval Research, the National Geospatial-Intelligence Agency and ConocoPhillips.

The National Science Foundation infosite may be accessed at **http://www.nsf.gov/**

InfoBeam

A Five Satellite Launch on Behalf of KARI

CubeSat image is courtesy of Spaceflight, Inc.

Innovative Solutions In Space has been selected by Korea Aerospace Research Institute (KARI) for the launch of multiple CubeSats through ISIS' ISILaunch services for small satellites.

ISIS will be responsible for the launch of five satellites during 2015, developed under the first rounds of the University Cube Satellites Mission and Design Contest in Korea.

ISIS co-founder and marketing director Abe Bonnema said, "We know most of the involved teams already as customers for our subsystems and equipment, and it's great to be able to launch their satellites now as well."

"We are pleased to have found the experienced partner we were looking for in ISIS—Innovative Solutions In Space for the launch of the CubeSats of our national CubeSat contest, supported by KARI", according to Dr. Gi-Hyuk Choi, Director of Future Convergence Tech Division of KARI. "We look forward to having these first CubeSat contest satellites launched next year."

The CubeSats, of various sizes, were developed by Chosun University, Chungnam University, Korea Aerospace University, Kyung Hee University and Yonsei University, and will be manifested by ISIS in its QuadPack deployer systems onboard the 2015 Sherpa launch of ISIS' U.S. launch services partner Spaceflight Inc.

The Innovative Solutions in Space infosite:
http://www.isispace.nl

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Origins of the Universe Observation Mission is Given the Green Light...
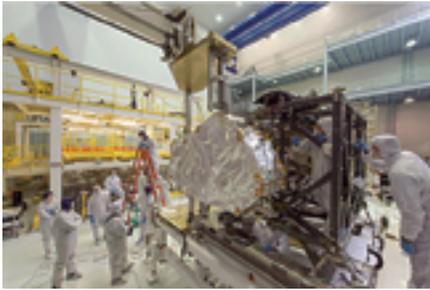
In March 2014, the James Webb Space Telescope's flight Near Infrared Spectrograph (NIRSpec) was installed into the instrument module. NIRSpec joins the flight Near Infrared Camera (NIRCam) Fine Guidance Sensor/ Near Infrared Imager and Slitless Spectrograph (FGS/NIRISS) and Mid-Infrared Instrument (MIRI) which are already integrated into the ISIM, making the instrument module complete.
Photo credit: NASA/Chris Gunn.

The Near Infrared Spectrograph (NIRSpec), developed and built by Airbus Defence and Space, and the Mid-Infrared Instrument (MIRI), built by a European consortium led by the company, have successfully passed a 120-day cryogenic vacuum test campaign within the Integrated Science Instrument Module (ISIM) of the James Webb Space Telescope (JWST).

This test was the second of three at NASA's Goddard Space Flight Center in Washington D.C. and the first with all flight science instruments installed in ISIM.

The NIRSpec and MIRI instruments have been provided under a European Space Agency (ESA) contract. After launch in 2018 on an Ariane 5 from Europe's spaceport in Kourou, French Guiana, the JWST will detect and analyze the very faint light from the first stars and galaxies that formed in the Universe.

During the test campaign, supported by Airbus Defence and Space, the thermal vacuum chamber at NASA cooled the ISIM and its instruments to their operating temperatures, around 38K (-235°C) for NIRSpec and 6.7K (-266°C) for MIRI. It took about three weeks for the instruments to reach these temperatures. Then the instruments underwent dedicated functional and performance tests and extensive check-outs.

NASA testing the Webb Telescope's MIRI thermal shield.
Image Credit: NASA/Chris Gunn.

Following the completion of this test campaign, the ISIM will be put in its flight configuration and will then be subjected to acoustic, vibration and electromagnetic compatibility testing to simulate the launch environment.

The third and final ISIM thermal vacuum test will be performed in 2015, verifying that ISIM and all science instruments are working as specified before delivering ISIM to the next level of the telescope integration and testing.

NIRSpec will be capable of measuring the spectrum of up to one hundred objects simultaneously. That will enable NIRSpec to observe large samples of galaxies and stars at unprecedented depths across large swathes of the Universe and far back in time. MIRI, a combined camera and spectrograph for mid-infrared wavelengths, will extend JWST's observation capabilities to longer wavelengths than covered by its other instruments, vital for the study of light from objects in the early universe or to peer inside dust clouds where stars and planetary systems are forming today.

"Our instruments represent the pinnacle of technology for modern astronomy," said Head of Space Systems François Auque. "JWST will be hugely important in expanding our understanding of how our universe evolved. Especially NIRSpec is further proof of Airbus Defence and Space's unrivaled expertise. We are proud to be supporting the scientific research that JWST will carry out."
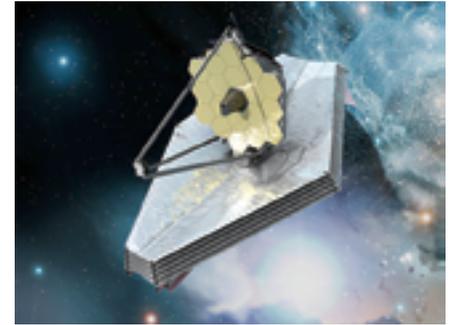
Artistic rendition of the James Webb Space Telescope.

NASA, ESA, and the Canadian Space Agency (CSA) are collaborating to develop JWST, which will replace the legendary Hubble telescope and enable observation and measurement of infrared wavelengths. JWST will be able to study key phases in the evolution of the Universe in great detail—from the first stars and galaxies to form after the Big Bang to the formation of planetary systems in our own Milky Way galaxy today.

This will be made possible by JWST's suite of four highly-sensitive scientific instruments and its huge primary mirror made of 18 hexagonal segments spanning a total of six and a half meters in diameter. JWST will be the largest astronomical telescope in space.

For more information, please visit the Airbus Defence and Space infosite at
http://airbusdefenceandspace.com/

InfoBeam

NRL Researchers Study Solar Disturbances—Their Impact on Satellite Navigation Systems
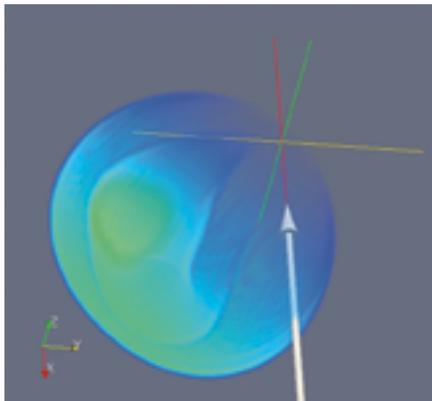
Based on the images from the SOHO and STEREO spacecraft, NRL's Dr. Brian Wood reconstructed the 3-D morphology of the event, where the CME is modeled as a tube-like magnetic flux rope with a shock driven in front of it. The arrow indicates the Earth's path through the event. Note that the CME's flux rope misses Earth entirely— only the CME shock hits Earth. Synthetic images computed from this reconstruction are shown below the real images in the figure just below.
Image is courtesy of
U.S. Naval Research Laboratory.
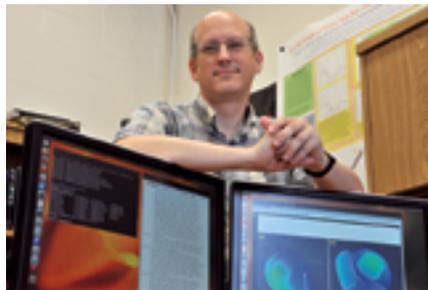
U.S. Naval Research Laboratory scientist Dr. Brian Wood is exploring how solar disruptions impact activity here on Earth. Photo is courtesy of U.S. Naval Research Laboratory/James Marshall.

Scientists know that weather in space impacts activity here on Earth—Dr. Brian Wood, at the U.S. Naval Research Laboratory (NRL) Space Science Division, is analyzing ionospheric disturbances to determine their effect on ground-based, satellite navigation systems.

Wood is studying the solar origins of two of the strongest recent ionospheric disturbances over North America using observations from NRL-designed imagers on board NASA's STEREO and SOHO spacecraft. "It is important to understand the kinds of eruptions from the sun," Wood said, "that can lead to significant effects at Earth." These two events had a significant effect on positional accuracy for the Wide Area Augmentation System (WAAS) satellite navigation system.

By some measures, the strongest ionospheric disturbances to happen over North America in recent years occurred on September 26 and October 24, 2011, Wood said. The fury of these two solar disturbances was revealed through their effect on the WAAS system, a network of ground-based reference stations that provide corrections to signals from Global Positioning System (GPS) satellites, leading to improvements in GPS positional accuracy.
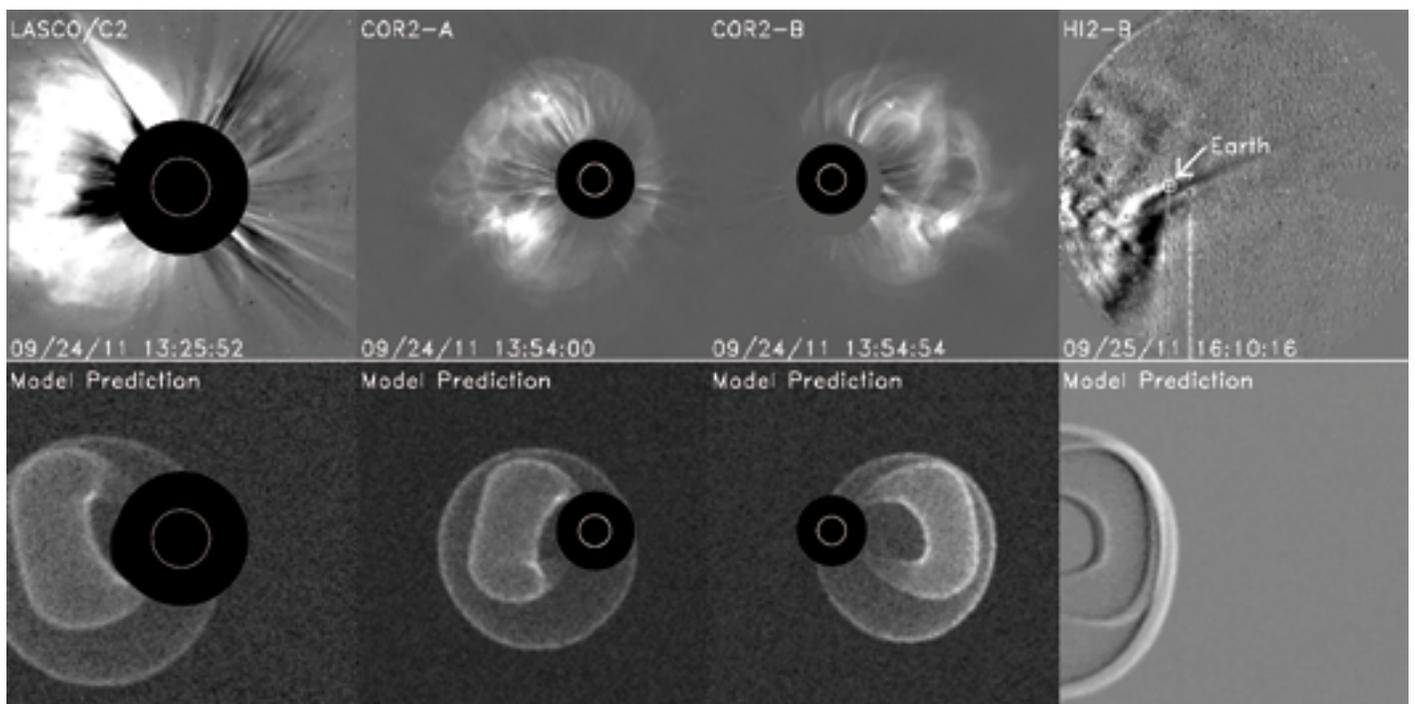
On September 26, 2011, a strong ionospheric disturbance occurred over North America that resulted in significant degradations to the WAAS (Wide Area Augmentation System) air navigation system, used to assist in GPS-based instrument landings at airports throughout the U.S. This event was due to a coronal mass ejection (CME) launched at the Sun on 2011 September 24. The images across the top were taken by NRL-built instruments on NASA's SOHO and STEREO spacecraft. The bottom images are synthetic images computed based on the 3-D reconstruction of the event shown in the next figure. These images are courtesy of the U.S. Naval Research Laboratory.

The WAAS system is widely used in civil aviation within the United States, including for landing approach procedures requiring high positional precision. The September 26 and October 24 disturbances produced the largest degradations in WAAS service since 2007.

Based on the images from the SOHO and STEREO spacecraft, NRL's Dr. Brian Wood reconstructed the 3-D morphology of the event, where the CME is modeled as a tube-like magnetic flux rope with a shock driven in front of it. The arrow indicates the Earth's path through the event. Note that the CME's flux rope misses Earth entirely—only the CME shock hits Earth. Synthetic images computed from this reconstruction are shown at the bottom of this page after the real images posted on the previous page.

Wood traced the origin of these disturbances to coronal mass ejections (CMEs), massive bursts of solar wind and magnetic fields that erupted from the Sun two days prior to the ionospheric storms observed at Earth. He has reconstructed the three-dimensional structure and kinematics of the two CMEs using images from the NRL-designed instruments aboard STEREO and SOHO spacecraft. Wood modeled the two CMEs assuming a magnetic flux rope morphology, which is a tube-shaped structure wrapped in a helical magnetic field.

Kinematically, the September CME reached 1700 kilometers per second near the Sun before decelerating to 1000 kilometers per second. Wood noted that this event was surprisingly geoeffective, considering that Earth only received a glancing blow from the shock that formed in front of the CME, with the CME ejecta missing Earth entirely.

The October event was slower, only reaching 700 kilometers per second, but it provided a more direct hit on Earth. Both events arrived at Earth during daytime over North America, maximizing their impact on the U.S.

Looking forward, Wood is hopeful that this research will improve the ability to evaluate and forecast solar events that can significantly degrade navigation systems here on Earth.

"The ultimate goal," Wood said, "is to be able to predict in advance the effects of a solar storm on communications and navigation at Earth. Characterizing the sources of geoeffective solar storms is a necessary step in that direction."

For more information, visit the NRL homepage at
http://www.nrl.navy.mil/
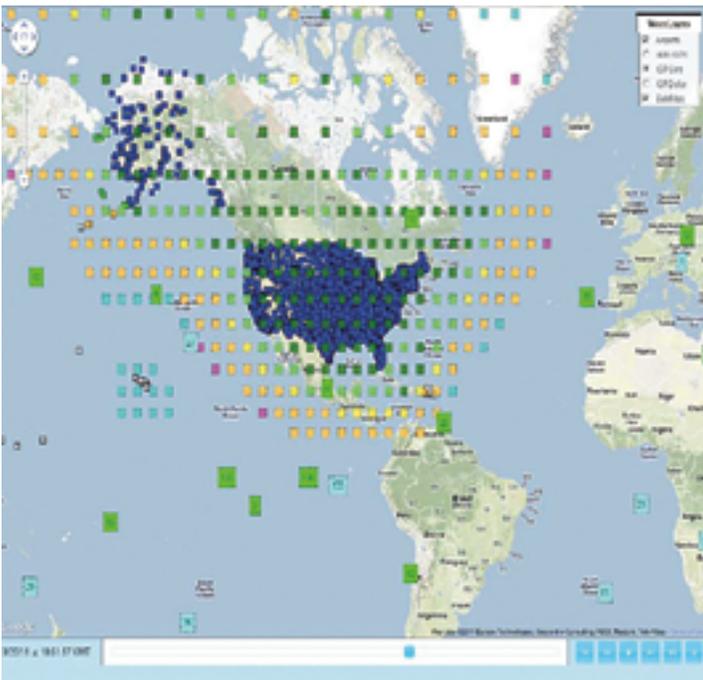
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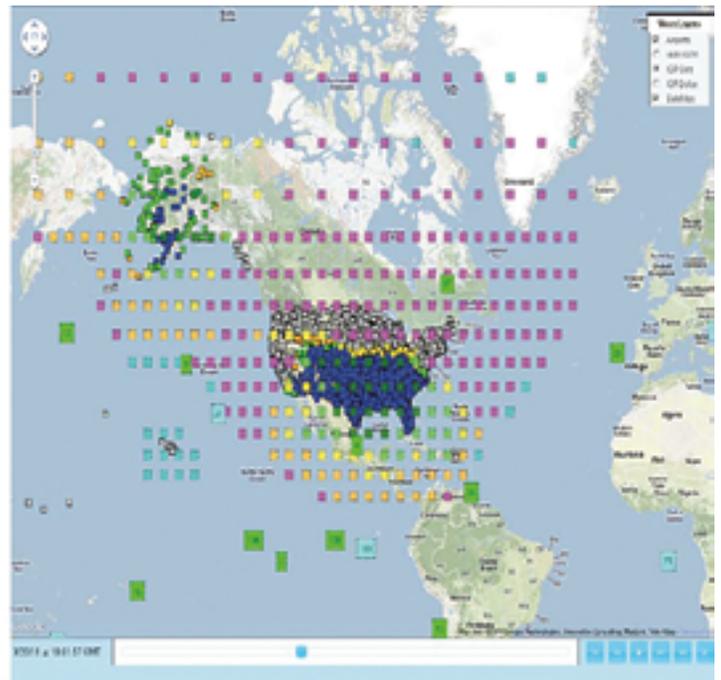
September 26, 2011
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These maps show the WAAS status before the event on Sept. 25, with the dark blue symbols indicating normal operating status at airports across the U.S., and the WAAS status during the event on Sept. 26, with degradations in WAAS accuracy being indicated at airports in Alaska and in the northern continental U.S.
These maps are courtesy of the Federal Aviation Administration, DR#104.

InfoBeam

Coming Soon From iDirect—Protocol Transparency Through L2oS

With the upcoming launch of iDirect's Evolution® iDX 3.3.1, Layer 2 over Satellite (L2oS) service providers will soon have the option to run an iDirect network in a Layer 2 bridging mode as an alternative to the traditional Layer 3 mode architecture.

This approach expands flexibility. A service provider can implement a variety of network architectures, pass any Layer 3 protocols desired, and easily modify Layer 3 settings after deployment.

L2oS enables new satellite service delivery models based upon carrier-grade Ethernet and facilitates converged services so that a satellite network can behave like a mainstream access network.

L2oS emulates a standard Ethernet connection across the satellite link, forming an end-to-end network and transparent pathway for Layer 3 traffic.

 iDirect equipment no longer participates in routing, Layer 3 protocols, or higher layer functions. iDirect's Protocol Processors and remotes serve as Ethernet switches that maintain MAC tables to make forwarding decisions based entirely on the information in the Ethernet header, passing entire Ethernet

frames over the air. As a result, the Intelligent Platform behaves not unlike a simple Ethernet cable from the port entering the hub Protocol Processor to the port exiting the site remote.

L2oS could be considered as an expressway for information transport. A road carries any type of vehicle swiftly from point A to point B. The infrastructure doesn't care if it's a car, truck, or motorcycle. Changes in traffic patterns have no impact to the underlying highway.

L2oS is similar, passing Ethernet packets carrying any type of Layer 3 protocols desired without impacting the underlying satellite network.

The iDirect infosite may be accessed at
http://www.idirect.net/

The Smallsat + Hosted Payload Phenomenon, Changing the Face of the Satellite Industry

As sponsor and exhibitor, Surrey Satellite Technology-US (SST-US) recently attended the Hosted Payload and Smallsat Summit.

This conference is dedicated to hosted payload and small satellite opportunities, and comes only a few months after Surrey's Hosted Payload Solutions (HoPS) IDIQ contract was awarded to the company by the USAF's Space and Missile Systems Center (SMC). Surrey US CEO John Paffett participated in one of the Summit's panel sessions.

Entitled "Return-on-Innovation is the new ROI: Are Hosted Payload and Smallsats Opening the Door to New Space-Based Economies?"— the session explored how a wide range of market and technology-driven factors are leading to alternative business models.

Moderated by Theresa Beech, CEO and president of MetiSpace Technologies Inc., the panelists included representatives from long-established companies, recent startups, and data applications firms: Carolyn Belle, analyst

at NSR USA; Ron Squires, director of Global Comms and Aerospace Products Business Development, Space Systems Business Unit, Northrop Grumman Aerospace Systems; and Jan King, vice president of Space Engineering, Dauria Aerospace.

In his opening introduction, Paffett explained that finding innovative ways to use small satellites to deliver value and increase access to space has been at the heart of Surrey's mission for over thirty years. Whether through hosting payloads or flying dedicated missions for its customers, the return on investment on hosted payloads and smallsats goes beyond the benefits of lower-cost access to space.

Enabling sustainability of space architectures is an important benefit of using small satellites and hosted payloads. Establishing the right price/performance point to close the business case to get the satellite to orbit is no longer sufficient; the systems need to generate enough revenue (or manage constrained program budgets effectively) to allow the

growth, expansion, and refresh of these systems to ensure data continuity and coverage.

Another interesting question posed to each panelist was, "What does innovation mean to you?" John responded that innovation at Surrey occurs at all levels—that it's not just about using the new technology as an innovation enabler— new approaches to the way that programs are executed are also necessary.

The SST-US view is that while small satellites and hosted payloads may be the most appropriate solution for some missions, they won't be the solution for all missions. Some programs will necessarily require a more traditional, large satellite approach. Ultimately, the overall market for satellite systems—big and small dedicated missions and hosted payload missions—is set to grow over the coming years.

The SST-US infosite has more info at
http://www.sst-us.com/

InfoBeam

The Build is On for Francisco de Miranda Satellite

*Artistic rendition of the
Francisco de Miranda satellite.*

**Venezuela has signed an
agreement with China Great
Wall Industry Corporation
(ICGWIC) to build and deliver
into orbit the country's third
satellite, all with the help of
Chinese technology.**

The satellite will be named after
the independence hero Antonio
Jose de Sucre, although neither
the Venezuelans nor the Chinese
offered any details of regarding
the satellite's cost or specific
timeframe for the project.

The agreement, which was
inked at the presence of
Venezuelan President Nicolas
Maduro, was signed between
the Venezuelan government
and CGWIC, China's sole
commercial satellite launch
service provider.

In addition, China will expand
satellite technology transfer to
Venezuela, Chinese President Xi
Jinping said during his visit to
Venezuela in July this year.

Venezuela's first satellite, a
telecom satellite, was launched
from China in 2008 and named
after independence leader
Simon Bolivar.

Venezuela's second satellite, a remote sensing
satellite, was also delivered into space
from China in 2012 and named after the
independence hero Francisco de Miranda.

The second satellite is mainly used for
the country's land resource inspections,
environmental protection, disaster detection
and management, crop yield estimation and
city planning.

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Success in Reaching Orbit—Russia's Express-AMC6 Satellite Taken Aloft by a Proton-M

The Express-AM6 spacecraft was commissioned by the Russian Satellite Communications Company and built by Reshetnev ISS (Information Satellite Systems) of Russia in association with Canadian-based MDA and Russian NIIR (Radio Research and Development Institute).

The satellite is based on the Express-2000 satellite platform and is equipped to carry 72 C-, Ku-, Ka- and L- bands transponders (bringing the combined capacity to more than 2,700MHz). The vehicle service life is 15 years.

The Express-AM6 has been built based in consideration of the domestic market outlook for satellite communications and broadcasting services as set out in the Federal Target Program 'Development of TV and Radio Broadcasting in the Russian Federation for 2009-2015' under the Federal Space Program of Russia until 2015.

The satellite will provide additional infrastructure to make multi-program digital television and radio broadcasting services, including HD television, accessible to the Russia's western regions.

The AM6 space vehicle is also designed to furnish mobile presidential and governmental communications, broadband Internet and multi-service access capabilities (digital TV, telephony, video conferencing and data transmission) as well as to set up VSAT communications networks in European Russia, the Urals and Western Siberia.

Apart from that, the Express-AM6 satellite is proposed to be used for international projects to benefit Russian and foreign users in Africa, Europe and the Middle East.

The Express-AM6 satellite is expected to be commissioned at 53 degrees East in the first quarter of 2015 after completion of requisite flight tests and inspection of all on-board systems.

On October 21st, 2014, the Russian communications and broadcasting satellite Express-AM6 was launched into orbit.

A Proton-M rocket booster took off from the Baikonur Cosmodrome (space launch facility) at 19.09 (Moscow time). The new Express-AM6 heavy-class space vehicle will be deployed into geostationary orbit at 53 degrees East, from where it will provide coverage of European Russia, the Urals and Western Siberia as well as the Middle East, Europe and Africa.

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"It would not be much of an exaggeration to say that the launch of the Express-AM6 is one of the most anticipated events of the year in the satellite industry. With the new satellite in action, the overarching task of broadcasting nationwide television programs from Kaliningrad to Irkutsk will be addressed," said General Director of RSCC Yuri Prokhorov.

The Express-AM6 has been built under the Federal Target Program 'Development of TV and Radio Broadcasting in Russia in 2009-2015'. The first satellite produced in the context of this Federal Target Program is Express-AM5 and it has been servicing the consumer needs in the Far East and Siberia since April 2014.

Another two spacecraft—Express-AM7 and AM8—are expected to be launched in the first quarter of the next year, resulting in continuous high-quality broadcasting services throughout Russia.

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Market for Gas Flow Meters, Sensors + Monitors=$6.4 billion by 2019

Source: BCC Research (IAS012C), August 2014

BCC Research has recently published their new report, Gas Sensors and Gas Metering: Applications and Markets, which covers the global market for gas flow meters, sensors, monitors, and secondary flow instrumentation.

The report reveals this market is estimated to exceed $6.4 billion by 2019, registering a compound annual growth rate (CAGR) of 5.9 percent from 2014 to 2019. The gas flow sensors and monitors segment is growing at 6.7 percent CAGR for the projected period.

The market for gas flow sensors and monitors is expected to grow faster than the markets for flow meters or secondary instrumentation.

Stack gas monitoring is expected to become the largest application segment of the market with 21.6 percent market share by 2019, while custody transfer applications fall into second place with 19.7 percent and flare gas monitoring takes over third place with 16.6 percent.

Market drivers include new legislation (especially in the U.S. and Europe) affecting major user industries of gas sensing equipment, such as the chemical and petrochemical industry.

Other factors driving the market include innovative designs, lower prices, expanding applications areas, and increasing Southern European, South American, and Asian interest in environmental awareness and work safety.

"North America and Europe each accounted for over one-third of the global market for gas meters, sensors, monitors, and secondary instruments in 2013, while Asia accounted for less than a quarter of the market," said BCC Research's market analyst Dr. Edward Gobina. "By 2019, Europe is expected to be the leading market, with 36.1 percent of the global market."

Gas Sensors and Gas Metering: Applications and Markets presents data on demand for gas metering and gas sensors/monitors for different applications in current U.S. dollars for the major global regions.

Market share is presented for all major products, applications, gases, players/regions, and at the global level.

Additional information is available at
http://www.bccresearch.com/

16K Solutions from ORBCOMM

ORBCOMM Inc. has announced that one of the nation's largest retail fleets has selected ORBCOMM to deliver 16,000 dual-mode tracking and monitoring solutions across its mixed fleet of dry and refrigerated trailers.

ORBCOMM expects to ship the majority of the order in the fourth quarter of this year.

The company will provide its dual-mode GT 1100 solution for the customer's dry van assets using its new, more advanced OG2 satellites and Verizon's CDMA cellular network.

In addition, the customer will use ORBCOMM's dual-mode RT 6000+ cold chain monitoring solution for its refrigerated assets. ORBCOMM's powerful dual-mode tracking and monitoring solutions are ideal for meeting the demanding requirements of the customer's nationwide supply chain operations by ensuring complete asset visibility and continuous network coverage.

"Signing one of the nation's largest companies as a customer validates our ability to build and deliver high-performance M2M solutions that help our customers optimize their assets, drive down maintenance costs and increase their return on investment," said Marc Eisenberg, ORBCOMM's Chief Executive Officer. "This opportunity marks our largest GT 1100 order to date and sets the stage for future growth in the transportation & distribution industry."

For further information, please visit
http://www.orbcomm.com/

InfoBeam

Connectivity Services in Africa are Expanded by Emerging Markets Communications

The African Union Commission (AUC) has expanded Emerging Markets Communications (EMC) connectivity services in Africa and has renewed its existing contract.

Over the past eight years, EMC has provided satellite communication services to the African Union in 20 countries throughout Africa for their corporate offices and remote locations. In addition to renewing services for these sites, the African Union added an additional eight international locations, for a total of 28 global sites. EMC provides connectivity for private data, Internet, voice and high definition video using HD Connect.

"EMC has been instrumental in supporting the African Union's mission over the last eight years," said Rekia Mahamoudou, Division

Head at African Union. "EMC's investments in local field support, satellite capacity, teleports and in-country inventory in Africa enables us to expand our operations to achieve our goals of promoting unity and solidarity among African states, coordinating the cooperation for development, and safeguard of the sovereignty and integrity of the Member States. We decided to continue and expand our connectivity services with EMC as a result of their consistent, reliable network performance and 24 x 7 support."

The African Union Commission (AUC) is an institution spread throughout Africa with a mission to efficiently drive African integration and development in collaboration with African Union Member States, the Regional Economic Communities and African citizens.

Through a strong infrastructure spanning 54 countries, the commission encourages diversity, teamwork, transparency, information sharing and maintains a high level of integrity to put the needs of Africa above all else.

"EMC's communications infrastructure throughout Africa in satellite capacity, fiber, teleports, in-country field support centers and locally hired engineers provides organizations such as the African Union the access to quick-deployed connectivity solutions," said Joe Kamau, Senior Vice President, African Business at Emerging Markets Communications.

Emerging Markets Communications is a provider of fully managed satellite and terrestrial connectivity solutions to all 54 countries in Africa. The company has 21 field support locations throughout Africa, staffed with locally hired engineers and an inventory of spare parts. In addition to its C-band satellite capacity, EMC has a corporate office and teleport in Nairobi, Kenya.

Emerging Markets Communications® operates in 150 countries, with 41 global field support centers and wholly-owned infrastructure of teleports and terrestrial pops in the U.S., Europe and Africa. Emerging Markets Communications® is financially backed by ABRY Partners; a firm specialized in funding the communications industry with $36 billion of completed transactions.

The EMC infosite may be reached at
http://www.emc-corp.net/

Inmarsat's IsatPhone is Now Conducive to Operations in Brazil

Inmarsat has announced that its IsatPhone portfolio is now approved for operation in Brazil.

The handheld satellite phones provide reliable voice, data and GPS location services globally whether at sea or on land, ensuring seamless and reliable communications in areas where terrestrial and mobile networks cannot reach. Inmarsat's satellite phones can now be distributed by Globalsat Brazil, Brazil-based operating member of Globalsat Group, a leading provider of mobile satellite services in Latin America since 1999.

IsatPhone Pro and IsatPhone 2 operate over Inmarsat's global I-4 satellite network with an

average network availability of 99.9 percent across the world. This has made the phones a favorite of emergency first responders; humanitarian aid organizations; journalists reporting from the field; companies operating in the mining, oil and maritime industries; and other organizations whose activities take them to areas where other forms of communications are unreliable or nonexistent.

Each phone, with its own unique features, is engineered to operate in extreme conditions, providing peace of mind to the users that they can remain in contact at all times, even in the absence of a fixed terrestrial or cellular network.

Alberto Palacios, CEO of Globalsat Group, said, "We are able to finally provide companies and government entities operating in such industries as mining, power, shipping and humanitarian relief the ability to communicate where and when it's needed most."

For additional information regarding the IsatPhone, please visit
http://www.inmarsat.com/service-collection/isatphone/

For more information on purchasing an IsatPhone Pro or IsatPhone 2 in Brazil, visit Globalsat Brazil at
http://www.globalsatgroup.com.br

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EDRS Traveling the Space Data Highway with ESA
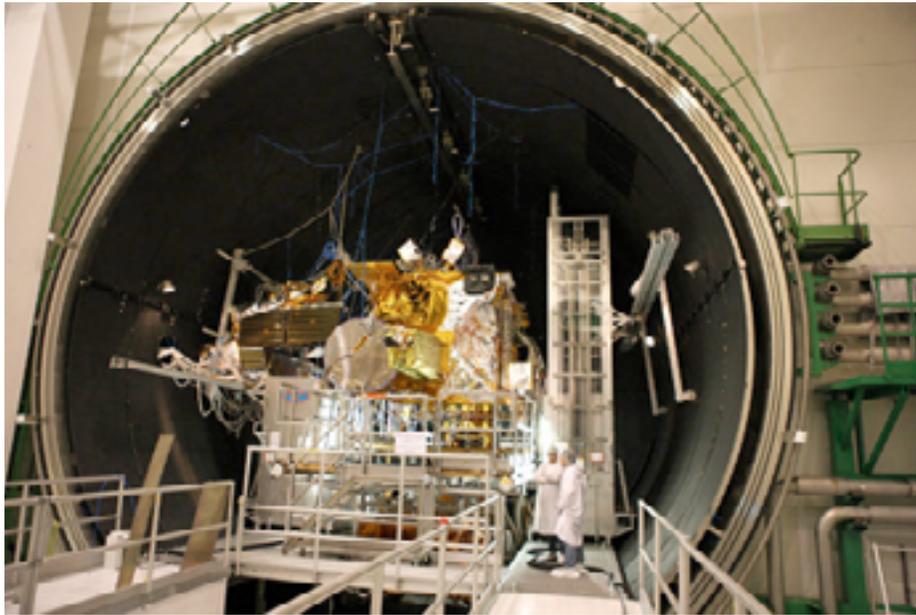
Eutelsat-9B/EDRS-A satellite inside thermal-vacuum chamber in Airbus Defence and Space facilities in Toulouse, France. Photo is courtesy of Airbus Defence and Space SAS.

The Eutelsat-9B/EDRS-A satellite is mated in the Airbus Defence and Space facilities in Toulouse, France. Photo courtesy of Airbus Defence and Space SAS.

The first component of Europe's space data highway passed several critical tests this summer replicating the harsh launch and space conditions it will soon have to endure.

The European Data Relay System, or EDRS, will consist of two geostationary nodes collecting data from low-orbiting satellites via laser and radio links for retransmission down to Earth. Complementing current routes, it will ensure the near-realtime availability of information for time-critical events such as environmental monitoring, emergency response and security missions. In addition
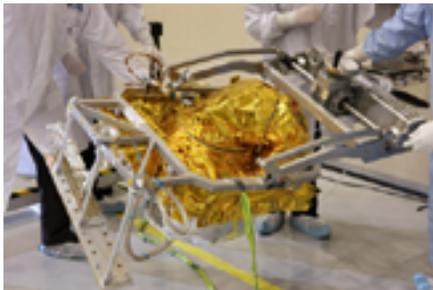
The Tesat Spacecom laser communication terminal is integrated on the Eutelsat-9B satellite in Airbus Defence and Space facilities in Toulouse, France. Image courtesy of Airbus Defence and Space SAS.

to the sophistication of the technology, the payloads must also be robust enough to withstand the rigors of launch and life in space. This first element, EDRS-A, consists of three hosted packages on the Eutelsat-9B satellite for launch next year.

The first is a laser terminal capable of receiving 1.8Gbit/s of user data from a satellite up to 45,000km away. EDRS-A also carries a radio terminal that will handle up to 300Mbit/s—a vast improvement over today's systems. The third package is an 'opportunity payload' funded by Italy's ASI space agency operating independently of EDRS to provide broadcasting services over Italy.

The testing occurred at the Toulouse, France facilities of Airbus Defence and Space, the Eutelsat-9B prime contractor. After its two main modules were mated, the satellite and its hosted payloads passed the month-long thermal vacuum test in July.

The vibration test then subjected them to the rigors of launch, followed by a stint in the acoustic test chamber. They emerged unscathed from them all. Germany's TESAT Spacecom is the prime contractor for the

EDRS payloads and also provided the laser terminals on the four low-orbiting Sentinel-1 and -2 Earth observation satellites.

Part of Europe's Copernicus program, these satellites will reduce the time delays in transferring their data to the ground through the greater flexibility of this new service. The satellite and EDRS payloads now face their final radio-frequency tests. Then the solar wings and antennas will be added ready for launch preparations to begin.

The EDRS SpaceDataHighway is a commercially operated data relay system created as a public–private partnership between ESA and Airbus DS. As prime contractor, the company will build, operate and co-fund the infrastructure, as well as providing the data transmission services to ESA and customers worldwide. ESA is carrying out the project on behalf of its Member States as part of its Advanced Research in Telecommunications Systems program.

The ESA infosite: ***http://www.esa.int/***

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A Collaborative Effort at 55.5 Degrees West

The Spanish satellite telecommunications operator HISPASAT and satellite services provider Intelsat have detailed their collaboration with respect to capabilities at the 55.5 degrees west orbital position.

This agreement, which has allowed both companies to enhance their positioning in Latin America, has been consolidated for the long term so that the two operators can grow at this orbit position and offer new services, especially DTH services.

The companies have agreed to the shared future use of the Brazilian-focused Ku-band capacity on Intelsat 34, which is scheduled to be launched in the second half of 2015, providing continuity of service and growth at the 55.5 degrees west orbital location.

Since June 2014 HISPASAT's Amazonas 1 satellite has been co-located with Intelsat's Galaxy 11 satellite, increasing resiliency and expanding resources available to the quickly growing direct-to-home television community that is hosted at that orbital location, including Brazilian payTV operator GVT.

Over the longer-term, HISPASAT has procured capacity on the Galaxy 11 follow-on satellite, Intelsat 34, which is expected to launch during the second half of 2015. HISPASAT and Intelsat will cooperate at 55.5 degrees west, continuing to build the momentum at this important Latin American video neighborhood.

"Our collaboration with HISPASAT, which we initiated earlier this year, has been instrumental to building the momentum for media applications at this orbital location," said Intelsat President and CCO Stephen Spengler.

"This extension of our agreement in the medium and long term will give our clients greater security as to the continuity of the services we are offering them from 55.5 degrees west," said HISPASAT CEO Carlos Espinós. "For HISPASAT, this agreement is a clear example of efficient management of space resources, in terms of both orbital positions and satellites. This collaborative agreement allows each company to optimize the use of our respective assets and expand our business opportunities in an efficient manner."

For more information, please visit the Intelsat infosite at
http://www.intelsat.com/

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Argentina + LATAM Recipients of a Two Satellite Positioning Following an Ariane 5 Launch

Arianespace's mission with Intelsat 30, hosting the DLA-1 payload, and ARSAT-1, in a mid-October launch via an Ariane 5 liftoff from the Spaceport in French Guiana, was a total success, burning five tons of fuel per second.

Total lift performance for this launch was approximately 10,000kg., with the two spacecraft successfully deployed during a flight that lasted a total of 33 minutes.

Arianespace continued Ariane 5's track record of success with another heavy-lift mission that orbited a pair of telecommunications satellites for Latin America: Intelsat 30, which is hosting the DLA-1 payload, and ARSAT-1.

The spacecraft were deployed into geostationary transfer orbits following their ascent from the Spaceport's ELA-3 launch area.

"The two satellites orbited will serve users located in Latin America, a region that has always had a special place in the heart of Arianespace, as this is where our launches take place, and also because our market share in the region has always exceeded 50 percent," said Arianespace Chairman & CEO, Stéphane Israël, during post-launch comments at the Spaceport.

Israël added the launch was performed at the service of two established global telecommunications players—Intelsat and DIRECTV—as well as for a new regional operator—ARSAT (Empresa Argentina de Soluciones Satelitales Sociedad Anonima).

Intelsat 30, released first from Ariane 5's upper passenger position, is a high-power relay spacecraft built by SSL (Space Systems/Loral) for Intelsat. Based on the 1300 series satellite platform, Intelsat 30 hosts the DLA-1 payload for DIRECTV.

With a design life of 15 years, Intelsat 30 will be co-located with Intelsat's Galaxy 3C satellite at 95 degrees West—from where the satellite will expand Direct-To-Home (DTH) entertainment offerings in Latin America, as well as provide backup and restoration services for the company.

Intelsat 30 is the 54th satellite launched by Arianespace for Intelsat, as well as the 45th SSL-produced relay platform, continuing a 31-year relationship between these three companies.

The second payload deployed by Ariane 5 on this mission—ARSAT-1—is the first geostationary satellite built in Argentina. The satellite was produced for ARSAT by INVAP, with Airbus Defence and Space and Thales Alenia Space serving as leading equipment suppliers.

As the first satellite to be launched by Arianespace for ARSAT, ARSAT-1 will operate from an orbital position of 71.8 degrees West and will deliver a wide range of telecommunications, data transmission, telephone and television services across all of Argentina, Chile, Uruguay and Paraguay.
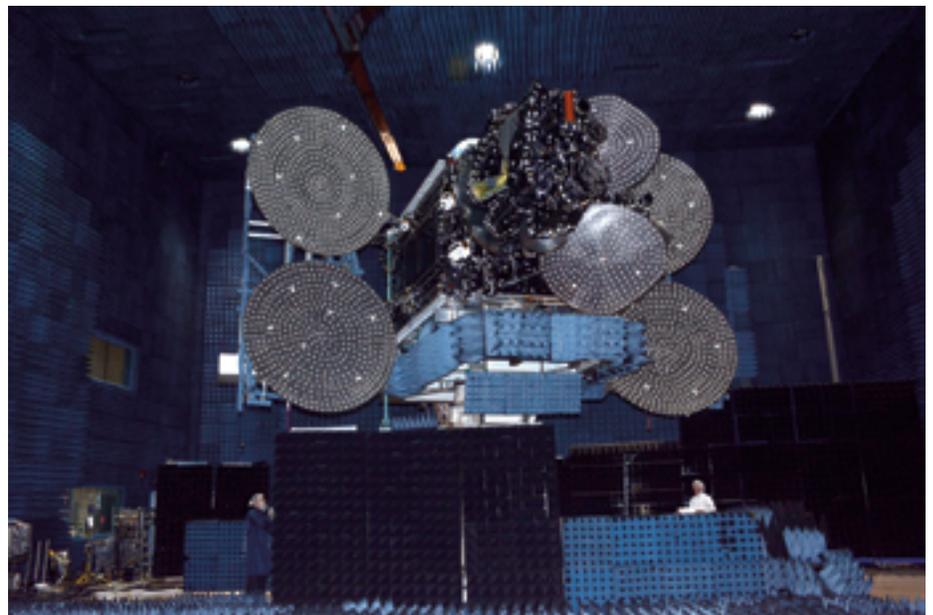
The Intelsat 30 satellite upon build completion.
Photo courtesy of Space Systems/Loral (SSL).

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With this success, Arianespace has conducted nine launches from French Guiana in 2014. These have been comprised of five Ariane 5 flights, three missions with Soyuz and one Vega liftoff. This pace keeps the company on track to meet its 2014 target of 12 missions, based on the availability of the payloads scheduled for these launches.

Arianespace's Stéphane Israël said the company's three remaining scheduled missions for 2014 are a lightweight Vega flight on November 18 with Europe's Intermediate eXperimental Vehicle (IXV) spaceplane, an early December liftoff of Ariane 5 with the DIRECTV-14 and GSAT-16 relay platforms, and a medium-lift Soyuz launch with a cluster of O3b Networks connectivity satellites.

Artistic rendition of the ARSAT-1 satellite.

Airbus Defence and Space has been the prime contractor for the European Ariane 5 launcher, one of the largest and most ambitious space programs in the world, since 2003. The company oversees an industrial network that brings together more than 550 companies (more than 20 percent of which are SMEs) in 12 European countries.

ARSAT-1 is the first GEO satellite to be built in Argentina, specified by the national telecommunications company ARSAT, who also did the technical monitoring of the entire project. The Argentinian high technology company, INVAP, was the manufacturer of various components and responsible of the design and integration of the satellite.

The Arianespace infosite:
http://www.arianespace.com/

The SSL infosite:
http://www.sslmda.com/

The ARSAT infosite:
http://www.arsat.com.ar/

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Government of Colombia Shelves Satellite—Lack of Funds

Colombia's vice president has announced the country will not purchase a $250 million satellite, but instead will continue to buy information delivered by other nations' satellites.

The planned satellite was canceled because the government doesn't have the budget for the purchase, vice president German Vargas stated. "We have explored the possibility over the last few years, but the government concluded that at this time it is too inconvenient. Unfortunately, the country does not have the economic capacity to make this investment," Vargas said.

The government now prefers to purchase the necessary satellite images elsewhere, which cost $11.5 million a year, adding up to $80.5 million in the same seven years the planned satellite's life expectancy would have been.

According to the opposition political party, Colombia is running behind on technology. Conservative opposition senator and former Communications Minister Maria del Rosario, warned that by not investing in a satellite, Colombia is allowing other Latin American countries to take advantage technologically. The lawmaker added that satellite technology is necessary to predict natural disasters.

According to the El Tiempo newspaper, most Latin American countries get their information through a third party with access to satellites. However, major economies such as Brazil, Venezuela, Argentina and Mexico own their own satellites.

Colombia uses satellite data for different purposes, such as communications, national security, identification of illicit crops, agricultural development programs and the implementation of infrastructure plans.

There are other ways of gathering information. The President of the Geographic Institute Agustin Codazzi (IGAC), Juan Antonio Nieto, stated that information can be retrieved from other sources than satellite, according to newspaper La Vanguardia. Nieto mentioned that radar and drones can be used to produce much of the required information.

Story by Christoffer Frendesen, journalist covering Colombia.

A Processing Power Partnership
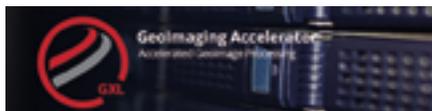
PCI Geomatics has reported that the company's Mexican partner, Cloud Mapping Technologies (CMT), has selected the high-speed, automated, GeoImaging Accelerator (GXL) image processing system to power its production center.

The announcement was made at a launch event held at the Latin American Geospatial Forum (LAGF) in Mexico City.

CMT, which also serves as a PCI Geomatics' authorized reseller in Mexico, selected the GXL system as the cornerstone of their investment in a highly automated image production center designed to process large volumes of imagery quickly, efficiently, and with a high degree of quality.

From left: Arnold Hougham, VP, Sales and Marketing, PCI Geomatics. Oscar Rossbach, President, Cloud Mapping Technologies Kim Tofin, Territorial Sales Manager, Latin America, PCI Geomatics

CMT's production center is ideally suited to help customers who are faced with sudden peaks in demand for their color-balanced, orthorectified mosaic products, derived from raw aerial or satellite imagery.

The system delivered to CMT is capable of processing both satellite and aerial imagery.

The CMT Production Center will provide a unique opportunity for PCI customers in the region.

Through the implementation of this center, a world class facility is now available in region where Latin American customers can receive live demonstrations, training, and benchmarking services more quickly and easily.

For additional information, please visit
http://www.pcigeomatics.com

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Globecomm Completes VSAT Network in Support of Iraqi Oil Exploration

Globecomm has successfully completed a 158MB VSAT network, in partnership with one of the country's leading telecommunications suppliers, for a European-based client that is conducting oil exploration at sites in Iraq.

The network supports dedicated Internet, data and voice connections to manage the complex exploration process and to provide crews with essential communications.

The VSAT network is combined with 100MB terrestrial microwave links in a managed service that includes a Cisco call manager telephone system terminating calls at the Globecomm Europe teleport in the Netherlands.

The design of the dual-path network provides complete redundancy for all sites.

Globecomm network map.

"The main exploration site alone has a crew camp that supports five thousand people working and living there," said Globecomm Europe's Business Development VP Patrick Visser. "Communications services will be heavily used for both business and private purposes, and it has been engineered to guarantee a high level of quality and reliability."

One of Iraq's leading telecommunications suppliers was contracted to install the remote sites, install and manage the terrestrial microwave link, and provide all local technical support to the oil exploration company.

It is the kind of partnership that Globecomm has created in multiple countries to bring advanced communications to fast-growing emerging markets.

For more information, please visit
http://www.globecomm.com/

InfoBeam

C-COM's Antennas Save Wildlife in Africa + in the Great Limpopo

A rhino is killed every eight hours, as the animal's horns have become more valuable—pound for pound—than gold and this relentless slaughter threatens the rhino's very survival.

C-COM Satellite Systems Inc. antennas are being used in The Great Limpopo Transfrontier Park located in Mozambique, South Africa, and Zimbabwe to monitor and prevent the poaching of rhinos.

The combined size of these three parks covers 35,000 square kilometers and is one of the world's greatest animal kingdoms. The park contains 40 percent of the world's rhino population and it has recently become the frontline of the rhino poaching wars especially on the borders of Mozambique and South Africa.

Saab Grintek, a C-COM iNetVu integrator based in South Africa, is sponsoring a foundation that is working closely with the three governments where the park is situated.

The foundation has been testing Unmanned Arial Vehicles (UAV's), which are equipped with regular, as well as infrared cameras, and thermal sensors for sensing body heat as well as heat from vehicles during the night.

These UAVs are flown and controlled from a specially equipped vehicle. Using the C-COM iNetVu vehicle mounted antenna, the unit stays in contact with the operational center, and any disturbance or potential breach in the conservation's life is immediately responded to on the ground.

This setup provides the park rangers with the ability to monitor activities in the park in real-time, day and night and intervene as required, as well as record the action for eventual prosecution of the poachers.

"Having the C-COM Mobile unit as the main means of connectivity during this operation, proved to be the best decision we made. The success and the availability of the system has become the norm of a daily process," said Gustav Engelbrecht, Product Manager Satellite Systems at Saab Grintek Technologies.

"This innovative solution of using UAV's in conjunction with the C-COM iNetVu antennas for monitoring and control of large areas or difficult to access locations from the air will open up many new applications. We expect to see a number of our integrators from around the world apply this technology to their existing vertical markets, such as emergency communications and disaster

management," said Leslie Klein, President and CEO of C-COM.

Saab Grintek Technologies (SGT) is a telecommunications company offering a comprehensive range of end-to-end services and solutions to operators, OEMs, enterprise and governments. The company specializes in integrated, leading edge and comprehensive solutions across the entire spectrum of telecommunications.

The company's infosite is located at
http://www.saabgrintek.com/

C-COM Satellite Systems Inc. provides commercial grade mobile satellite-based technology for the delivery of two-way high-speed Internet, VoIP and Video services into vehicles. C-COM has developed a unique proprietary Mobile auto-deploying (iNetVu®) antenna that allows the delivery of high-speed satellite based Internet services into vehicles while stationary virtually anywhere where one can drive.

The iNetVu® Mobile antennas have also been adapted to be airline checkable and easily transportable. The company's satellite-based products and services deliver high-quality, cost-effective solutions for fixed and mobile applications throughout the world.

C-COM's infosite may be reached at
http://www.c-comsat.com/

InfoBeam

A New Teleport Build by SES TechCom for Es'hailSat

SES TechCom, a wholly-owned subsidiary of SES S.A and Es'hailSat, The Qatar Satellite Company registered in the State of Qatar, have signed a comprehensive consultancy service agreement.

The agreement provides Es'hailSat full access to the technical and engineering experience of SES. In the framework of the contract, SES TechCom will support Es'hailSat in the development of that company's new teleport facility.

The teleport will be built on a green field site north of Doha and will be designed as a modern, state of the art facility providing satellite control and communications support (TT&C) for the Es'hail 2 satellite, as well as offering up-linking and reception facilities tailored for Es'hailSat's business partners.

The teleport will be designed from the outset to allow for significant future growth, and will feature all major requirements in order to provide customers with comprehensive satellite ground station and platform services.

During the course of the contract, SES TechCom will work closely together with Es'hailSat's project management team and their selected contractors, in order to create a new and exciting satellite facility for the future of Qatar's communication infrastructure.

Ali Ahmed Al-Kuwari, CEO of Es'hailsat, said, "The establishment of our own teleport in Qatar is an integral part of the Es'hailSat program, giving us a secure and independent satellite infrastructure. It marks another key milestone in our plan to become a leading satellite operator and center of excellence in the MENA region.

Gerhard Bethscheider, Managing Director of SES TechCom, said, "SES operates several of the largest and most successful teleports in the world—this initial contract has the potential to foster a long standing partnership between our two organizations."

The SES TechCom infosite may be accessed at
http://www.ses.com/techcom

Es'hailSat's infosite is available at
http://www.eshailsat.qa

A War Of HTS Ecosystems On The Horizon?

By Carlos Placido, Senior Contributor

For a long time, the satellite communication (SATCOM) industry has enjoyed a rather stable distribution structure, with clear demarcation points among key stakeholders in the value chain.

Recent trends, however, seem to point to a different future environment. As differentiated high-throughput satellite (HTS) platforms become pervasive across all regions, focus will shift from spectral efficiency and distribution openness to aspects such as network´s long-term value, extensibility and stickiness. In a nutshell, in the context of moving parts, focus will now turn to the sustainability of the ecosystems.

who their direct competitors were. Indeed, with a few exceptions and despite natural market shifts and adaptability to varying user needs, the overall distribution structure for satellite services has remained fairly stable for decades.

The HTS paradigm, however, is shaking things up and forcing all stakeholders to rethink their positioning and re-evaluate their core competencies in the context of a rather 360-degree view of the competitive dynamics, regionally and globally. Indeed, such rethinking is bringing yet another key stakeholder to the mix: Spacecraft manufacturers are increasingly involved in the design

For decades, the SATCOM services ecosystem has been primarily comprised of service providers, satellite operators and technology vendors. Generally speaking, the ecosystem worked like this: Satellite service providers leased raw bandwidth (in Mhz) from one or more satellite operators, and selected one or more transport systems to do the in-house integration, packaging and provisioning of satellite connectivity services offered to end users (external or internal).

For the most part, satellite operators were competing among themselves by leasing chunks of spectrum at a wholesale level; so were technology vendors competing among themselves selling ground systems on a global basis; and service providers offering end-to-end services on a local/regional basis. In a sense, these players had well-defined demarcation points and preconceived core competencies with good visibility around in terms of

of HTS service models given that the satellite design can have great impact on the network architecture, and ultimately, on the service model as well.

Closed or Open?

For the past few years, the industry has passionately discussed the pros and cons of the so-called "open" and "closed" HTS architectures and their match with different target users. There appears to be some sort of consensus now that the so-called "closed" (or vertically integrated systems), which put more focus on technical efficiencies, are prone to enjoy a good degree of success in contented, commoditized markets (such as residential broadband, USO and small enterprise). "Open" systems appear to be well positioned to tap into a diversified set of B2B satellite service providers that target verticals such as energy, backhaul, mobility and enterprise VSAT. Both "open" and "closed" HTS systems (and variants in between) aim

at lowering the cost per bit, but "closed" models place more focus on technical efficiencies, while "open" focus on distribution efficiencies.

Nevertheless, note that the terms "closed" and "open" can have misleading interpretations. HTS architectures are generally IP-based, and the Internet Protocol (IP) is, by definition, open. There is no reason why "closed" systems cannot enable different distribution hierarchies and/or open up to a third-party ready development environment. Likewise, "open" networks allow traditional service providers to transition to HTS but market forces could drive the system to a de facto closed environment if the operator decides to aggressively pursue managed services, or if gateway beams end up being monopolized by a large player.

In the end, the terms "closed" and "open" could be respectively replaced by "integrated" and "traditional," given that these terms rather define which model allows service providers to continue the "brokering" of raw satellite capacity (in MHz) and repackage this in Mbit-denominated services.

Core to this is also the fact that service providers can do their own "tricks" regarding how such raw capacity is best used via techniques such as statistical multiplexing, traffic prioritization or optimization that package distinct services targeting a wide range of user types. Note that most service providers use similar tricks, so there is really no special talent that result in a sustainable technical competitive advantage: Service providers´ sustainable competitive advantages rather hinge around their locality or intimacy aspect with end users, and knowledge of their evolving needs and buying patterns.

From Platforms to Ecosystems

Recent HTS trends do seem to point to quite a different competitive environment unfolding over the next few years. As HTS globalizes in different sizes and shapes, and bandwidth cost inevitably comes down, focus will shift from cost per bit and distribution openness to aspects such as network´s long-term value, horizontal extensibility and stickiness.

Leading HTS players such as Hughes, ViaSat and Intelsat, to name but a few, will seek to drive not just lower cost per bit but also other, perhaps more intangible benefits that position their platforms for long-term value and sustainability. There is a reason why the industry has started putting focus on the word "ecosystem."

Decisions being made are either pragmatic and in reaction to market (or government) forces, or rather strategic with long-term implications, but there is already a great deal of evidence that these shifts are happening across the entire value chain. Some examples include:

- *While some traditional service providers welcome the introduction of open platforms to transition to HTS, others are adopting hosted-payloads to vertically integrate offerings*
- *Technology vendors are clearly diverging in their strategies: Some are betting on the geographic expansion of fully-managed services, others continue selling systems for others to integrate and operate*

- *Satellite operators are either vertically integrating services, providing an evolutionary FSS-to-HTS path or striking deals with large anchor tenants*
- *Even traditional wholesale operators, with a vested interest in protecting and empowering the traditional food chain, are forced to introduce new managed offerings to complement and catapult open models*

In the short term, these shifts mean focus on strategic partnerships among service providers, satellite operators and ground system vendors. However, these shifts also seem to increasingly indicate that, longer term, the competitive environment could morph from a "Battle of HTS networks" into a "War of HTS Ecosystems."

At The Crossroads

The satellite industry appears to be at crossroads and more vulnerable to disruptions. "Traditional" FSS dominance at either global, regional or local levels do not necessarily translate into HTS leadership and, as players "platformize" their offering around IP, the industry also becomes subject to the scale and network effects of (much larger) Internet-driven ecosystems. This is possibly the reason why the rumored interest of Google in a Low Earth Orbit (LEO) constellation of communication satellites caught so much industry attention, due the ongoing expansion of Google's Android ecosystem into more communication and entertainment sectors.

In summary, the HTS paradigm shift is mixing things up, opening the value chain to disruptions that can sustain themselves. Time will tell which initiatives, models and ecosystems will prevail. There will surely be winners and losers—however, on a global basis, there is no doubt the industry is going through one of the most exciting times experienced in decades of SATCOM advancements.

About the author

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Mining In Africa: Connectivity Applications

By Orson Storar, Head of Mining Sales at Airbus Defence and Space

Distance and a lack of terrestrial infrastructure are two of the key challenges to organizational communication in Africa. As one of the major remote working industries, mining companies know this and use VSAT to ensure reliable voice and data communication on the African continent. However, feeling the pressures of the global financial environment as much as any industry, operational efficiency has come very much to the forefront in the mining world.

Already an 'early adopter' of satellite communications, the sector is committed to maximizing profitability through smarter operations—securing robust and high bandwidth communication network is an important aspect of this. When looking at the use and development of SATCOM in Africa, what is happening in the mining industry is a healthy indicator of changing usage patterns in other sectors, such as NGOs and heavy industries.

Bandwidth demand continues to increase, almost regardless of the communications band in operation for a communications service. This has led to the development of the multi-band AuroraGlobal portfolio introduced by Airbus Defence and Space in March of 2014. AuroraGlobal is designed to ensure availability of bandwidth on existing Ku- and C-band services, while being ready for forthcoming Ka-band services. In this way, businesses, industry, government bodies, NGOs, and mining companies in Africa can be certain of their long term ability to communicate, even as bandwidth requirements continue to grow.

Mining in Focus

There are several stages of a mining project's lifecycle that may require different types of SATCOM service and hardware. Using high quality voice and mobile broadband satellite, such as BGAN, exploration teams need to deliver progress reports, photographs, video and seismic data to off-site experts. As BGAN is highly mobile, such drives the efficiency of exploration efforts, while Iridium/Inmarsat/Thuraya handsets or asset trackers deliver voice, messaging, on-line tracking and emergency alerts to better ensure worker safety in the field.

During the development and production phases of a mine, deploying economical full-scale, high quality global network communications solutions is critical for daily mining operations and business. Services might include portable and fixed VSAT systems, enabling instant broadband connectivity, and Wide Area Network (WAN) solutions to offer the best combination of high performance VSAT and hybrid networks to provide full communications capabilities including voice, data, videoconferencing and managed services. Collaboration is key to improving efficiency in most industries, so one of the most developed communication tools for mining companies has become videoconferencing.

Improving Video Conference Performance

As an example, a multi-national alloy producer wanted to connect some sites in Gabon and have a faster, more reliable link with its HQ in Europe. High on the requirements list was the ability to conduct video conferences between its sites in Gabon to a very high standard—no jitter, noticeable delays, and so on.

VSAT photo is courtesy of Airbus.

On a standard star network topology using geostationary communications satellites, this would require at least two satellite hops. This meant the service would suffer from high latency (2 x and up to 600ms latency). This required the less common star mesh network topology to be deployed.

The architecture is a hybrid mesh-star network based on a Newtec platform, which delivers dedicated capacity for the client in order for service levels to be guaranteed. This topology, with the company's server located in one of the Gabon offices, links directly with a single satellite hop all of the Gabonese sites. Latency was decreased (max. 600ms vs. 1200ms) between offices in the country and the overall business connectivity experience is enhanced.

Inter-Continent Business Networking

Another key requirement of the network was to secure connectivity to the server at the production site in Gabon, for the administration and finance staff in Europe. To achieve this, a Multiprotocol Label Switching (MPLS) connection from an Airbus Defence and Space hub to the Datacenter was established. This added an extra dimension made straightforward by the Star Mesh topology. When it comes to month-end, when staff at HQ need their accounting systems the most, they experience a fast, reliable connection, ensuring that they can get the job done quickly and efficiently, regardless of the server being located in Gabon.

Providing Bandwidth for Employee Welfare

In today's world, workers expect to communicate from remote regions just as they would at home. An employee who can talk to friends and family, as well as access email, social media or browse the Internet, is a far happier worker who will provide more value to a business. However, rather than sharing bandwidth from a corporate or operational network, Airbus Defence and Space has created a new concept for employee communication in the mining industry—Link2Mine.

This fully managed service is based on a dedicated network for only employees and third parties workers. Airbus Defence and Space takes care

of this—management doesn't need to worry about bandwidth for critical communication being used for non-business communication by employees. By purchasing prepaid vouchers, employees have access to the Internet and phone for international calls, either in an Internet café or installed telephones, or over Wi-Fi using their own devices.

Networking for All Applications

Of course, SATCOM applications are not mutually exclusive. When a customer has their network in place, a wide range of applications can be used, as long as the system is flexible and robust enough.

A recent project for an Airbus Defence and Space mining customer demonstrates a dual focus on corporate and employee welfare needs. It included establishing a network for one of the world's leading mining companies to provide telecommunications services to the firm's mining operations in West Africa.

Under the contract recently signed, Airbus Defence and Space provides Internet connection to staff working and living at the mining sites—nearly 1,000 people in all. Fiber through microwave towers brings bandwidth to the remote sites where staff are able to connect their laptops, tablets and smartphones via wireless solutions.

Airbus Defence and Space also provides additional telecommunications services, such as bandwidth on demand via VSAT to the sites, to be further used for VoIP, videoconferencing and corporate applications. The network is managed by Airbus Defence and Space with value added services such as security and Virtual Private Network with high-level service agreement.

The Airbus Defence and Space infosite may be accessed at
http://airbusdefenceandspace.com/

SatBroadcasting™:
The Talk Is 4K, 4K + More...

By Chris Forrester, Senior Contributor
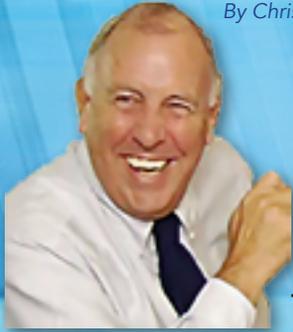
This year's IBC topped out at some 55,000 visitors (up 2,000+ on 2013), and became another record year for attendance. The sun shone and there was a definite sense of optimism around the halls, especially Hall 1, the event's home to the satellite broadcasting community.

By and large, the optimism focused on a series of buoyant statements that emerged during the conference sessions and praised the impact that 4K/UltraHDTV would have on the broadcasting sector.

Typical were comments from satellite operator SES's COO, Ferdinand Kayser, who said SES was "convinced" of 4K success. He cited the challenges likely to be faced by IP-based telco system users, saying, "Currently, across Europe, the average consumption of web-based content is around 20 Gbytes/household a month. An individual HD-quality full OTT service would require around 35 times this amount, or around 700 Gbytes/household. Add UltraHD and this expands to 100 times today's average. Today's current observed average speed is 4.6Mb/s. Systems would need to handle 10 times this level to cope with UltraHD. Only about 54 percent of homes would achieve this technical reach level of access. This would inevitably create another digital divide. Dramatic upgrades would be needed to make this access possible."

Kayser said he expected some key European broadcasters to start closing Standard Definition (SD) channels this coming year in order to create capacity for UltraHDTV, as well as be ready for 2016's all-important Olympic Games and UEFA soccer championships, both of which would be captured in 4K.

Kayser reminded his IBC audience of SES' 54 orbiting satellites, and 1,500+ transponders from 37 orbital locations, and the 98 transponder expansion in capacity planned for the next few years to 2017 (and up to the launch of SES-12) which will add 14 percent to its fleet in total. SES commands 28 percent of the world's TV channels and has added 494 channels since 2012.

However, he quickly returned to his UltraHD theme, saying that by 2025, half of all screens and STBs would be for UltraHD. "Ultra-HD screens are already showing a similar price entry point and price decreases as full HD screens did when they first debuted. Introduction of the new [HEVC] compression format will require

a new simulcast period to migrate from MPEG4 to HEVC. Congestion-free viewing of UltraHD services is a 'sweet spot' for satellite."

"By 2025 we expect 1000 Ultra-HD channels to be on air, and around 500 million Ultra-HD displays in use."—Ferd Kayser, COO, SES

Kayser said SES had already collaborated with Sky Deutschland for the first end-to-end UltraHD broadcast of live soccer, and at IBC, the company showcased the world's first end-to-end encrypted transmissions of UltraHD (using Samsung screens and Kudelski's SmarDTV CI encryption).

Questioned as to whether SES favored 4K or the anticipated 8K transmissions under development in Japan, Kayser admitted that 8K would be wonderful for the satellite business.

Indeed, his enthusiasm is echoed by research house IHS and their Consumer Electronics & Video Technology division's latest study, which stated that UltraHD TV has "hit the ground running, and is about 10 years ahead of where HDTV was, just two years after standards ratification".

However, IHS also issues a warning stating that payTV broadcasters might not own the 4K opportunity. With Netflix already supplying 4K streamed content, and Amazon Prime Instant Video's launch being "imminent," as well as the likes of Samsung and Sony bringing UHD content to owners of their high-end displays, such VOD suppliers might be a good way to distribute 4K content to—as yet—fragmented audiences.

Tom Morrod, IHS' senior director, said that while the transition from SD to HDTV will have required more than 20 years to reach a 74 percent penetration of Western European households (in 2015) that own at least one HD-enabled TV set, UltraHD 4K is making significantly better progress.

Global UltraHD via satellite revenues by region, 2025

Source: NSR
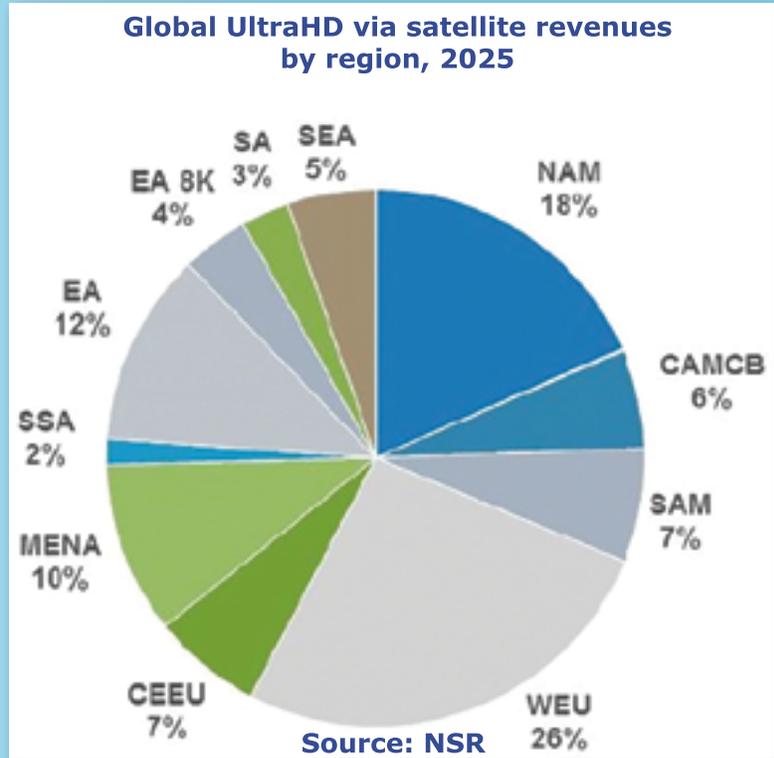
"Household penetration is steadily climbing up," said Morrod. He added that it will already be commercially viable for broadcasters to commence 4K transmissions in 2015-16 (and a 3 percent penetration rate) and "mainstream by 2019 with a 15 percent penetration rate".

Another giant European satellite broadcaster is Eutelsat. Markus Fritz, the company's Commercial and Marketing Development Director, spoke

Household penetration is steadily climbing up
Mainstream by 2019 (15 percent penetration and commercial in 2015-2016 (3 percent penetration)

UHD TV household penetration 2013 to 2019

■ FHD   ■ HD   ■ SD   ■ UHD

Chart is courtesy of IHS
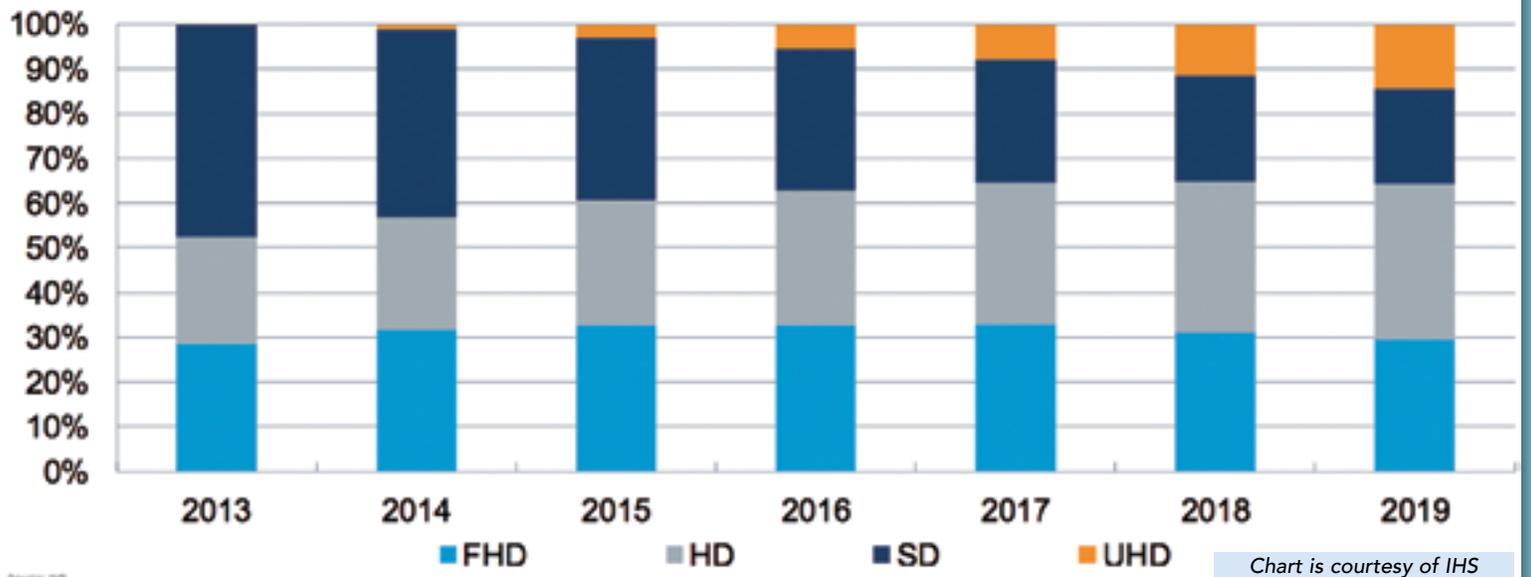
enthusiastically about the prospects for 4K, although he admitted that there was currently no rush to book 10-year leases for the technology.

"In reality many of our customers will find space on one of their existing transponders with us for the early transmissions. How will it start? It will be similar to the early days of HDTV, but the set-top boxes have first to be available. In my view, there's plenty of content about, and if you wanted us to find content for two channels—let alone a few hours in the evening—we could do it. Certainly filling four or so hours a day is not difficult. We have two content operators who have said that as soon as we go live with [an aggregator's] service, they will go with two, 24-hr UHD TV channels. The UltraHD logo has emerged from Digital Europe and is ready and [was] communicated at [the Berlin trade show] IFA and IBC. What is also interesting is that I have a lot of public broadcasters interested in demonstrations than we had at the start of the HD process, and this includes the BBC, RAI, France Televisions, and others I cannot mention."

He recognized that many public broadcasters are financially limited in what they can do today and are, in some cases, still developing their strategies for 4K.

"If they start moving internally, then they will show their governments that there is a case, but it has to be financed. But they are pro-active. 2015-2016 will be key and we expect compression to free up some capacity which will absorb new UHD channels, but it is also possible that some seed investment could come from the satellite community to help broadcasters ramp up their 4K services.

"The big question is whether 4K will be a success, or will the market wait for 8K? Or, will 4K go on to become the mass market proposition and replace HDTV and close out 8K? If we look at the DTH industry, it is easy to see today's Standard Definition converting to HD and dropping SD completely. And there are still many SD channels out there, far more than HD. There is plenty of capacity expansion for us. But on a market-by-market basis, I think we need to do more in understanding whether the consumer will buy 4K. This means focus groups and the like. And it might be a different pace of adoption in some markets."

Fritz is correct. The $64,000 question—although more likely to be at least a $64 million question—currently being debated is whether to adopt the European Broadcasting Union's early 4K specification.

"Should we go for UHD-1 or wait for UHD-2?" asked the EBU's Hans Hoffman at IBC. "When will services start? When will consumers buy new displays? Should we wait for a more robust and satisfactory set of technical demands to be in place before we start?"

Hoffmann admitted that UHD-1 (and 2) have various subsets and standards, and immense confusion in the market, not least with a plethora of "4K" or "UltraHD" logos and claimed standards. "And it is getting worse as displays enter the retail chain," he added.

Paul Gray of research specialists DisplaySearch delivered his latest 4K display sales forecasts, which in terms of anticipated sales are impressive:

- $30m in 2015
- ($12-15m in China)
- 4$5m in 2016
- $62m in 2017

China, he said, will be the world's largest market for 4K displays, followed by North America and Europe. Gray said that volume sales will be at largely at 55-inch size and above.

Hoffmann's expert panel also heard from the NexTV Forum's Kaiya Motohashi. He told IBC delegates that Japan's first 4K channel went 'live' on June 2nd, showing six hours a day of drama, sports, travelogs and natural history programming. During early 2016, it would be broadcasting an experimental 8K channel by satellite as well as two or three channels in 4K. "By 2018 there will be several 4K channels on air as well as 8K channels, tapping into interest from the Winter Olympics, the FIFA World Cup soccer from Russia and then the 2020 Olympics from Tokyo.

As to the inevitable 4K quality/standards confusion, Sky Germany's Stephen Heimbecher, while wearing his co-chair position of the FAME (Forum for Advanced Media in Europe), admitted that "UHD-1 has a momentum in Europe today."

Andy Quested, the BBC's head of technology for HD and 3D, said the BBC wanted to go back 30 years. "We'd like to be in a medium where natural history and drama were shot on a camera that had 16-18 stops of dynamic range. Our first transitions from film to video had everyone screaming that they couldn't work with such a tight dynamic range. It is only now that we are seeing cameras emerge that can get close to what film could do."

BSkyB's chief engineer Chris Johns summed up the dilemma. "4K is a bit like an airline. HDTV is obviously economy class. Everyone has it and they

BT Sport's 4K plan

IBC delegates heard Alex Green, BT Sport's director of TV, said the broadcaster was working "very hard" to see 4K transmissions of its Premier League soccer matches during the 2015-16 season. BT Sport conducted the first end-to-end all 4K trial in the UK (of a Rugby final) and the recording was demonstrated at IBC. "This gave us a great deal of confidence. We are also doing a lot with 4K camera work across upcoming sports events. We are also using in the studio a couple of 4K 'stitched' images allowing us to see the whole field of play, and this is very useful and we are excited by this."

Green was speaking during IBC's 'More pixels, better pixels' session, and he said he sensed a strong enthusiasm for the technology from the public. "I invested in a 4K display for home, and showed my family 'House of Cards' in 4K and it truly generated the 'Wow' factor. There is an appetite [from the public] for quality. The demand is there."

Green said that sport would be major driver, and perhaps 'the' driver for 4K adoption. "We see 4K being a natural evolution right across the industry. Live sport is all about immediacy and UHD is perfect."

On the way are two SMPTE standards that address metadata as such pertains to HDR and it has a study group charged with studying the 4K eco chain and identifying gaps. Meanwhile, the DVB is due to discuss UHDTV Phase 2, which goes beyond static resolution.

"One of the most important issues will be HDR in environments where there are screens available with very high peak luminance," said David Wood, chair of the DVB commercial UHD group. "Technical additions need to be made, starting with more bits per sample. Secondly, what we used to call the gamma curve will be called the OETF (Opto Electronic Transfer Function). The decision will be taken very soon on whether to include this feature in the UHD DVB Phase 2 spec intended for broadcasting in 2017, when the chips with the necessary memory bandwidth are available from manufacturers," he added.

About the author

Senior Contributor Chris Forrester is a well-known broadcasting journalist and industry consultant. He reports on all aspects of broadcasting with special emphasis on content, the business of television and emerging applications. He founded Rapid TV News and has edited Interspace and its successor Inside Satellite TV since 1996. He also files for Advanced-Television.com. In November of 1998, Chris was appointed an Associate (professor) of the prestigious Adham Center for Television Journalism, part of the American University in Cairo (AUC), in recognition of his extensive coverage of the Arab media market.

Samsung's 85-inch bendable, curved, UHD TV

can fly anywhere in the world. But it's nicer in Premium Economy where you can get UHD-1/Phase 1. Then, in First Class, it's UHD1-Phase 2. Of course, 8K then means you are in your own executive jet."

Immediately following IBC, SMPTE held a series of meetings in Geneva and, in particular, a special session which saw EBU members pressing their requirements for High Dynamic Range capture.

"HDR has dependencies and impact factors. Good modern cameras capture images with quite a high HDR," said Hans Hoffmann. "In the RAW domain, we have a signal with a potential headroom, and broadcasters can store that for future use.

"The difficulty is what to do in terms of bringing it through an eco chain to the consumer. The whole chain has been designed for Rec 709," he added. "We need to reconsider all the operational practices. We need to define a signal which is going through the chain, and it has to be at least 10-bit. This should be manageable," said Hoffmann.

ITU-R Recommendation BT.709, more commonly known by the abbreviations Rec. 709 or BT.709, standardizes the format of high-definition television (HDTV), having 16:9 (widescreen) aspect ratio. The first edition of the standard was approved in 1990.

NSR Analysis: Will Latin America Repeat Africa's Oversupply Situation?

By Prashant Butani, Senior Analyst, NSR India

At first look, the headline may seem to be an unusual combination of continents to compare and contrast. Africa is about three times the population of South America, twice the area and more than one and half times more dense in terms of people per square kilometer. South America on the other hand, has a GDP per capita that is almost four times that of the African continent.

Comparison of Demographics		
	Africa	**South America**
Area	32	16
Population	1200	400
Density	35	21
GDP per capita	$2,500	$10,000
Largest Economies	South Africa, Nigeria, Kenya, Egypt	Brazil, Argentina, Columbia, Peru

Source: Wikipedia, UN Statistics Division

Both regions have contributed one country each to the BRICS viz. Brazil and South Africa. Both continents have close ties to their northern counterparts (Europe and North America) in terms of language, video distribution platforms and connectivity. Both continents have also played host to the FIFA World Cup, an event known to attract viewers—and hence consumption of satellite capacity—from across the globe.

However, what makes the comparison interesting is that while Africa has seen almost all satellite operators launch capacity for the region over the last five years, for South America that phase of a "supply boom" is expected to play out over the next half decade. This is a fact that warrants the question above—will this amount to over capacity, excessive competition and eventually, falling prices (read lower revenues and margins)?

Are There Trends Behind The Launches?

For starters, Africa has about 48 satellites in service currently that carry C-and/or Ku-band capacity in the 50 West to 95 East orbital arc that allows fairly decent look angles into the continent. For South America, albeit a smaller region, that number for its orbital arc is about 38 satellites in service. Now that may suggest nothing extraordinary; of those numbers, between 2009 and 2012, a span of only four years, there were about 25 launches over Africa, whereas the number for South America was a mere nine satellites.

Clearly, the operators had decided that there was a gap left by fiber in the African market that only satellite could help fill. What they perhaps had not anticipated was that the near monopoly in the video distribution markets in Africa would not change drastically, and that VSAT operators would eventually consolidate as fiber became more prevalent. All this while more and more operators laid their claim to the promise of Africa, thereby leading to increased competition and eventually lower fill rates and falling prices.

Comparison of HTS Bandwidth Supply and Demand
South American HTS Bandwidth Supply and Demand

African Continent HTS Bandwidth Supply and Demand

Source: NSR
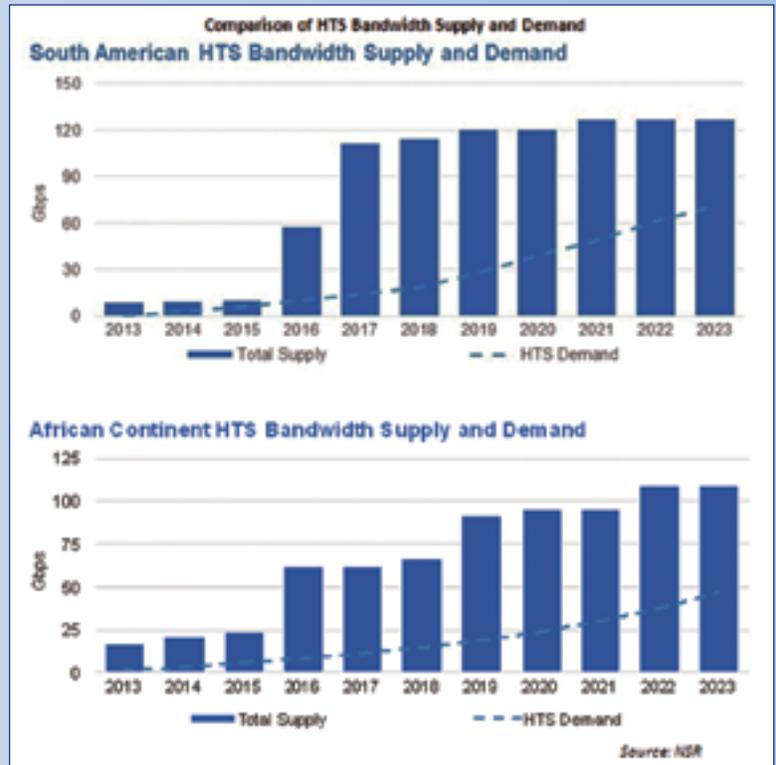
South America, on the other hand, becomes the region in focus if you now look at how much capacity is coming online in the next three to five years. There are about 18 satellites announced for South America carrying either C- / Ku- or HTS capacity, whereas the figure for Africa is about 15 satellites. In terms of TPEs of C-, K-u and Ka-band capacity, South America is expected to add about 850 TPEs by 2018, as compared to only 750 for Africa by the same period.

The difference becomes extremely evident when looking only at HTS capacity, measured in Gbps. Here, the figure for South America is at 100 to 125Gbps by 2018, as compared to only 50 to 60Gbps for Africa. Now this figure does include Brazil's SGDC-1, which is not entirely a commercial payload, but that does not rule out its role in Digital Divide programs. Despite all the "unconnected" markets that Africa offers compared to a more robust fiber network for South America, the HTS capacity coming online for data services is just under half for Africa!

What Does This Discrepancy Mean?

For starters, South America is benefiting from the lessons learned on HTS systems in other parts of the world, namely North America and Europe. The applications are largely data driven and, even there, more suitable for consumer broadband.

As an application, that has demanded a higher purchasing power and disposable income from the population that lives beyond the reach of terrestrial solutions. At $10,000 GDP per capita for South America, versus $2,500 for Africa, it now begins to seem obvious why there are fewer HTS birds for the latter. In addition, the geo-political climate in South America is one of a large dominant economy (Brazil) versus two to three growing economies (South Africa, Kenya, Nigeria) that make the former region perhaps easier to navigate for those launching HTS-based services.

Additionally, the video markets in Africa remain somewhat closed, with MultiChoice still maintaining incumbent status and smaller players yet to gain significant ground. South America offers a much more vibrant DTH market and, with penetration rates of digital TV still low, the potential headroom remains attractive. All of these factors point toward there being more easily addressable demand, which leads to more supply, for the South American market.

Does More Supply Mean Excess Supply?

This, then becomes the multi-million dollar question as to whether South America will suffer the same fate as Africa in the longer term with excess supply. The supply over Africa has been, and will be for some time, largely FSS, i.e., traditional wide beam C-, Ku- and Ka-band. This is suited for video and data markets and, while it typically means higher cost per bit for data, there have been players such as Yahsat and Avanti that have brought arguably cheaper Ka-band capacity into the African data market. Despite this, fill rates over Africa remain low (in the sub-55 percent% range) and are expected to continue this way until supply additions slow down. Will South America suffer a similar fate?

Comparison of Supply & Demand		
	Africa	South America
Satellites In Orbit	48	58
Launched 2009-2012	25	9
Expected 2015-2018	15	18
Expected TPEs (FSS) by 2018	750	850
Expected Gbps (HTS) by 2018	50-60	100-125
Majority Demand	Distribution, DTH	Distribution, DTH, Gov/Mil, Enterprise Data

Source: NSR

The answer is two-pronged and varies depending on whether it is video or data markets one addresses. For video (effectively FSS supply and demand), South America seems to be offering enough opportunities between now and the 2016 Brazil Olympics. Even after that inflexion point, there are enough countries with Analog Switch-Over plans to keep fill rates ticking upwards for the region on the video side.

For data, however, the answer is not as straightforward. Yes, there seems to be a consumer broadband market for the taking in the suburban and remote areas of Brazil and few other countries. There are even quite a few USO-driven Digital Divide programs run by the Government that would be happy to run on HTS capacity that lowers the cost per bit.

However, and other developed markets have shown, that Government-backed rural broadband programs don't always work according to schedule.

In addition, if there are too many HTS systems lowering the cost per bit, then it becomes a problem of plenty and this is where NSR believes that there could be over supply in the near term. A corollary to lowering the cost per bit is, of course, opening new applications and markets such as mobility (aeronautical, maritime or land-mobile) and video contribution that could foster demand and stabilize fill rates in the longer term.

If one only looks at launches and amount of FSS and HTS capacity coming online, it does seem that South America is going down the same path as Africa. However, it may not be as slippery a slope, as the situation in Africa was different. Africa saw FSS oversupply as a result of fiber expansion and geo-political challenges in markets that had satellite demand.

South America is ahead of Africa with respect to fiber. Not to say that it isn't expanding, but growth in the former is more evolutionary, as major fiber routes (land and submarine) were deployed years ago and the market has absorbed them. NSR advises operators in South America to actually recall Finance 101—compound opportunity in the present and discount projections of the future.

Further information: *http://www.nsr.com*

About the author

Based in Mumbai, India's commercial capital, Mr. Butani joined NSR in February of 2008 and currently holds the title of Senior Analyst. He has authored first editions of NSR's Direct-to-Home and Satellite Manufacturing & Launch studies along with providing coverage of the satellite and telecom market in India, Middle East and Africa. His areas of expertise include Satellite Capacity Supply & Demand, Direct-to-Home, Satellite Manufacturing, Satellite Launch and Emerging Media Applications. For client specific projects, he has worked on topics as diverse as Satellite Broadband, MILSATCOM, M2M and Equipment Manufacturing. Mr. Butani has also been a speaker at Satellite 2010, Satellite MENA and user meets organized by both Indian Space Research Organization (ISRO) & industry.

Mr. Butani obtained his Masters degree in Satellite Communications Engineering from the University of Surrey in Guildford, United Kingdom. During this time he was actively involved with the European Space Agency's SSETI project for student-built space missions. He also worked closely with Surrey Satellite Technology Ltd. (now part of Astrium), the satellite manufacturing company on campus focusing on Spacecraft Engineering. Mr. Butani also co-founded the Surrey chapter of the UK Students for Exploration and Development of Space (UK SEDS) society.

After graduating with distinction, Mr. Butani worked with Inmarsat and Avanti Communications in London. At Inmarsat he studied RF engineering of COTM and COTP applications for BGAN's Land Mobile extension. From there he moved onto Project Management for Avanti's Hylas-1 satellite. While at Avanti, Mr. Butani also consulted to the European Joint Research Centre and European Space Agency under FP6 and FP7 programs. Mr. Butani then moved back to India to join Bharti Airtel in their VSAT business in Middle East designing network solutions for banking and retail customers. For improving pre-sales process efficiency at Bharti, Mr. Butani was awarded the Yellow Belt in Six Sigma Quality Management. In India, Mr. Butani has collaborated with the Indian Institute of Technology, Bombay and S.P. Jain Institute of Management and Research in varying capacity.

Executive Spotlight: Kim Gram, Vice President, Aeronautical Business Unit, Cobham SATCOM

Kim Gram has held the position of Vice President Aeronautical Business Unit at Cobham SATCOM (previously Thrane & Thrane A/S) since 2009.

Kim has commercial responsibility for the global aeronautical business of Cobham SATCOM. He joined Thrane & Thrane A/S in 2001 as Sales Director Global Maritime Sales, before becoming the Director of Sales Asia Pacific and Global OEM Accounts from 2003 until 2009.

SatMagazine

Mr. Gram, would you please tell our readers about your background and how you decide to enter the SATCOM business?

Kim Gram

I have worked with technology companies for most of my career. I have found it very challenging and exciting to apply the methodologies of strategy development, sales and marketing in a broad sense to the international development of technology firms. It was an irresistible opportunity and a challenge I could not turn down when Thrane & Thrane [now part of Cobham SATCOM] approached me and asked if I was interested in heading up their global maritime business within satellite communication.

SatMagazine

What training was required for you to realize your career goals?

Kim Gram

I graduated with a master's degree in business sciences and have found that arriving as a business graduate into the industry with a great passion for the technology has been hugely beneficial when I look back at my 12-year history in the business.

SatMagazine

What drew you, initially, to Thrane & Thrane A/S? How was your transition to Cobham SATCOM A/S and what benefits were realized by the company from the acquisition?

Kim Gram

It was an exciting prospect to joint Thrane & Thrane, as the company was one of the most progressive satellite communication manufacturers in the aeronautical industry and many of the pre-eminent experts and engineers in the field were part of the company. Cobham SATCOM was formed in October 2012 after the July 2012 acquisition of the Danish satellite telecommunications group by British defence equipment manufacturer Cobham plc. This resulted in the creation of an aeronautical group within the Satellite Business Unit (SBU) with the capability to lead the way in this important market sector.

In Thrane & Thrane, and now Cobham SATCOM following the acquisition, I have actually had three different jobs, which suits me well, as I enjoy variety. My first role was taking on the global commercial responsibility for the maritime business. Then I had the responsibility for our Asia organization across our land mobile and maritime businesses. This involved establishing our local organization in the region, while also running the day-to-day business. When I was asked if I would take over the Aero business, I was excited to take on the challenge as there is a huge opportunity to make a difference in aircraft SATCOM.

The opportunity to join Cobham SATCOM and Thrane & Thrane created the engineering platform to really make a leap with the kind of satellite systems available to the airline industry. The companies have always been competitors and business partners, all at the same time. Our combined experience, expertise and global operations has now made it easier for customers to select communications equipment and integrated solutions that are correct for their needs. The convergence of the manufacturers has already made a huge impact, as Cobham SATCOM invests in product and market development to respond to new regulations as well as the surge in demand for connectivity within the air transport, business aviation and defence sectors.

SatMagazine

What are the similarities, and the major differences, between land based SATCOM-On-The-Move (SOTM), Maritime and Airborne satellite communication technologies?

Kim Gram

I would start by pointing out the differences and subsequently move on to some important similarities.

Airborne satellite communication equipment is characterized by being subject to extremely stringent requirements from authorities, airframe manufacturers and the airlines. The opportunity to install equipment on board the aircraft predominantly exists when the aircraft is being built or subsequently or when it is undergoing major maintenance work.

The exception occurs when the aircraft operator will gain a strong advantage from the SATCOM connectivity on the aircraft that they are prepared to move the aircraft out of service outside of the normal, scheduled maintenance.

Other more technical differences include the fact that aircraft move at a speed which incurs different technical implications. Another important aspect is that, currently, fewer satellite communication systems are being sold in aviation than in maritime and SATCOM-On-The-Move (SOTM).

The similarities are significant as the basic radio technologies for all of the application areas are basically identical. Furthermore, across airborne systems and SOTM satellite communication, weight, size and power consumption truly matters. In SOTM, equipment has to be portable and, in aviation, the equipment has to be as light in weight as possible.

Cobham is in a position where we are active in all areas,—SOTM, maritime and airborne communication. When building our AVIATOR S products, we obviously investigate to what extent we gain from the efforts in our SOTM radio technologies, to the benefit of the aviation industry, in which we have been active since 1992.

SatMagazine

What does the global aeronautical satellite communications business encompass for Cobham?

Kim Gram

Our business encompasses our modem and antenna business, reaching out to all of the industry verticals: Air Transport, Government and Business Aviation. Our products reach all major aircraft manufacturers in the three verticals and virtually all aircraft models. More than 700 aircraft are equipped each year with our technologies, which we believe gives us a solid position in the industry.

As the largest provider of mobile satellite systems, we are at the forefront of developing a new generation of technologies that will handle the specific requirements in the airline industry and meet the continued push for broadband in the cabin and on the flight deck. In example, our AVIATOR portfolio of compact, lightweight and cost-effective systems offers wireless communications to a broad range of aircraft, including turboprops, light jets, air transport aircraft, military aircraft and unmanned aircraft vehicles (UAV).

SatMagazine

What have been the most significant changes in SATCOM systems over recent years and what do you think will be the next developments in terms of SATCOM equipment?

Kim Gram

We believe the adaptation of IP data communication to and from the aircraft will increase drastically over the coming years. This will drive the need for cost-effective SATCOM technologies. In cooperation with the industry, we are developing our products accordingly. Our major effort right now is our AVIATOR S product family.

The versatile S series will allow secure data communication for aircraft operation, maintenance and management services, as we prepare for the technology shift to IP data-connected aircraft in the future. Suitable for aircraft ranging from regional turboprops to large jets, the new AVIATOR S terminal and antenna product family reflects Cobham's commitment to the 'connected aircraft.' The series will support a wide range of communication applications in both the cockpit and cabin, including cockpit voice dialing, in-flight calling and Internet browsing.

SatMagazine

Will High Throughput Satellites (HTS) benefit airborne SATCOM? What are your thoughts regarding HTS for the commercial side of our various industries?

Kim Gram

I am not an expert when it comes to HTS. However, it is obvious that the effective provisioning of higher data speeds and throughput is a highly positive theme in all frequency bands.

SatMagazine

How fierce will the competition become regarding satcom for the commercial airline industry and what advantages will Cobham offer to potential customers?

Kim Gram

I believe the competition is significant. We trust that our history of developing aero SATCOM products since 1992, combined with the efficiencies of scale from being the world's largest mobile satellite communication equipment manufacturer, offers us the opportunity to provide our customers with products which represent a step change in innovation, form, fit and function.

SatMagazine

As it satisfies future safety requirements and allows for aircraft domain separation, does the AVIATOR S series represent the way ahead for all SATCOM systems?

Kim Gram

Domain segregation is a necessity to meet flight safety requirements. This is particularly relevant when IP is used more and more by the other airline functions, such as maintenance and operations, dispatchers and passenger service. We have offered to take the lead in this field by engaging in the development of industry standard requirements and architectures.

SatMagazine

What requirements and architectures is Cobham SATCOM promoting for the standards?

Kim Gram

In the ARINC 781 workgroup for small SATCOM (Inmarsat), annex 7 describes the Hardware—Annex 8 describes the required data segregation architecture for AC (Aircraft Control), AIS (Aircraft Information System) and PIES (Passenger Information and Entertainment) domains. The standards sit in the public domain. Cobham believes it is highly beneficial for the manufacturing community to share this information. Cobham AVIATOR S products will adhere to the standards and offer IP and Safety Service data modems in a form factor which we believe will benefit the industry.

SatMagazine

Can you predict how the picture for in-flight connectivity may look in 5 or 10 years, for the operator, user and owner?

Kim Gram

We believe that the aircraft is the final frontier in today's world where an effective IP pipe is not available to the employees onboard the aircraft—this is a transitory situation. When the appropriate technologies are made available, the use of data communication in-flight will be spread across all professional disciplines present in the airline, as it has done in every other company or workplace on the ground or at sea in the world.

Cobham SATCOM's AVIATOR S.

We are ensuring the appropriate technologies are available in an effective form factor to facilitate this trend. As part of our involvement in this on-going process, we make our engineers available to assist the airlines in trying out applications both on the ground in our lab and in flight.

We are also actively engaged in the ARINC committees working on future SATCOM systems that will provide the connectivity to make aircraft a business domain where people can be connected with the rest of the organization. While doing this, we need to be sensitive to the security issues and need for versatility of the future satcom communication systems.

We enjoy playing this active role and this is fun, to be part of the journey in a tangible way.

SatMagazine

What is Cobham's vision for aircraft SATCOM moving forward and what is the company's role in these technologies as far as support and implementation are concerned?

Kim Gram

Ultimately, we believe adaptation of SATCOM for data communication will be a global standard. Through our ability to move technologies across from our land and maritime segments and achieve similar efficiencies, we have the opportunity to assist the airline industry using our in-the-air engagement with the airlines.

SatMagazine

What efficiencies will be achieved, thanks to the cross pollination of technologies?

Kim Gram

I look at it from this angle. The aircraft and the personnel on board the aircraft are almost the last remaining pieces of infrastructure and organization in international corporations which is not a 'node' on the corporate network. Our notion is that this will change. Exactly how the operators of aircraft, such as the airlines, will capitalize on IP data links is really for the airlines to answer rather than the satellite communication provider.

SatMagazine

Could tell us about Cobham SATCOM's involvement with the Volvo Ocean Race?

Kim Gram

We are extremely proud that Cobham will play an integral part in the Volvo Ocean Race 2014-2015, with both the SATCOM and Tactical Communications and Surveillance (TCS) signed on as partner sponsors for this event, which started in Alicante, Spain, in October.

As the Satellite and Radio Communications Equipment Partner, Cobham SATCOM will provide the satellite communications hardware for every boat, including new SAILOR 500 and 250 FleetBroadband systems, as well as safety and radio systems.

The SAILOR FleetBroadband will allow each boat's 'Onboard Reporter' to send video and audio reports to VOR HQ. The design of the identical racing boats includes six built-in cameras covering every station from cockpit helmsman to foredeck hand, to catch every harried expression and looming wave. The content will be used for TV and online coverage of the race, for a global audience of millions of fans, helping to maximize value for sponsors.

Operating in the most challenging environments, we are excited that SAILOR products will allow people around the world to see the teams in action. The system will also provide crews with a means of updating weather information, communicating with support crews and even keeping crew members in touch with loved ones on dry land.

Cobham SATCOM also provides EXPLORER 710 Terminals for race officials to use at stop overs.

SatMagazine

When you review your career, what project, or projects, truly brings you a sense of satisfaction?

Kim Gram

It is actually quite simple. Bringing great engineers together from my own and our customers organizations and having them develop ideas which subsequently become a reality is what professional development and success is all about.

For more info:
http://www.cobham.com/about-cobham/aerospace-and-security/about-us/satcom.aspx

One of the most recent success for Cobham SATCOM was with Hawaiian Airlines. The company is equipping Hawaiian Airlines' fleet of Boeing 767-300 aircraft with their AVIATOR SwiftBroadband satellite communications systems.

This agreement represents an important milestone for Cobham in the development of its next-generation product family, AVIATOR S, as the system will be used for Safety Services data as well as for the provision of an IP pipe to the cockpit.

The new Cobham SATCOM contract will serve to demonstrate how the AVIATOR products can provide high speed IP data services and voice communication not only for the cockpit, but also other domains of the aircraft.

Installation of the Cobham systems on the Hawaiian fleet is a significant step forward in the process of approval for SwiftBroadband as a safety service by the aviation authorities, which is a requirement for the operation of the AVIATOR S series.

This technology demonstration, under FAA supervision, will pave the way for other airlines and equipment manufacturers. It will eventually allow the fast, efficient transfer of ACARS data messages over the SwiftBroadband

link, as well as flight deck safety voice services and IP connectivity to the flight deck, enabling other flight operations and cockpit services.

During the SwiftBroadband safety evaluation period, the AVIATOR SwiftBroadband system will be used for FANS and CPDLC messaging and will also be used for data transmission in support of Hawaiian's new eFLIE, Electronic Flight Bag program (EFBs).

Hawaiian's B767s will be retrofitted with Cobham's current generation AVIATOR SwiftBroadband SATCOM hardware, which includes an IGA-5001 intermediate gain antenna. The system is capable of providing both voice and data communications with the addition of many enhanced features such as immediate aircraft tracking information and Ethernet ports for connecting devices like Aircraft Interface Devices (AIDs) and Electronic Flight Bags (EFBs) for the pilots to obtain real-time information including graphical weather updates. The connectivity will facilitate dynamic routing to favorable winds and away from unfavorable weather.

These enhanced features will become the centerpiece of Cobham's AVIATOR S product family which is designed specifically to leverage Inmarsat's new SwiftBroadband Safety service and will ensure a system configuration that can meet the requirements of all aircraft types. AVIATOR S will be available early 2016 to coincide with approvals for FANS 1/A services over SwiftBroadband.

The Cobham SATCOM AVIATOR S infosite may be accessed at:
http://www.cobham.com/about-cobham/aerospace-and-security/about-us/satcom/cockpit-and-cabin-communication/products-and-services/swiftbroadband-systems/aviator-700d.aspx

The Hawaiian Airlines infosite may be reached at
http://www.hawaiianairlines.com/
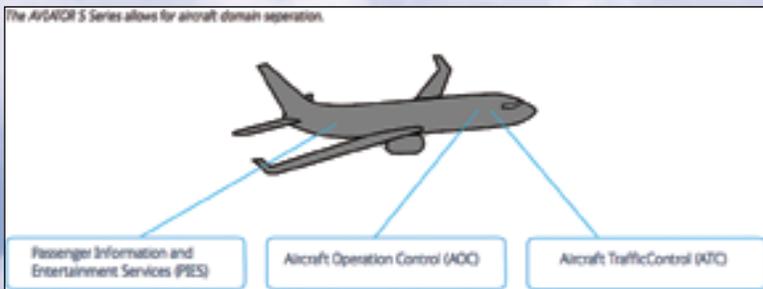
Satellite: The Energy Utilities' Comms Solution

By Kris Jarrett, Senior Systems Engineer, iDirect

Looking to reduce their dependency on fossil fuels, utilities are turning to green energy sources such as solar and wind power for cost effective and flexible alternatives for increasing their power generation capabilities.

In 2006, the U.S. Department of Energy, in collaboration with various industry organizations, embarked on a study to determine the feasibility of supplying at least 20 percent of the nation's electricity from wind power by 2030. According to a recent report from the American Wind Energy Association (AWEA), 15 wind energy projects have been completed and are online since the start of 2014, with another 109 projects underway as of mid-year.

On the solar front, more than 475,000 solar energy systems were interconnected in the U.S. at the end of 2013; a number that is projected to reach one million by the end of 2017, according to the Solar Electric Power Association.

Quite apparent is that affordable, clean power is helping to reduce the cost of energy for homes and businesses across many regions of the United States. For utilities, this has the potential of adding new challenges to the mix. Many solar and wind energy assets are located in remote locations and over challenging terrain, far removed from the core operations of a utility company. This introduces the need for broadband connectivity for applications, such as system monitoring, to help manage the variability of renewables or to protect and monitor physical assets through video surveillance.

These new challenges to the communications network must be balanced with traditional ones, such as processing the growing volume of data and managing supervisory control and data acquisition (SCADA) devices. When looking at bringing these remote locations for green power generation into the core network, along with existing coverage for remote substations or backup services in case of an emergency, utilities are seeing increased value in satellite communications as part of their overall communications toolkit.

Answering the Connectivity Questions

Despite the broad use of satellite communications in utility networks, some consistent questions seem to always surface when it comes to the capabilities of a satellite solution. Many of these questions stem from the use of legacy satellite as opposed to the modern VSAT solutions that are offered in the market today.

Let's address each question with the appropriate answers as far as the solutions being delivered by satellite today.

Latency
Question: Is the latency of satellite too great to support core applications?

Answer: While current satellite systems are slightly more latent than terrestrial broadband, the difference is only a few hundred milliseconds. In fact, the latency of satellite is low enough to meet the requirements of nearly every core utility application. Furthermore, when addressing more bandwidth-intensive applications such as video surveillance, VoIP and real-time monitoring applications, satellite technology with built-in acceleration and quality of service (QoS) can ensure reliable performance regardless of the IP-based application.

Cost
Question: Is the cost of bandwidth in the space segment becoming more competitive to typical terrestrial-based coverage?

Answer: Satellite offers flexible options for utilities to own, manage and deploy networks with low upfront capital investment and minimal operational expenses. TDMA provides an efficient way to transport data as each site requires it, without the need to strand bandwidth per site.

The promise of high-throughput satellites (HTS) will elevate this discussion to an entirely different level. By introducing more bandwidth, higher power and frequency reuse, HTS will bring down the cost of the space segment and increase bandwidth availability.

Reliability
Question: Can satellite provide the necessary reliability/availability?

Answer: Satellite networks have become highly reliable and capable of providing at least 99.95 percent availability. A couple of key advancements guarantee the availability of the satellite link in both directions.

Adaptive TDMA is used on the inbound (remote site to the core network) and increases the reliability of the transmission by providing a mix of available carriers. This process enables each remote to select the best inbound carrier (modcod and symbol rate) based on its current operating environment. As remotes move within a satellite contour, or as atmospheric conditions change, A-TDMA allows the remote to frequency hop to the best inbound carrier that a particular remote can access. With A-TDMA, a network no longer needs to be designed for the worst performing remote terminal in the network.

Adaptive Coding and Modulation (ACM) is similar to A-TMDA, but is used on the outbound (core network to remote site). This process allows each

remote to achieve the maximum data throughput by utilizing the most efficient coding and modulation scheme dependent upon the location within the satellite contour, antenna size, and atmospheric conditions.

VSAT sites are one hop away form the hub, which eliminates multiple network elements, transitions and points of entry.

The question of reliability also incorporates weather-related incidents that can degrade the reliability of a satellite connection. Up Link Power Control (UPC) is a two-way process, between the hub and remotes that provides real-time compensation for fading events due to weather. This process controls remote power levels to keep them within expected limits. UPC is similar to automatic transmit power control (ATPC) used in point-to-point microwave radios.

Security
Challenge: Is satellite just as secure as other access technologies?

Response: AES 256 encryption has become an option on satellite, with remotes and hubs containing the same information. Many technology companies are also working with third-party virtual private network (VPN) providers to add an additional layer of security to the discussion.

A Definitive Answer for Utilities
Smart energy today means a growing volume of data and the requirement of new assets located in remote locations. Utilities have always had a robust toolkit to solve communications challenges, comprised of fiber, point-to-point microwave, and lease services. As the communications requirements continue to expand for utilities, this toolkit should also include satellite communications. Advancements in satellite communications can enable a utility to overcome new challenges, while enjoying the benefits of reliability, ease of deployment, and network reach.

iDirect's network is built to deliver all the aforementioned answers. Some of the largest utility customers in the world are using iDirect's technology to manage multiple aspects of their operation.

With advancements in technology, adjustments to pricing models, and migration towards a unified IP network, satellite has the correct answers to the question of why SATCOM should be used for communication in the utilities space. More info @ *http://www.idirect.net*

About the author
Kris Jarrett is a Sr. Systems Engineer with iDirect, and he is a subject matter expert within the Energy and Utility vertical. Mr. Jarrett is responsible for educating Energy and Utility customers on the viability of VSAT technology and solving challenges related to mission-critical networks. Prior to joining iDirect, Kris served in the United States Air Force for nine years, working with Satellite, Microwave, and Fiber Optic communications systems. He also worked as a Wireless Integrator, explored the Fuel Cell market, and was the Utility Solution Architect at Alcatel-lucent, where he focused on solutions for the Energy and Utility industries. Kris has been in the telecommunications industry for over 20 years, spanning a wide range of technologies.

Establishing A Strong Foothold In An Emerging Market

By Dante Neyra, Head of Commercial Services + Development, Latin America and Hispanic Markets, RR Media

In recent years, Hispanic content has rapidly gained popularity worldwide, presenting a prime opportunity to develop alliances and create new revenue streams within the market.

Latin American broadcasters are eagerly seeking ways to expand their global reach and distribute their content into new markets, as well as deliver content to Latin America from global sources. With strong partners throughout the world, Latin American content programmers can leverage the infrastructure and new technologies needed to distribute content ,locally and globally.

Growing Demand for Hispanic Content Worldwide

The influx of Latin Americans migrating to other areas of the world, particularly the U.S., and the subsequent demand for Hispanic content, these are the main driving factors for the rapid growth of such programming, creating opportunities for businesses to align with broadcasters and content programmers in the region. Social and cultural shifts of the Hispanic market have a significant affect on the future of the U.S. economy, and it is vital for companies to embrace the opportunity to monetize Hispanic content being produced.

Currently, the U.S. is a top exporter of Hispanic content to the world. A growing number of U.S. and European companies are eager to develop content for distribution into Latin America, which is embraced by the market's need for international content. Latin American players are seeking better ways to distribute richer content and improve viewer experience, while seeking new revenue streams. Programmers are also looking for partners that provide distribution and satellite services across the globe.

Challenges Faced Within the Market

Service providers must understand each region's growing sector needs and meet those demands with technological advances, all the while acknowledging the variables within the target markets. Latin America extends across a huge geographic territory, which means defining key, focused strategies to develop each market are more than essential. Language and cultural barriers, rapidly changing needs and relationship building within a closed community are factors that cannot be ignored.

Local presence and expertize in each territory that is lead by a dedicated executive team that understands and is immersed in the culture and has strong relationships within the media community—these are among the best methods to manage the cultural and language barriers that exist between Latin America and other areas of the world. When working within a market such as Latin America, local representatives should be cultivated who can provide insight in building business relationships, who speak the language and understand the client's business and immediate needs are key acquisitions. This helps to eliminate that initial barrier of not fully understanding the culture
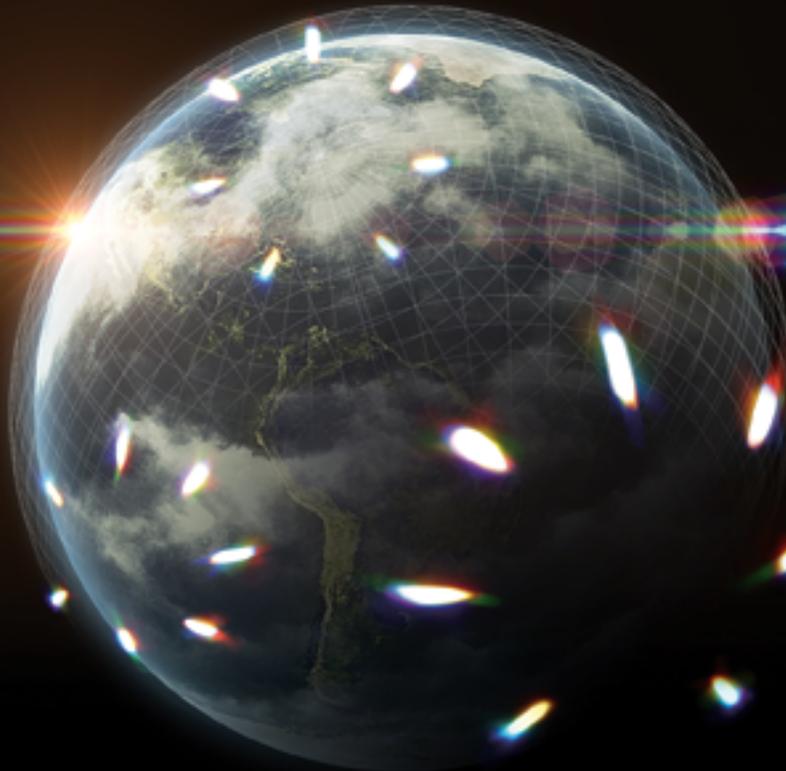
as well as opening doors to garner additional relationships and to uncover new opportunities and strategies to monetize content.

The emergence of exporting and importing Latin American content offers tremendous opportunities in spite of the complexities. Local infrastructure is rapidly evolving, posing the need to be vigilant with the changing world of consumer needs. Finding the correct applications to meet the needs of a specific market, as well as seeking new media opportunities, can be quite challenging, but also creates long standing, business relationships.

Latin America is rather a closed community that can make it difficult to penetrate the market—cultivating local resources is essential. Providers should create strategic alliances with local companies to establish a presence and credibility in each media sector. Content programmers and service providers are also seeking a global presence where new opportunities can be acquired after gaining market knowledge through local "know-how."

RR Media's Strategy for Entering the Market

RR Media has embraced the LATAM region's challenges and is strategically pursuing opportunities to provide service offerings to the rapidly growing Latin America and Hispanic markets. A key element to RR Media's global strategy is to ensure the correct team is in place for each region. This includes seeking out and hiring individuals who are immersed and understand the culture, as well as possess strong backgrounds in broadcast technology.

In order to strengthen its global presence, RR Media invested in a strategy that included individuals who were the best fit for each geographic location, including Latin America. These additions to the strategic team add depth and strength in multicultural content and digital media, enabling RR Media to build and establish strong relationships within the regions.

In addition to developing a team that can integrate with the market, RR Media has established an office in Miami, which acts as a melting pot for the Latin American and Hispanic markets. Acclimating to the culture and staying on top of key market trends assures a potential partner that RR Media is invested in the relationship and understands their unique cultural, geographic and service needs.

While RR Media is new to the region, the company is rapidly establishing credibility and a strong presence through its alliance with Cisneros Media, and RR Media's pushes forward to ensure consistent visibility with key, local players. RR Media is focused on helping satellite broadcasters to reinvent their offerings by addressing any immediate needs. Such affords new opportunities, which will ultimately drive new revenue streams. Bringing fresh ideas from international markets and showcasing those capabilities helps to illustrate how others are benefiting and monetizing content in other markets.

RR Media is motivating additional revenue streams and expanding current distribution channels by tapping into the region's plans to import and export content to the growing U.S. Hispanic market, as well as the demand for Hispanic content across the globe. Building a strong team and a strategic market plan for each target market has enabled RR Media to enter into territories that are on the forefront of growth and success across all international boarders.

To learn more about RR Media (formerly known as RRsat), visit:
http://www.rrmedia.com/

About the author

Mr. Neyra leads the Latin American and Hispanic markets sector through the commercial services and development division of RR Media.

Case in Point:
Aligning with Cisneros Media

A recent partnership with Cisneros Media is a first for RR Media in Latin America and signifies the company's commitment to broaden local capabilities throughout the Americas.

The relationship provides RR Media with credibility and the ability to establish a presence, while Cisneros gains a secure and reliable technical platform to deliver its content around the world, launch new channels and expand into new territories.

RR Media's ability to provide Cisneros with full playout and global distribution services, maximizing and optimizing return on assets.

"RR Media's high standards and quality service enables us to exceed the growing necessities of our clients and the demands of our viewers for more variety of content, expanded reach, greater accessibility and viewing experience," said Jonathan Blum, President of Cisneros Media. "They also offer us the capability of efficiently managing and maximizing the potential of our content, greatly improving our workflow."

Hook Up Via Hybrid—Satellite-Cellular Terminals Extend Broadband Reach

By Doreet Oren, Director, Product Marketing, Gilat Satellite Networks

Everyone can agree that providing a region with broadband access brightens economic outlooks. Studies show that joining the connected world correlates strongly with improvements in per capita income.

Ancillary benefits of connectivity are plentiful as well: education, political freedom, human rights and health. Why isn't every region connected? There are geopolitical barriers, to be sure, but the biggest inhibitor of growth is perceived cost. Goodwill will not suffice if the ROI is absent. Can this be overcome? Gilat believes it can.

Where Traditional Solutions Fall Short

In many developing regions, a minuscule percentage of households have a fixed broadband connection, due to a lack of terrestrial infrastructure. Laying copper wire, coax cable or fiber optic cable is expensive. In some areas, the cables themselves are prone to sabotage and theft. Additionally, the low per capita income of consumers in these areas of the world makes investment in terrestrial infrastructure highly unlikely, due to the requisite ROI yield being almost non-existent.

In light of these obstacles, it's unsurprising that an overwhelming majority of consumer connections are mobile-based. One key reason is that most consumers already use a mobile device for basic telephony services—in sub-Saharan Africa, for example, mobile penetration is more than 63 percent as of 2013 and growing (*ICT Facts and Figures*). This, along with the prohibitive cost of terrestrial infrastructure, makes a cellular-based network a desirable proposition.

However, cellular networks have limitations. One drawback is that reception may be spotty due to limited geographical coverage and a lack of available frequencies. Barriers often take the form of wide distances between the consumer and the nearest cellular tower, resulting in a cellular network that has not scaled to support the data transfer speeds required for Internet use. Slow data transfer speeds make Internet use a frustrating proposition, unlikely to yield the productivity benefit Internet access typically provides. When the mobile network operator (MNO) cannot provide sufficient bandwidth, the network becomes congested, degrading the user experience and creating customer dissatisfaction.

With an increased budget, MNOs could expand their network to increase their customer base and improve service to ensure customer retention. Additional cell towers would help, as would infrastructure upgrades, but in some areas, especially where the population is sparse, the CAPEX investment in additional towers or upgrading to a high-throughput system is hard to justify.

Another inhibitor is a lack of frequencies and, therefore, insufficient bandwidth to deal with throughput demand. Looking at the big picture, the perceived drawbacks mirror the facts on the ground. Expanding and

upgrading a cellular network into lightly populated areas often doesn't pass a cost-benefit analysis.

Satellite Technology: Changing the Equation for Cellular Reach

For delivering broadband to hard-to-reach regions, the satellite industry has long led the way. However, the industry has long been associated with high CPE entry costs, which is of particular concern in cash-strapped regions. But technological advances in satellite, along with a new line of innovative products, have changed the equation.

High-Throughput Satellites (HTS) offer significantly increased capacity, reducing bandwidth costs by an order of magnitude. This is achieved via frequency reuse and multi-spot beam technology, which provide higher satellite capacity than traditional single beam satellites. This breakthrough has helped position satellite communication as a cost-effective alternative for delivering broadband.

To reach a price point at which satellite communication could be considered truly viable for consumers with limited ARPU, further innovation was required. Gilat's low-TCO solution relies on an innovative hybrid terminal that combines satellite and cellular technologies. SkyEdge II-c Libra, Gilat's hybrid router, leverages the MNO's existing infrastructure to increase fixed broadband penetration while providing high-speed service.

How Does it Work?

Generally, residential data traffic is heavily skewed toward the forward path;

end users generally download far more data (primarily video) than they upload. Industry estimates set the usual download/upload ratio at around 12:1. Libra transmits the heavy download traffic via a satellite link, providing a vastly improved download speed of up to 20Mbps. Because the upload path—from the end-user to the Internet—requires far less bandwidth, Libra transmits upload data via the MNO's existing cellular network, which is capable of handling the relatively light traffic typically sent in this direction.

Win-Win

The best kind of business is one wherein everyone benefits. With the satellite-cellular solution, MNOs win, as they are able to increase their ARPU and reduce churn by offering broadband Internet service to their customers. This solution has the added advantage of not straining the existing cellular network with heavy data download transmissions.

Also embedded in the Libra router is quality of service and data acceleration engines. An integrated, flexible, usage-based service definition system enables the MNO to define a wide variety of service plans. For example, customers can enjoy a home broadband Internet plan that offers 10 times more quota than their cellular plan—and 20 times the speed.

Customers can now gain broadband access with minimal investment: a simple, self-installed, one-way antenna and a standard cellular dongle inserted into the Libra router provides broadband access via the cellular network for the return channel.

As Libra is not a two-way satellite terminal, its per-unit cost is far less than its counterparts, making it a particularly attractive proposition in areas where price point sensitivity is acute.

Leveraging DTH Service Providers' Existing Infrastructure
DTH service providers accustomed to broadcasting to a household with a dish can leverage their satellite infrastructure to increase their portfolio by providing Internet service to the home. The only piece of the puzzle they lack is a return path to enable two-way communication.

Here again, Libra provides an answer. DTH providers already have the infrastructure in place to support satellite subscribers and manage a subscriber base; all they need is a Libra router in the home to complete the circuit by establishing a return-path link via a cellular network. This two-way connection enables enhanced broadband services such as Smart TV, OTT and Video on Demand (VoD), elevating the portfolio offered by DTH providers.

The Opportunity is Now
The market trends are clear: the appetite for broadband services everywhere will only grow. Despite the challenges to date, broadband technology is rapidly reaching a point where it can offer answers for a growing number of consumers of all income levels. Mobile and DTH operators are perfectly positioned to use Gilat's satellite-based solutions to meet this demand.

For more information, please visit **http://www.gilat.com/Libra**

About the author
Doreet Oren is Director of Product Marketing for Gilat Satellite Networks. In this role, Oren is responsible for defining product positioning, messaging and go to market strategies and is responsible for market research and analyst relations.

Doreet has more than 20 years of industry experience and has held management positions in R&D, product management and product marketing for international high-tech companies. In this capacity, she contributed to next-generation product definition and was responsible for delivering the company's vision to the media and analyst community. Doreet has published thought leadership articles in renowned international journals and has spoken at numerous industry conferences worldwide. Oren received a BSc in Computer Science from George Washington University. Contact Ms. Oren at **doreeto@gilat.com**.
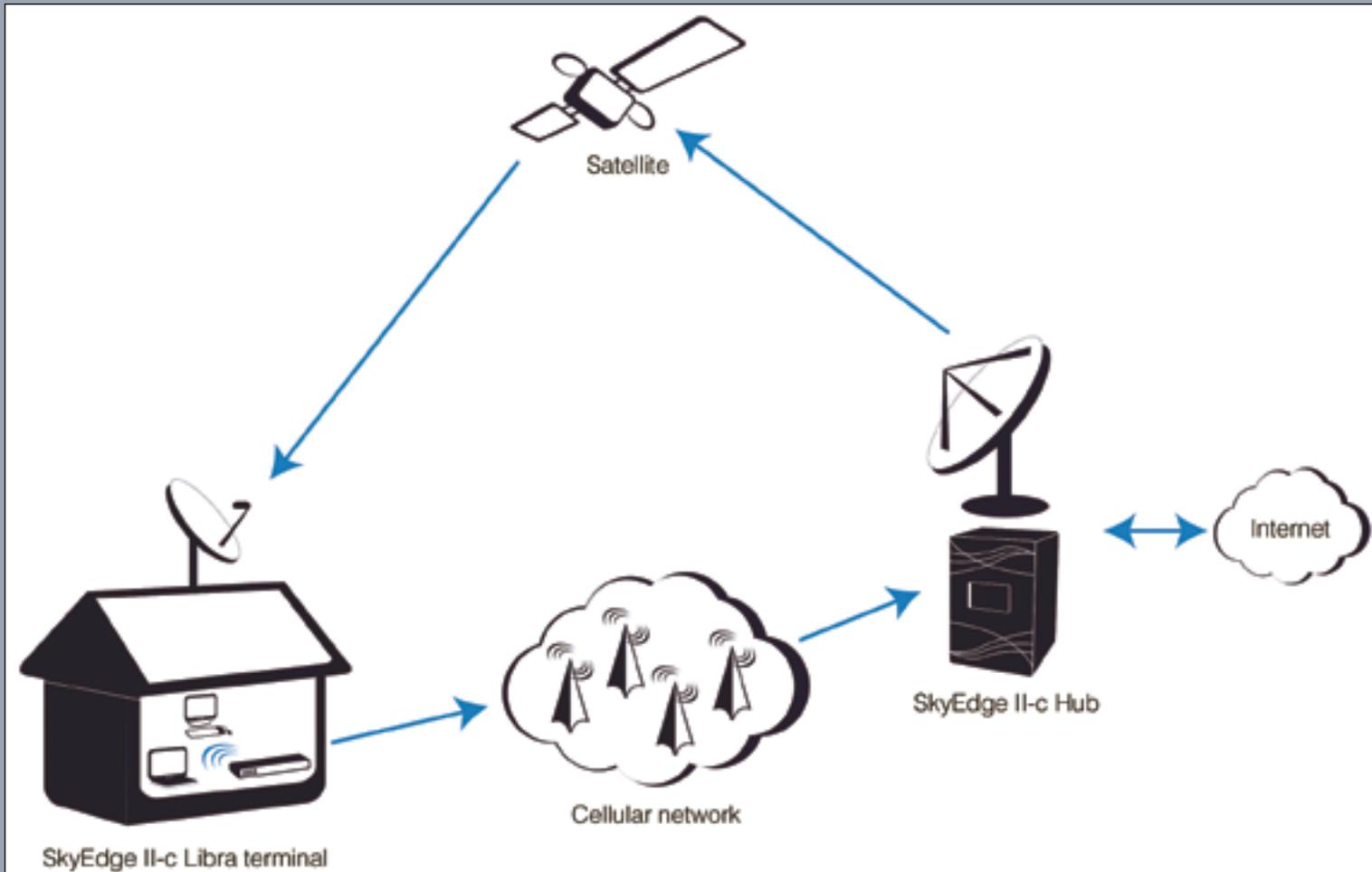
Recent company accomplishments for Gilat include the successful deployment of CellEdge small cell over satellite solution to 20 rural sites in Brazil.

This is part of its agreement with TIM Brasil, the second largest Brazilian operator and the leading company in the pre-paid segment.

TIM selected Gilat to provide a full turnkey solution of 3G coverage to the most remote regions of Paraná state in Brazil, which was delivered within their two month deadline. Gilat assumed complete responsibility for providing connectivity to these areas and ensured that the project was handled in an efficient manner, including site acquisition, energy, 24m tower provision, installation, integration to the mobile core network of TIM and final ATP.

Gilat's CellEdge small cell over satellite solution enables mobile network operators (MNOs) to provide enhanced cellular connectivity to any location, no matter how remote. The turnkey solution includes the VSAT, base station, tower, energy, logistics and installation for quick and easy deployment. CellEdge's tight integration reduces power consumption and makes efficient use of the satellite space segment.

"TIM was required to provide 3G connectivity to some of Brazil's most remote areas," said Marco Di Costanzo, Director of TIM's Mobile Network. "When we learned about Gilat's unique CellEdge solution, coupled with their outstanding capabilities in rural areas, we were confident that they would deliver the turnkey project on spec and on time, and indeed they did."

The Flex Of CellEdge
Mobile operators are missing out on nearly two billion customers who remain unconnected in rural, suburban, and remote areas. Until recently, operators had not attempted to reach these potential users as they could not justify the time and expense of rolling out conventional infrastructure for areas with low Average Revenue Per User (ARPU).

CellEdge 3G is Gilat's integrated solution, which includes an outdoor HSPA+ small cell, which is optimized to work over a low-bandwidth satellite link. CellEdge 3G provides high transmission power for wide coverage, coupled with low energy consumption, which allows operators to use cost effective solar power at off-grid locations. CellEdge is also available for 2G networks.
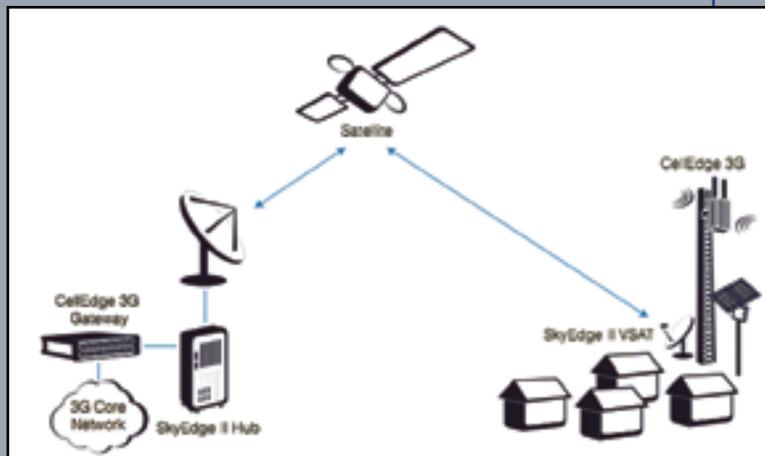
CellEdge is...

> » Optimized for satellite backhaul
> » Presents up to an 80 percent OPEX reduction
> » Available with a solar power option—there's no need for a diesel generator
> » Passively cooled in one outdoor enclosure—no shelter or AC required
> » High transmission powered—5 Watt
> » A low power consumption unit—30 Watt

Additionally, Gilat revealed that their SkyEdge II-c Capricorn VSAT delivered accelerated and encrypted data at the full performance potential of 4G handheld devices. The tests were performed over an LTE network at a tier-one operator in Asia.

Gilat's 200Mbps Capricorn demonstrated an outstanding sustainable speed in a single-session FTP download, reaching the handheld device maximum performance of 100Mbps. The demonstration took place over an LTE network based on the technologies of different leading equipment providers. The end-to-end test, proved the capability of Gilat's patent-pending acceleration technology to overcome both satellite delay and device limitations. Successful acceleration and encryption enabled delivery of data, via satellite, at speeds previously associated only with terrestrial networks.

SkyEdge II-c Capricorn is a leading industry TDMA VSAT is well-suited for high-end applications such as 4G/LTE cellular backhaul. The very high peak-to-average ratio of LTE networks fits well for bandwidth sharing, reducing operational costs while maintaining an excellent user experience. In addition, Capricorn has advanced GTP acceleration, application-based quality of service and over-the-air AES-256 encryption for security and privacy, which complies with cellular network technology standards.

Executive Spotlight: Kevin Rogers, CEO, AeroMobile

SatMagazine

Mr. Rogers, how did you decide to forge a career in the communications industry?

Kevin Rogers

It really started with some good luck after graduating from university all those years ago! The company that was to become Nortel offered me a decent graduate salary, in a great location and they were designing fiber-optic components for the telco sector, definitely an interest of mine. What could have been better? The telecoms "boom" carried me from components to telco systems and then to the mobile sector with Telenor.

SatMagazine

Exactly what services does AeroMobile provide for the aviation industry?

Kevin Rogers

Very simply, specialized on-board equipment provides an AeroMobile mobile network inside the airline cabin. The passenger switches on his or her phone when the aircraft reaches cruising altitude and can then use it for voice, texting and data inflight. The AeroMobile service allows passengers to use their phone inflight just as they would use their phone on the ground.

AeroMobile was the first mobile service to operate on a commercial flight in March 2008 and, since then, more than 20 million passengers have successfully connected to the AeroMobile network. The AeroMobile service is currently available across 13 airlines, including Emirates, Etihad, Lufthansa and Virgin Atlantic.

SatMagazine

What drew you to AeroMobile from your previous position?

Kevin Rogers

At that time, AeroMobile was owned by Telenor and had a strong presence in Norway, my home country at the time. AeroMobile was in a strong growth phase and I was asked to look after the company's roaming, regulatory and network operations. This was a great opportunity to influence the development of a unique market, a combination of telco and aviation.

SatMagazine

Please explain the how GSM manages to "communicate" at altitude? What role do satellite communications play within the AeroMobile technology mix? What challenges had to be overcome?

Kevin Rogers

The AeroMobile system uses a pico-cell (small mobile base station) installed inside the aircraft cabin. This provides a mobile signal to which the passengers' phones attach, just like your phone attaching to a mobile network on the ground.

With our service for example, you will see "AeroMobile" on your handset display instead of your home provider. "AeroMobile" can be thought of as a "country in the sky." The pico-cell connects to AeroMobile mobile ground network infrastructure via a Ku- or L-band satellite link (dependent on which satellite type the airline has installed). The ground network is just like any other operated by a mobile network provider. Calls, texts and

data services are routed from here to the required destination network anywhere in the world.

Satellite technology has developed significantly over the past few years and enables higher bandwidths and more services to the aircraft. Obviously, the development of the AeroMobile system has required much testing and work on the integration of airborne and network elements to ensure a good quality of service. Additionally, the system has been certified by EASA and FAA for operation on many of the Boeing and Airbus airframe types. All of this take time and money, but has now been done.

SatMagazine

What are the latest developments from AeroMobile? Has AeroMobile reached any key milestones so far in 2014?

Kevin Rogers

2014 has been a good year for AeroMobile. We've launched the service with two new airlines (EVA Air and Qatar Airways), while our existing airline partners such as Lufthansa, Etihad and Emirates continue to roll-out AeroMobile services across their fleets. Passenger demand is also increasing and, in the first six months of 2014, the number of users on the network increased by more than 100 percent when compared to the same period in 2013.

SatMagazine

How does your service connect passengers once airborne?

Kevin Rogers

The aircraft is fitted with an external antenna which connects AeroMobile's network to the ground via satellite. In the cabin, there is a base station or pico-cell which provides a signal via a 'leaky' feeder cable along the length of the aircraft. This provides a uniform mobile signal throughout the cabin.

Once a passenger switches on their device, they will automatically connect to the AeroMobile network inside the aircraft. Pricing is set by the passenger's home mobile operator and charges will appear on the customer's mobile phone bill, just as they would when roaming abroad. No credit card or onboard payment is required on the flight.

SatMagazine

What is in the pipeline for AeroMobile in 2015? Are there any new developments, networks or airlines that are due to go live?

Kevin Rogers

Southeast Asia is a huge growth area for AeroMobile, with several airlines scheduled to launch the service in the coming months, including Thai Airways, Garuda Indonesia and a Malaysian airline. 2015 will see continued momentum from new airline partners and continued roll-out of the service by the existing airline partners.

I am constantly looking at how we can reduce roaming costs so inflight connectivity becomes even more attractive to passengers. The satellite cost is, of course, a significant part of the service cost structure. Costs have reduced during the past few years. However, more does need to be done in order to keep pace with the cost and pricing demands from the passengers and mobile network providers. I expect to see further reductions in satellite costs over the next couple of years and will work with the mobile operators to ensure that these cost reductions are passed through to the end user.

SatMagazine

How are proposed regulatory challenges in the US affecting your business?

Kevin Rogers

The USA is obviously an important market to AeroMobile and its passengers. Regulatory clearance would enable, for example, the many US subscribers using the service outside of the USA to continue using the service over U.S. airspace. Clearance would also allow the US airlines to choose whether to offer this service alongside Wi-Fi, as is done by many of their overseas competitors.

The Department of Transportation (DoT) has initiated a parallel proceeding to the FCC. Whereas the FCC is focused on the technical aspects of

Kevin Rogers

Inflight mobile connectivity has huge growth potential. Inflight mobile services initially took some time to gain momentum, largely due to the rigorous testing required to operate inflight. However, over last two to three years, inflight mobile services have, in many cases, become fully integrated with the cabin experience.

SatMagazine

Will AeroMobile be involved in the growing In-Flight Entertainment (IFE) market with their service at some point in the future?

Kevin Rogers

AeroMobile is specifically focused on the provision of in-flight mobile connectivity services and is a subsidiary of Panasonic Avionics, which is the world's leading provider of in flight entertainment systems to the commercial airline industry and a leading supplier of airline connectivity solutions.

SatMagazine

As you review your career, what projects have brought you a true sense of satisfaction?

Kevin Rogers

To be frank, the AeroMobile "project" has provided me the greatest job satisfaction—results achieved from tangible action, growth and the opportunity to work with colleagues and partners across both the telco and aviation industries has been extremely satisfying.

For more information on AeroMobile, please visit
http://www.aeromobile.net

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licensing the mobile phone service, the DoT is proposing to ban the use of voice on wireless devices, whether it be over GSM/mobile or over Wi-Fi. Time will tell. I am of the opinion that airlines can determine for themselves whether to provide voice without the need for regulation. In fact, airlines such as Lufthansa and Aer Lingus have already made that choice, limiting the service offering on mobile to text and data services.

SatMagazine

Does U.S. passenger behavior toward inflight mobile connectivity differ to European attitudes? Can you share any stats around usage trends?

Kevin Rogers

We monitored the inflight mobile usage of nearly 500,000 passengers across four connected airlines on long-haul routes between April 1st and July 15th, 2014. The findings revealed a strong demand for inflight mobile connectivity from U.S. travelers. Interestingly, U.S. passengers' appetite for inflight mobile connectivity exceeded the usage of other customers onboard. In fact, on average American passengers used almost double the amount of data and texts than their fellow travelers inflight.

SatMagazine

What are your thoughts on the growth potential of inflight mobile connectivity?

How African Providers Can Cost Effectively Tap Into New Markets: An Intelsat Perspective

By Grant Marais, Regional Vice President, Africa Sales, Intelsat

The world is becoming more mobile—that's no secret. Regions such as the Middle East and Africa (MENA), in particular, are experiencing a dramatic increase in demand for Internet-enabled mobile devices.

While global mobile data traffic will grow at a compound annual growth rate (CAGR) of 61 percent from 2013 to 2018, MENA is expected to have the strongest mobile data traffic growth of any region at 70 percent CAGR.

The need for more advanced mobile services is being driven by enterprise users, consumer broadband providers and governments. While the end user demand is evident, there are three major issues facing network providers that want to expand in these fast growing regions:

- *Existing networks cannot provide the necessary quality and reliability to ensure maximum uptime for end users and are not easily scalable to address future demand in a timely manner*
- *Remote equipment is not powerful nor reliable enough to serve growth in rural and remote areas safely and cost-efficiently*
- *Difficulty in effectively managing the total cost of ownership of networks does not provide the long-term insight needed to plan future technology deployments*

Addressing these complex challenges requires a strong understanding of the region, the terrain and the needs of the wireless community. Intelsat has served Africa and the Middle East since 1965, giving the company strong insight into the needs of the customers and their end users, as well

Artistic rendition of the Intelsat-33e satellite. Image is courtesy of Intelsat.

as knowledge of local and regional infrastructure requirements. Intelsat's global telecoms expertise is leveraged with the 50 satellite fleet and the terrestrial network, IntelsatOne^SM, to effectively and efficiently address Africa's increasing demand for reliable data services, particularly in the more remote areas of the region. The connectivity afforded supports economic growth, particularly for small businesses, as well as provides connectivity for medical and educational services throughout the continent.

In order to better satisfy the voracious subscriber demand, wireless operators will need a platform on which they can create differentiation and add unique value. Satellite infrastructure provides the quickest means to upgrade and expand their mobile networks—High Throughput Satellite (HTS) platforms, such as Intelsat's EpicNG, will be able to assist network providers solve their biggest challenges as additional demand outstrips their existing networks.

Expanding Capabilities, Preparing for the Future

Using the company's existing network, operators can expand their operations and address many of the challenges they face today in meeting end user demand. Intelsat's satellite beams cover the entirety of Africa, which means access to the required capacity is available everywhere, not just in city centers or along the coast. What this delivers for network operators is:

- *Network Expansion: The ubiquitous reach of satellite capacity can accelerate network deployment into remote and low-density regions with quick return on investment (ROI). By reducing the capital expenditures required to expand via terrestrial infrastructure, mobile network operators can focus on high-growth areas with new service propositions, including mobile broadband into remote regions.*

- *Reliability: Satellite technology, supported by field-proven ground equipment, provides mobile operators with a reliable means to address end-users' communications needs. Hybrid networks consisting of fiber, microwave and satellite links ensure carrier-grade reliability and provide mobile operators the most robust network possible. Leveraging weather-resistant C- and Ku-band frequencies also ensures operators can provide the highest levels of availability with minimal operational complexity.*

- *Simplicity and Flexibility of Architecture: Whether it is increasing throughput to or sharing network bandwidth dynamically to adapt to changes in traffic patterns and demands, satellite-based services offers unprecedented operational flexibility for mobile network operators.*

development, job creation and increase in GDP. In order to support that growth, SMEs will need consistent broadband connectivity to help ensure that their businesses thrive in an already complex and competitive landscape.

Working with Intelsat, Vodacom offers a satellite broadband solution focused on the small office/home office (SOHO) and SME market that will provide more bandwidth at a lower total cost of ownership. By using Ku-band satellite capacity and managed services from Intelsat to enhance its Satellite Connect product line for enterprise and wholesale customers, Vodacom will demonstrate that Intelsat-enabled services can serve the professional broadband market.

The service is operating on the Intelsat 28 satellite, and once Intelsat 33e is operational, Vodacom will seamlessly access Intelsat EpicNG capacity, thanks to the network's backward-compatibility and open architecture design. Using EpicNG, companies such as Vodacom will have a combination of wide beam and spot beam coverage that allow for seamless access to a high performance overlay that will provide additional throughput for the busiest regions of the continent.

Up to the Task?

While traditional satellite capacity can provide network operators with solutions that meet today's needs, the coming surge in the volume of data and video content will create additional congestion on network infrastructures, testing the limits of current FSS network designs.

Intelsat has responded by developing Intelsat EpicNG, a high-performance, next-generation satellite platform that delivers high-throughput technology without sacrificing user control of service elements and hardware. This technology will deliver throughput in the range of 25 to 60Gbps per satellite, and with EpicNG's use of "best-fit" spectrum, end users will have the capability to choose the frequency band based on application needs.

The capabilities provided by Intelsat EpicNG will reduce congestion through such means as allocating bandwidth dynamically and allowing load sharing of links during times of high traffic loads. The ability to deliver capacity through traditional wide beams, as well as HTS spot beams on via the Epic fleet, will meet the emerging business demands by providing additional advantages such as smaller equipment that allows for the rollout of solar-powered sites. The mix of capacity also provides network operators more flexibility in network design and throughput options.

Cost-Effective Capacity = Additional Opportunities

The most important design parameter for Intelsat EpicNG is lowest total cost of ownership. The backward-compatible design enables operators to leverage existing hardware, resulting in quicker, cost-effective improvements in throughput and service expansion, while the open architecture design allows for the delivery of differentiated services with flexible network topologies, service characteristics and speeds. The greater efficiency of Intelsat EpicNG will change the market dynamics and creates a larger, and more profitable addressable market for our customers, enabling new applications and solutions in every sector—broadband, cell backhaul, and mobility.

For example, the growth of small and medium enterprises (SMEs) in Africa is viewed as a critical component in driving the continent's further economic

The EpicNG platform, which includes six announced satellites as of this writing, is fully integrated with Intelsat's existing fleet. Of the first two announced, Intelsat 33e is scheduled to launch in 2016, providing capacity for Africa, Europe, the Middle East and Asia. The two initial Intelsat EpicNG satellites will cover most populated continents and mobility routes, putting enhanced capacity where there is the greatest demand. Four additional EpicNG-class satellites are slated to launch in 2017-2019, providing further high-performance broadband coverage for Africa that will enable service providers to expand their networks across vast service territories, generate greater cost efficiencies and increase their ARPU.

Satellite and Intelsat play a vital role in the global communications infrastructure and will continue to do so in Africa. Mobile network operators will need robust solutions that provide the necessary speed and reliability for even the most remote areas.

Satellite is uniquely positioned to meet these needs due to its ability to economically provide point-to-multipoint connectivity over vast geographic areas, and Intelsat EpicNG's combination of technology and economics will be even more compelling for our customers. Satellite solutions will ensure that network operators are able to meet the skyrocketing demand for data traffic, supporting high-quality customer experiences that will drive stronger bottom lines.

For additional information, please visit:
http://www.intelsat.com/services/broadband-services-2/

About the author

Grant Marais is responsible for supporting the growth of Intelsat's customer base in Africa, which includes leading telecommunications and wireless operators, network service providers, DTH platform operators and broadcasters. Grant has more than 15 years of experience in sales and marketing in Africa and the Middle East, including 10 years in the telecommunications industry.

About EpicNG

Intelsat EpicNG is a high performance, next-generation satellite platform that delivers global high-throughput technology without sacrificing user control of service elements and hardware.

The Intelsat EpicNG platform is a new approach to satellite and network architecture using C-, Ku- and Ka-bands, wide beams, spot beams, and frequency reuse technology to provide a host of customer-centric benefits.

Designed as a complementary overlay to Intelsat's fixed satellite network, Intelsat EpicNG will be fully integrated with the company's existing satellite fleet and global IntelsatOne terrestrial network.

Intelsat EpicNG is based on open architecture and engineered for backwards compatibility, allowing broadband, media, mobility and government organizations to realize the cost-efficiency of using existing hardware. Simultaneously, increased control means these organizations can build on their success by offering end-users customized, differentiated solutions—even defining such service characteristics as speed, hardware and network topology.

For Broadband

As bandwidth requirements skyrocket, the limits of current FSS network design for backhaul of 3G/4G networks are being tested around the globe. Altered multimedia mixes are creating challenging connectivity designs—this is all occurring ll while the economics of supporting equipment and customers in remote areas becomes less attractive to operators.

For broadband networks, Intelsat EpicNG enables higher data rate applications and smaller terminals. This, in turn, provides expanded market opportunities that can be served by satellite. Plus, customers have flexibility in their network solutions to use a combination of C-, Ku-, and Ka-bands to address their clients' needs.

For cellular backhaul, Intelsat EpicNG provides the high throughputs required to support 3G/4G backhaul bandwidth requirements—dynamic bandwidth allocation for asymmetric multimedia requirements and load sharing of links during network congestion. This efficient platform overcomes lower revenue per site barriers in remote areas and enables satellite as a primary or backup solution for backbone links in populated areas.

While Intelsat's current fleet continues to serve the large, existing installed base as well as provide primary solutions in remote areas, the Intelsat EpicNG platform can:

> » Be leveraged in densely populated areas that demand more bandwidth
> » Provide a low-cost solution that can push a mobile network's edge further into rural areas
> » Deliver the bandwidth needed to backup high-speed core and backbone links
> » Offer economical backup to fiber and microwave links towards the edge of a network
> »

For Mobility

There is a crying need for additional robust broadband connectivity in the maritime and aero markets. However, current satellite service offerings force customers to select between high performance and widespread coverage. With Intelsat's global mobility platform, enhanced by Intelsat EpicNG, there is no longer a need to compromise.

Intelsat's C- and Ku-band mobility solutions already offer mobility customers always-on broadband connectivity that rivals land-based networks. Designed as an overlay to the existing mobility fabric, the Intelsat EpicNG platform uses focused spot beams in key mobility routes to meet high-throughput and performance needs. This layered approach offers global coverage and high performance, again, opening the door for new business opportunities.

Customers can fuel their mobility applications using current wide coverage beams and the new, focused Intelsat EpicNG capacity—all without having to invest in new platform or terminal solutions.

For Media

The model for today's satellite content delivery makes customization of channel content economically impractical. The cost of bandwidth drives the requirement for more generic platform content, while current beams are designed for wide coverage, which means all channels go to all locations.

With the Intelsat EpicNG platform, channels can be customized for a specific region and beam. Spot beams and frequency reuse provide greater throughput and drive lower cost per Mbit/s, changing the economic model for delivering localized content—by country, region, language and even culture—and increasing Average Revenue Per User (ARPU).

Working in tandem with the company's existing fleet, Intelsat EpicNG offers the freedom to tailor content delivery solution to serve as large, or as small, of an audience, as is desired.

Intelsat EpicNG also provides economical transmission to cable head ends, as well as point-to-point routes with scalability and cost-effective contribution links for Occasional Use (OU) video applications.

For Government

High performance, ubiquitous coverage and flexibility are critical for government and military applications. Finding the correct mix of those can often require compromises having to be made.

Intelsat EpicNG provides government and military users with 5x the bandwidth equivalent of conventional commercial satellites and two-to-three times that of WGS satellites. By leveraging a mix of wide beam, steerable spot and high-performance beams for thin/thick route traffic, Intelsat EpicNG offers outstanding performance, flexibility and security. High throughput power, combined with the existing fleet, the IntelsatOne terrestrial network, and the ability to operate all using existing terminal infrastructure results in Intelsat EpicNG requiring a hard look by those seeking government connectivity solutions.

Demands For Higher Bandwidth By Energy Companies Has Never Been Greater: A Signalhorn Perspective

By Gary Bray, Vice President, Energy Sales, Signalhorn Trusted Networks

Having worked in this industry for more than 20 years, I feel comfortable asserting that I have witnessed communications go though an astronomical transformation. Even—especially—within the satellite industry.

There has been an exponential growth in the amount of data that has been generated in some of the more complex uplink facilities. Even as recently as eight to ten years ago, a typical site required 256Kbps, at the most. Today, many of the offshore and onshore facilities Signalhorn supports for its energy customers require more than 4Mbps, and some as many as 8Mbps.

There have also been exponential technological advances in the way communications are managed at remote sites, as well as on the satellites, with more efficiency and faster throughput through deployment optimization. We've seen this use grow immensely over the last several years, despite some energy companies' increasing desire to remotely automate and manage their sites.

Remote and deep-water platform operators are increasingly deploying advanced technologies on rigs, while reducing the number of crew required for each site. This reduction in manpower is driving new applications that allow for remote monitoring. However, simultaneously, such applications require more bandwidth. Some operators are investing more than a million dollars per rig in additional equipment for this remote management capability.

Another noticeable change is the focus on crew morale. Crew members want more than the ability to call friends and family on the phone—they expect Skype, social media, YouTube and other communication applications that consume large amounts of bandwidth. Providing these services to an entire crew becomes a bandwidth challenge for these operators. They must cope with the challenge of investing in additional bandwidth and optimization to ensure high crew morale and to attract and retain experienced and valuable personnel.

Safety requirements have also become more rigorous, partially as a result of the April 2010 oil spill in the Gulf of Mexico. Data replication, video CCTV and storage of critical data have become extremely important requirements for oil exploration companies.

Although the major cities in this region already have fiber, the challenge as always remains the 'last mile.' Due to security reasons and other geopolitical factors, companies have not been able to provide fiber to their remote and outlying facilities in this region. While fiber may not currently be an option, satellite remains a reliable choice, especially if companies can deploy an antenna at their facility. Consequently, while demand and expansion of fiber networks in this region continues to grow, there will always be a demand for satellite-based communication.

In remote areas, it is challenging to guarantee a high level of service at a low cost, especially for energy companies operating in difficult-to-reach locations where the need for experienced people and available spare equipment to ensure uptime is at a premium. Communications systems on a rig are a critical differentiator in terms of working efficiency. However, the outlay—even including all the IT infrastructure and satellite capacity usage—is probably less than one percent of the cost to operate a deep water facility, which typically carries close to a billion dollars in equipment.

Signalhorn anticipates that these new safety requirements will become the norm as governments continue to adopt new regulations requiring rig operators to manage data in a more secure and sophisticated manner. Such regulations will require management of data that is produced at the site and new regulations for storing data—on site and remotely—in a manner where information can be retrieved on demand. These regulations will improve safety standards but, at the same time, may become cost-prohibitive and possibly even cause some energy companies to reconsider the cost benefits of operating in remote regions.

Signalhorn is continually working with its customers to determine the optimal means of storing and managing their data to facilitate and streamline data retrieval when necessary. Part of the question going forward relates to the significant data storage requirements governing bodies are going to require oil exploration companies to maintain: will it be data gathered over the previous 24 hours, week, or year? Regulations continue to be developed regionally and we are gaining a better understand these requirements as they impact our customers.

Signalhorn also has innovative Cloud computing and Cybersecurity platforms, with pilots underway for our remote and deep-well operator customers. So far, the results are encouraging. However, while oil and gas customers are increasingly using this Cloud technology, we see little pickup when it comes to real-time drilling applications.

Another current trend we are seeing is the use of submarine fiber at remote rigs where there are large concentrations of personnel requiring a high amount of bandwidth. While a niche sector, this solution is driven by bandwidth demands on offshore facilities and needs to be justified in terms of usage. Signalhorn currently operates submarine fiber networks as part of our technology-agnostic approach to help companies manage and monitor their facilities remotely.

If we look at the industry at large, satellites are still the predominant provider. Even in cases where submarine fiber is deployed, VSAT is used as backup just in case there is a break in the fiber. However, from a terrestrial standpoint, fiber is inevitable and we continue to see interesting trends, especially in West Africa.

The 'Golden Triangle' of Latin America, the Gulf of Mexico and West Africa will dominate deep-water expenditure over the next five years. With African developments—largely concentrated in Angola, Ghana and Nigeria—and Brazilian projects still dominant in the forecast, development in these regions represents a significant element of Signalhorn's anticipated growth. These regions account for an estimated 60 to 75 percent of our energy revenue.

Signalhorn works closely with satellite operators in these regions to ensure we have ample capacity while also tracking drilling activities. The exploration and production companies will be the ones that determine where the next drilling operation is going to take place. When they decide to explore a new area or region, we are already there, fully prepared to deliver trusted networks to meet their high bandwidth communications requirements.

By following this business model, Signalhorn realized a significant growth rate last year. We see these oil and gas market trends continuing in the future. This is definitely an exciting time to be in the industry, with the advent of Ka-Band and other new technologies that enhance cost-effectiveness.

The future of this market segment looks very bright, for Signalhorn and the industry as a whole. We will continue to engage with satellite operators serving oil and gas regions to manage and monitor satellite capacity and to ensure our customers have what they need to continue operating profitable operations in conformity with government requirements.

For additional information regarding Signalhorn, please visit
http://www.signalhorn.com/

About the author

Gary Bray is in charge of Signalhorn's Energy Sales division and is a vice president with the company.

Seeing A Better World Via WorldView-3...
A DigitalGlobe Perspective

Satellite imagery, and the information derived from it, is playing a greater role in the management of exploration and production operations as oil and gas companies increase activities in remote regions of the world.

After the August launch of the company's WorldView-3 satellite, DigitalGlobe imaged several examples of interest for the oil and gas (O&G) industry to demonstrate the increased uses cases for satellite imagery as compared to traditional aerial methods. In this blog, DigitalGlobe highlights several benefits imagery and information can provide to the oil and gas industry.

For additional annotated examples, useful to the O&G market, download the Rotterdam Oil Facility report on Slideshare: ***http://www.slideshare. net/DigitalGlobe/rotterdam-oil-refinery-worldview3-40-cm-report***

Note: On August 21, 2014, DigitalGlobe formally notified the U.S. National Oceanic and Atmospheric Administration (NOAA) of WorldView-3's Initial Operating Capability, which means that starting on February 21, 2015, the company will able to deliver 30cm imagery to all of their customers. In the meantime, DigitalGlobe is only able to show 40cm images from the satellite, which are not representative of the satellite's full resolution capability.

Satellite Vs. Aerial

WorldView-3 satellite imagery, is highly competitive with aerial—in cost, availability and quick accessibility for the customer. In the two examples below, shown are the Rotterdam, Netherlands port facility and the associated oil storage facilities.

Below is the first image, a 40cm resolution satellite image—the second image at the top of the next column is a 30cm aerial image over the same area. When the two images are compared, the 40cm satellite image shows similar level of visual information and detail as the aerial image. However,

professionals in the oil and gas industry understand that acquiring new aerial imagery is costly, especially in remote regions. Moreover, with aerial imagery, you have the additional permitting, import procedures, logistics considerations, and delays to consider, which add expense and time to your project.

Additional advantages of this "Engineering Grade" WorldView-3 imagery are quite apparent where details of the small diameter pipes on the tanker are clearly visible. Ship types and uses can be clearly identified, as well as level and type of activity at the terminal. Imagine how such resolution will help in planning, executing, and monitoring exploration and production throughout the oil/gas field cycle.

Forecasts + Trend Spotting

Decision makers who have access to accurate and frequently refreshed business intelligence data used to drive forecasts and trends have a leg up over their competition. Specific to the O&G industry, as more and more oil is being moved by rail, there is increased interest in learning...

- *What type of material is being moved through rail yards?*
- *How congested are they?*
- *Is the volume of cars this week, higher or lower than last week?*

The type and the number of rail cars that are at a plant provide important capacity and capability indicators, which are valuable to future markets as well as other economic impacts. The high resolution imagery from WorldView-3 allows for this type of identification (*see the image at the top of the next page*).
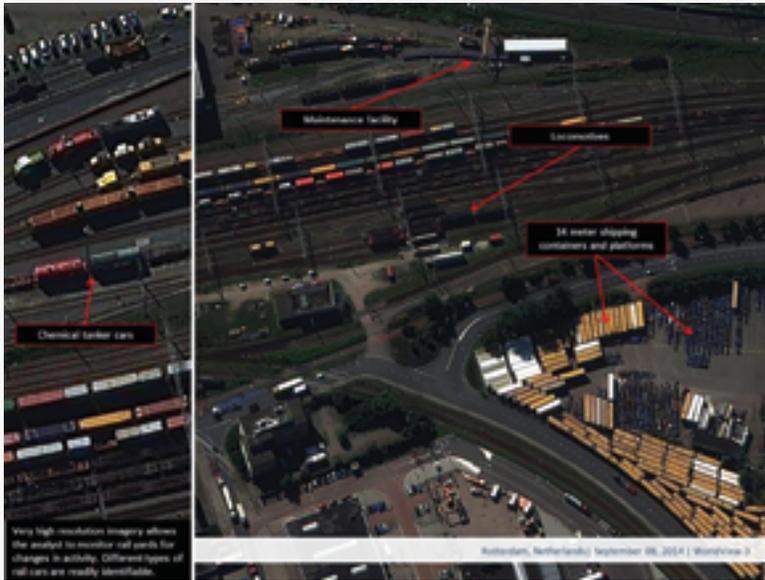
Seeing Through The Smoke

Fires can occur anywhere—however, in the O&G industry, they can be especially crippling. SWIR (Short Wave Infrared) is an advantage of WorldView-3 satellite imagery because it can see beyond what human vision is able to detect. The following two images (*below, non-SWIR; top of next column, using SWIR*) are an example from the devastating Happy Camp forest fires that recently occurred in California. The value of having a clear picture through the use of SWIR is plainly revealed in the second image as to what is actually happening on the ground during an

oil refinery fire.

Full Coverage + Quick Access

WorldView-3 imagery is available over any location in the world, as shown in this next detailed example on an oil facility island in the Caspian Sea. In fact, WorldView-3 and the five other high resolution satellites that DigitalGlobe owns and operates each orbit the Earth 15 times per day. WorldView-3, specifically, has an average revisit time of less than one day and is capable of collecting up to 680,000 km^2 per day, further enhancing the DigitalGlobe capacity for more rapid and reliable imaging over an area of interest.

With WorldView-3 40cm imagery available today, and 30cm imagery available in February of 2015, decision makers in the O&G industries have new options to consider for their critical monitoring needs. As humans expand the areas for new sources of energy, to include those in remote regions, having the ability to image sites from space can help DigitalGlobe customers save lives, resources and time.

To learn more about our DigitalGlobe Energy Suite, email
customersupport@spatialenergy.com

Editor's note
Our thanks to DigitalGlobe for their permission to republish this article from their blog at their infosite: **http://www.digitalglobe.com/**

Five Ways To Improve Remote Monitoring For Mining Companies Via SATCOM

By Sue Rutherford, VP Marketing, SkyWave Mobile Communications

Mining sites are often located in some of the most remote locations in the world. These outlying locations make communication difficult when attempting to successfully connect people, equipment and the enterprise system via cellular or radio technology. However, going without crucial communications is not an option—visibility is essential for critical decision-making.

Satellite messaging terminals provide a fiscally responsible way to automate machine-to-machine (M2M) communications for tracking, monitoring and messaging. For many monitoring and control applications, the ability to send regularly scheduled messages and one-off transmissions is all that is required. The technology meets the increasing demand for richer information in mobile and fixed remote monitoring applications and allows mining companies to share data across diverse operations without the added cost associated with continuous connectivity.

Tracking Trucks + Heavy Equipment:

Many mining companies are turning to satellite communications to track the location of their heavy equipment and trucks.

If occasional position information were needed, a wise choice would be a battery operated satellite-messaging terminal with an omnidirectional antenna that requires minimal installation and virtually no maintenance. If more detailed position information is required, a satellite terminal that can plug into the power of the vehicle is even a better selection.

Once location and usage data of equipment fleets are established, mining companies can immediately start collecting data to make intelligent fleet management decisions. For instance, a monitoring application can locate missing equipment, distribute vehicle usage across the entire fleet and plan for maintenance activities. This can have a sizable impact on capital expenditures, as well as overall cost savings and operational efficiencies.

Collecting Data with Remote Sensors

The slow and manual collection of data from mission critical remote monitoring stations can be costly in terms of time and budget. With satellite monitoring technology, mining companies can eliminate routine site visits with an automated water level monitoring system.

For instance, a mine in Australia needed to regularly monitor water levels of a borehole and report that information to the state's environmental protection authority. The issue for the mine was how to collect the information in a regular and timely manner, given monitoring points are only accessible by foot.

The final solution relied on sensors connected to a satellite messaging terminal. Information is sent via satellite at regular intervals as well as when the system raises an alert when a parameter that is being monitored has crossed pre-determined thresholds.

With the satellite terminals in place, environmental engineers no longer have to travel to the monitored sites as often and now receive immediate notification when a specific parameter has been breached.

Analyzing Weather Conditions

Harsh weather can have detrimental effects on mining operations. While rain and wind cannot be controlled, remote weather stations can go a long way in providing the information needed for activities such storm detection, flood and lightning risk management and scheduling blasts.

A mining company in the remote mountains of Chile is using satellite terminals and data loggers to collect weather information in remote areas. Sensors measure environmental conditions such as temperature, rainfall, wind speed/direction, humidity, barometric pressure, and solar radiation and transmit them every 15 minutes.

Analysts now have real-time and historical data for forecasting and also know when to keep mining operations running or to shut them down to protect people and equipment.

Automating Tanks for Peak Production:

Liquid tanks are a common asset in our industrial landscape. Many of these work quietly in the background as their large, yellow and mechanized counterparts take the spotlight for performance and functionality.

Rather than manually checking tank levels through site visits, mining companies are turning to automated tank monitoring using satellite technology. With satellite messaging terminals, notifications can be set up to alert personnel when a refill is needed and can provide an overview of all of the tanks and their levels.

The automation of the tank refilling process allows mining companies to plan which fluid needs to be filled and where the tanks are located, making efficient use of personnel time and vehicle use.

Ensuring Security + Protection

Ensuring the safety and welfare of employees, especially at high-risk sites, is a constant concern for many companies. A mining company operating in the Democratic Republic of the Congo (DRC) is faced with the daily safety concern of their contractors, geologists and managers traveling on unpaved, unsafe roads for exploration work.

Focused on reducing the number of accidents and increasing the overall security of their traveling workers, the mining company opted for a vehicle tracking solution that used a satellite-cellular tracking device. This solution allows the company to reliably and continuously track vehicle speeds, whether employees are traveling during prohibited times (such as after dark) and whether employees are moving through high-risk areas.

A panic button is also available to notify dispatch of any emergency, road block or vehicle malfunction. The real time visibility supplied by a dual communication device offers a much-needed layer of safety and security for employees traveling through vast areas over difficult terrain.

Solution for Many Types of Problems

Remote monitoring and operations management requires technology that delivers consistent, reliable communications service. When satellite messaging technology is integrated into automation processes, the mining industry has the tools and the information to increase productivity and decrease costs across the enterprise, achieving the ultimate ROI.

Additional information regarding SkyWave may be accessed at
http://www.skywave.com/

Executive Spotlight: Ali Ahmed Al-Kuwari, CEO, Es'hailSat—The Qatar Satellite Company

Ali Ahmed Al-Kuwari is Chief Executive Officer (CEO) of Es'hailSat. Prior to this appointment Mr. Al-Kuwari was Assistant Secretary General at ictQATAR. He also held the position of Finance Director at ictQATAR and was a member of the organization's management team overseeing the strategic investment in the satellite initiative which became Es'hailSat.

Mr. Al-Kuwari has a Bachelor's degree in Business Administration and Master's degree in Financial Decision Analysis. He joined ictQATAR in 2006 following senior financial and managerial positions with Customs & Ports General Authority, RasGas, and the Ministry of Finance.

SatMagazine
Mr. Al-Kuwari, what is the purpose of the new Es'hail 2 satellite?

Ali Ahmed Al-Kuwari
Es'hail 2 is a high-performance satellite with Ku-band and Ka-band capabilities providing TV distribution, telecommunications and government services to strategic stakeholders and commercial customers who value broadcasting and communications independence, interference resilience, quality of service and wide geographical coverage.

Es'hail 2 will provide additional premium capacity to support the growing 26 degrees East broadcast neighborhood and in-orbit redundancy and backup to the existing transponders at that orbital slot. The satellite will also provide the first AMSAT geostationary service in the S- and X-band.

Es'hail 2 will be positioned at the 26 degrees East hotspot position with wide coverage in Ku- and Ku-band of the entire Middle East and North Africa (MENA) region. Es'hail 2 also features fixed Ka-band spot beams over the major cities in the MENA region and Western Europe as well as steerable Ku- and Ka-band spot beams for broadcast distribution and special events. The satellite has been designed with specific anti-jamming solutions that will allow customers to provide high quality, premium DTH television content across MENA.

SatMagazine
Is Es'hail 2 designed mainly for commercial or military use?

Ali Ahmed Al-Kuwari
Es'hail 2 and Es'hail 1 are commercial satellites which will provide television, Internet, corporate and government services as well as TV broadcasting, newsgathering, business communications and telecommunications and trunking services. A government payload is also onboard.

SatMagazine
What are the main differences between Es'hail 1 and Es'hail 2?

Ali Ahmed Al Kuwari
Es'hail 2 will provide similar coverage and services to Es'hail 1 for Direct-To-Home (DTH) broadcasting. However, Es'hail 2 offers the following enhancements:

- *Ka-band uplink possibility offers an uplink frequency band which is not widely used and therefore more resilient to intentional and unintentional interferences*
- *Customer DTH uplink HUBs will be smaller in size*
- *A multi-spot solution on Es'hail 2 offers customers that don't have cost effective and reliable optical fiber infrastructure to uplink their content, a viable alternative for obtaining interference-resiliency against intentional jamming*
- *Steerable Ku- and Ka-band spot beams offer geographical flexibility for service provision*

In addition, Es'hail 2 will provide the first Radio Amateur Satellite Corporation (AMSAT) geostationary communication capability that links Brazil to India in one single hop and in real-time. The satellite will allow the AMSAT community to validate and demonstrate their DVB standard.

SatMagazine
When will the new satellite be launched? By whom? And who will build the satellite?

Ali Ahmed Al-Kuwari
Es'hail 2 is scheduled for launch during Q4 of 2016. We are currently finalizing our review of the various options for Es'hail 2's launch vehicle and we will soon announce the contract award. Following international consultation, we have selected Mitsubishi Electric Corporation (MELCO) to build Es'hail 2. The Es'hail 2 design activities started on July 17, 2014, and will require approximately 27 months to complete manufacturing and testing.

SatMagazine
In regard to Es'hail 1, how successful has that satellite been? And who are your customers for Es'hail 1?

Ali Ahmed Al-Kuwari
We have seen strong and steady demand for Es'hail 1 from broadcasters in the region and, to date, the satellite capacity is almost completely sold out. Al Jazeera and beIN Sports have both taken significant capacity on Es'hail 1 for the HD broadcast of their premium news and sports channels, including the transmission of the 2014 FIFA World Cup. We also have channel bouquets, which include Fashion TV, Al Rasoul TV and Expomania TV.

SatMagazine
What services are offered by Es'hail 1 and what has been the satellite's main success?

Ali Ahmed Al-Kuwari
Es'hail 1 provides a range of services including TV broadcasting, newsgathering, business communications, telecommunications and government services across the MENA region. We also have a Trunking

Service between Qatar and Europe, which is currently fully booked. Our goal is to become a major satellite player, first in the MENA region and then potentially globally—we are well on our way to achieving this realization. Having launched Es'hail 1 a little over one year ago, the satellite is very much in demand and is currently broadcasting channel bouquets for premium broadcasters, such as Al Jazeera and beIN Sports.

We have just announced the procurement contract for our next satellite, Es'hail 2, and we are working on designs for our own satellite control center in Doha. This is a strong foundation on which we can continue to build a world-class satellite operator and center of excellence in the MENA region. In recognition of our success, we were recently awarded "Satellite Operator Of The Year" at the World Satellite Business Week in Paris. I am immensely proud of all of the Es'hailSat staff that helped us to achieve our success so far.

SatMagazine
What where the challenges in the build of Es'hail 1?

Ali Ahmed Al-Kuwari
Starting as a satellite operator from scratch in any country without a significant pool of satellite expertise is a major challenge! Building and launching a satellite requires a great deal of effort and is a time consuming task.

In 2010, we chose to partner with an established operator—Eutelsat—to assist us with the procurement and launch of Es'hail 1. We then worked with Space Systems/Loral (SSL) to establish a training program to help us develop our in-house expertise in satellite manufacturing and launch.

With the opening of our own satellite capacity Management Center in Doha, we were able to build the capability to coordinate monitoring, problem detection and trouble shooting for customers on our fleet. With a strategic agreement with Arabsat, we were able to strengthen the reach and penetration at the 26 degrees East hot spot for our customers, which ensures future continuity and expansion opportunities.

SatMagazine
Please describe your experience of the launch of your first satellite.

Ali Ahmed Al-Kuwari
I was immensely proud to witness in Kourou the birth of our new star over Qatar with the successful launch of Es'hail 1. The arrival of Es'hail 1 marked a major milestone in a three year journey and completed the first step in Es'hailSat becoming a center of excellence in the region and in the development of a sustainable, national satellite industry for Qatar.

With the participation of Her Excellency Dr. Hessa Al Jaber, the Minister of Information and Communications Technology and founder of the Es'hailSat project, and a host of VIPs from Qatar, watching our satellite lofted into space on board an Arianespace Ariane 5 rocket was a once in a lifetime—and truly memorable—experience.

SatMagazine
How important is the Es'hailSat program for Qatar and the MENA region?

Ali Ahmed Al-Kuwari
The Es'hailSat program and the successful launch of Es'hail 1 marked a significant milestone for Qatar as part of the country's 2030 Vision to create a modern balanced economy that is self-sustaining and can grow in the long term. When Es'hail 1 entered service on December 18th, 2013 (Qatar National Day), we became an active satellite operator with the ability to provide independent, high-quality services to our stakeholders and customers in Qatar and the wider MENA region.

With our goal to become a major satellite player, first in the MENA region and then potentially globally, we have taken a number of steps to ensure we are building a sustainable satellite industry for Qatar with a solid foundation for the future. With Ku-band and Ka-band capacity at the 25.5 and 26 degrees East hotspot positions, we can provide the region with the most advanced and sophisticated services including broadcast, telecommunications and broadband.

Following the success of Es'hail 1, our expansion plan will continue to grow with our second satellite, Es'hail 2, and our own satellite control center in Doha. We are also adopting the concept of "world-wide footprints" through partnerships with leading regional and international operators around the globe to ensure customers obtain the most flexible and reliable service in the MENA and beyond. In parallel to building the "hardware," we are also keen to develop the space industry for Qatar. Es'hailSat is investing in local talent and providing training for Qatar's first generation of satellite operator engineers. Four Es'hailSat engineers completed a 26-month intensive satellite training program with Space Systems/Loral (SSL) following every state of the production process for Es'hail 1 and a similar program is about to begin with MELCO in Japan for Es'hail 2. We are also sponsor young Qatari undergraduates to develop their skills in satellite engineering.

We want to ensure that we nurture and grow the satellite industry within Qatar itself so that we have a solid foundation in satellite technology for the future.

The Es'hailSat infosite offers additional information at
http://www.eshailsat.qa/
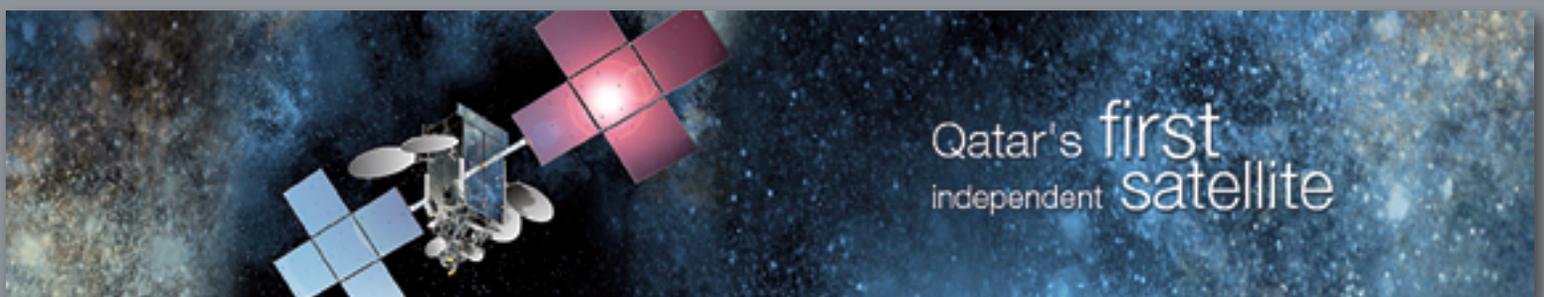
Efficiency Powered By Intelligence

By Fahad Kahoor, Director of Market Development for Energy, + Marwan Joudeh, M2M and Product Lifecycle Management, Thuraya

No matter how you look at it, satellite technology's impact on the machine-to-machine (M2M) market is palpable. The landscape for oil and gas (O&G) companies has evolved to a point where M2M applications are now used to optimize operations from asset tracking, to communicating remotely with systems all over the globe, to running 24-hour monitoring schedules, while enduring both natural elements and influence from unexpected factors.

The promise of efficiency powered by M2M systems combined with satellite technology is even more significant. It impacts the optimization of processes, enables higher production capacity, enhances security and also helps establish redundancy.

A recent study from MarketsandMarkets predicted M2M satellite communications will grow from a $2.98 billion market in 2014 to more than $4.7 billion by 2019—a CAGR of 9.8 percent. Here are five key considerations that O&G operations need to make in order to harness the power of satellite technology for more efficient operations.

1. **Reliability regardless of location**

   Mobile Satellite Services (MSS) have become invaluable in addressing the gap between the communications capabilities enabled by GSM backhaul services and VSAT networks. Service reliability is the foremost requirement for successful offshore operations. Oil and gas companies today need to consider private radio, GSM and mobile satellite solutions as part of their overall communications infrastructure. Mobile satellite-based solutions have the resiliency

to act as a backup for terrestrial solutions. For geographically remote locations that are not served by terrestrial networks, oil and gas companies can leverage the strength and capacity of L-band networks to enjoy uninterrupted

connectivity—even when operating under adverse weather conditions.

2. **24/7 monitoring**

Obtaining real-time measurement of how operations are run 24/7 for upstream and midstream including well-head monitoring is highly critical. Oil and gas companies need to be appraised of the status of oil production at any time in order to adjust production capacity where needed. In times of emergencies, real-time monitoring and reporting is vital to keeping operations smooth and identifying causes and factors when things go awry. This enables companies to monitor, diagnose and maintain the operation of their assets—even in the most hazardous environments.

Recently, a Thuraya M2M partner successfully deployed an end-to-end well-head monitoring system for a major Middle East oil company, which uses field equipment based on Thuraya modules as well as a back-end connected over the Thuraya network for added security and redundancy. This enabled the end user to monitor and control their assets in locations where, in the past it was either impossible to do so or the cost of actively monitoring these assets was quite high.

3. **Addressing security concerns for business continuity**

Security and pipeline monitoring applications are a growing concern in the energy sector, particularly in the Middle East region. M2M applications can be leveraged for video surveillance to prevent tampering of systems as well as monitor operations in areas which are not easily accessible by teams. Deployment of VPN via mobile satellite solutions such as IP broadband terminals provides an additional layer of secure and reliable, end-to-end connectivity over public or private communication networks.

4. **Providing better control over budgets**

The mantra "doing more with less" has been adopted by enterprises across all sectors. Oil and gas companies are no different. Companies need to partner with a satellite provider that is able to understand their business needs and develop customized solutions as well as price plans and packages to enable these companies to benefit from volume discounts on M2M connectivity over SMS or data services. The right partner will also be able to help oil and gas companies expand their GSM and mobile satellite solutions as well as explore other communication solutions that will serve their needs.

A successful example is where Thuraya recently worked with an oil and gas company in Africa, to develop and implement a tailored airtime package that met the end-user's forecasted budget for an asset tracking project in remote locations. The proposed package provided the end-user with better control over their communication needs over the duration of the project.

5. **Remote access**

Remote access enables oil and gas companies to obtain information or resolve any issues at any point in their operational supply chain, when needed. It also helps companies streamline and automate their processes to save costs over the long term. For example, if a company does not have remote access when an issue arises, they will have to send a technician or a team of technicians to obtain more information, diagnose the problem and resolve it. This process takes time, incurs additional manpower costs and would most likely be in a highly remote location. With remote access, the technician can run a diagnostic check to remotely isolate and resolve the issue, eliminating additional cost of manpower or logistics.

By provisioning for remote access, organizations will be able to reassign staff to where they are needed the most. Companies will have more control over how daily operational tasks are run and the costs of staff deployment for diagnostics, issues resolution, safety, cost and efficiency will be better managed.

One of the most efficient ways of providing remote access is via VPN tunnel connectivity using the Internet via terrestrial GSM or satellite access. However, companies are wary of this due to recent security threats. In addressing these issues, satellite operators such as Thuraya have gone to great lengths to enhance the resiliency of their networks in addition to the safety and security of all of its customers around the world.

Efficiency powered by the intelligence of M2M systems is the ultimate goal of O&G companies. At the same time, companies need a dependable solutions partner that will help them expand on the solutions that they currently have and incorporate new applications as a step closer to fulfilling their long term goals.

By partnering with a commercial satellite operator to support their current and future communication needs, oil and gas companies will be able to achieve some degree of long-term cost stability and significantly benefit from the innovative capabilities provided by cutting-edge technology.

For additional information regarding Thuraya, please visit
http://www.thuraya.com/energy-comms

Satellite Meets Wireless: A Hughes Perspective

By Vince Onuigbo, Senior Marketing Director + Vinay Patel, Regional Director, Sub-Saharan Africa, Hughes Network Systems

Today, more than six billion people around the world can't imagine life without their mobile phones or PDAs. As a matter of fact, there's a whole generation that can't even remember when these devices didn't exist. And the service juggernaut continues to grow rapidly across all nations and demographics, fueled by the seemingly insatiable demand for Internet access.

However, in spite of the high penetration of wireless communications around the globe—talking, texting or emailing outside the primarily urban and highway-centric coverage of most mobile networks is either not possible or comes with spotty, unreliable service coverage.

Though rural and remote areas represent a large untapped market opportunity, the primary barrier to expanding coverage has, in the past, been the high cost of terrestrial backhaul, whether using microwave, fiber or cable technologies.

Enter today's satellite technology—by carrying cellular traffic over cost-effective, high performance satellite connections, mobile service providers are now discovering new revenue opportunities to expand into rural and remote areas—with the potential of reaching customers roaming in these areas, not to mention the many millions of unserved or underserved residents.

Cellular Communications with a Global Reach

Only satellite provides the reach and flexibility to cost-effectively cover rural areas and low-density populations virtually anywhere. This is becoming of particular interest to operators in the areas of Africa, Asia, Latin America, and the Middle East, where the geography and economy present daunting challenges in justifying expansion of high-quality services.

Hughes Backhaul Solutions in Action

Case in point: In a war-torn region of sub-Saharan Africa, a forward-looking mobile operator was looking for an efficient and cost-effective means to provide very low-cost cellular phone coverage to remote villages. The rugged conditions and lack of infrastructure called for an all-outdoor, lightweight solution that sets up quickly and can be easily transported to even the most remote areas. Plus, the communication solution would also need to be self-contained as well as solar-powered.

To meet these requirements, the operator turned to Hughes for its Satellite Cellular Backhaul Solution. Designed to support a full range of cellular radio access network (RAN) technologies, Hughes backhaul solutions are based on the company's HX System platform, providing high-quality links while optimizing space segment resource use to minimize operating costs. Key features include efficient bypass and real-time, fast-track algorithms on outbound channels, and "just-in-time" TDMA burst forming, which leads to low latency and minimal jitter, essential elements for an excellent end user experience.

To date, the service has been deployed to more than 300 sites, and the operator provides low-cost, prepaid handsets that enable residents use the service to call or text within the village and from one village to another.

Boosting the Economy

The economies of much of sub-Saharan Africa are agricultural, based on bartering and trade. To ensure the success of the project, the operator partners with local chiefs to obtain buy-in and to help protect the equipment from possible theft or vandalism. The chiefs, in turn, encourage residents to participate and use the service, creating a micro-economic climate of entrepreneurship.

For example, when a local vendor has produce to sell, he can now use the satellite cellular backhaul service to text availability and pricing to other

villages and to arrange delivery of the produce when a truck is delivering other goods to the village.

"The service has kick-started micro-economic activity and entrepreneurship, which boost social development—not only to make money, but to empower the people to grow the economy of the village," said Vinay Patel, Hughes regional director for sub-Saharan Africa. "As people become accustomed to the service, they are finding more and more ways to use it, and, as a result, traffic is growing 10 to 20 percent on a monthly basis."

Smaller = Better

A new trend at the heart of the mobile industry is the use of small cells, which are operator-controlled, low-powered radio access nodes, to provide the best user experience to mobile subscribers everywhere. When these small cells are combined with a satellite backhaul solution, they offer enormous potential for providing wireless access to underserved locations at a lower cost.

An active supporter of small cells, Hughes is a member of the Small Cell Forum, an international organization that supports, promotes, and helps drive the wide-scale adoption of small cell technologies to improve coverage, capacity, and services delivered by mobile networks.

Fulfilling the Dream

Ideal not only for rural and difficult-to-reach fixed locations on land, satellite cellular solutions also connect people on-the-move—on airplanes, cruise ships, and trains—and they are ideal for emergency response and special events with Cell on Wheels (COWS) coverage.

According to Euroconsult's 2013 report, *Prospects for Cellular Backhaul in Fast-Growing Economies*, cellular backhaul sites are expected to grow at a compound annual growth rate of 7.6 percent over the next 10 years, while 3G will experience double digit growth and capacity carried over satellite will increase by 16 percent. Going forward, it's also anticipated that High-Throughput Satellites (HTS) will play a significant role in backhauling the explosive capacity growth expected due to 3G and 4G/LTE requirements.

That means more and more mobile operators will adopt satellite backhaul technology to fill the gaps in their networks and reach untapped markets in previously cost-prohibitive locations.

As the world continues to expect more from cellular technology, satellite backhaul solutions will grow as a key component of a true, high-performance global communications network— fulfilling the dream of connecting people no matter where they live, work, or travel.

About the authors

Vince Onuigbo is a Senior Marketing Director at Hughes, a wholly owned subsidiary of EchoStar Corporation, where he leads the technical marketing and business development for satellite backhaul of radio access networks globally. Among Vince's responsibilities are, liaising with engineering to deliver optimized satellite backhaul solution for various cellular standards 2, 3 & 4G/LTE and scenarios—rural, urban and residential/enterprise deployments. In addition he leads the analysis and validation of prospective customers' backhaul business cases to ensure the most cost-effective systems design, and building of third-party partnerships that facilitate the best overall project delivery experience for operators. In early 2000, Vince played a leading role in the market development of Western Europe, Africa, and Middle East for Hughes Terrestrial Point-to-Multipoint microwave solution, used primarily for cellular backhaul.

Prior to joining Hughes in 1996, Vince held various technical positions at Motorola Cellular Infrastructure Group, including GSM /CDMA systems engineering and consultant to mobile operators for the planning of network roll-out. Vince is a published expert in the field of wireless access. He is a member of the IEEE and holds a BSc with honors in Electrical Engineering from Ahmadu Bello University Zaria, Nigeria and an MBA from Keller Graduate School of Management of DeVry University.

Vinay Patel is the Regional Sales Director for Sub-Saharan Africa, for the International Networks and Products Division of Hughes, a wholly owned subsidiary of EchoStar Corporation. Mr. Patel's role is to promote the Hughes family of VSAT products and services in the region, working with public operators, entrepreneurs, and government entities to bring the benefits of broadband satellite to public, private, enterprise, civil, and government end-users.

During his 20+ years at Hughes, Mr. Patel has been involved in satellite and terrestrial wireless product sales and marketing activities. His experience spans mobile and fixed cellular systems, terrestrial PTP and PTMP microwave, product line management, and business case development. Vinay has geographic experience working in the USA, Latin America, Western and Eastern Europe (including Russia), South Asia (including India), and Sub-Saharan Africa. Vinay holds a Bachelor of Science degree in electrical engineering and a Master's degree in Business Administration from the University of Maryland in College Park, Maryland.

Remote Comms For Exploration + Production
An ND SatCom Perspective

By Volker Jarsch, Director Satcom Solutions, ND SatCom GmbH

Communication via satellite is the most reliable method to reach off-shore and remote sites. Engineers and supporting staff must have good voice quality and stable data transmissions among all of the relevant sites.

The oil and gas (O&G) drilling business depends on real-time, direct connectivity with the customer's engineering lab. Information gained at the drilling site needs to be transmitted without delay to the lab for analysis by the geologists and their supporting tools. In turn, the drilling process is controlled in real-time by control information that is created at the lab. Surveillance of remote installations, pipeline sections and video reporting of relevant events require broadband transmissions from one or more sites to the company headquarters, as well as to the headquarters in the region where the drilling and the production occur.

Current mainstream SATCOM solutions fall short in fulfilling these evolving requirements which, in turn, force companies to compromise on functions that truly challenge technical capabilities. Point-to-point connections with dedicated satellite capacity meet the requirement for single-hop connectivity, but are constrained in fixed bandwidth. They are expensive—not all of the capacity of each link is used all the time, and parallel connections between multiple sites require cumulative space capacity—i.e.,they are insufficient and unnecessarily expensive for O&G applications.

The typically-offered star networks with one central site at a service provider's main location does allow for some cost reduction. However, the routing of all traffic via that one central site (which is typically not at the oil company's headquarters) means double hops or dependency on additional terrestrial routes to reach the relevant company locations. This makes star networks unable to fulfill the requirement for single hop connectivity. Additionally, the forwarding of guaranteed high quality video using multicast from remote sites directly to one or several company sites processing this information is a challenging task.

Enabling Agile Networks

ND SatCom's new satellite communications platform—SKYWAN 5G—overcomes these handicaps and fulfills the requirements of drilling, exploration and transport in an ideal way: Small private networks become cost effective
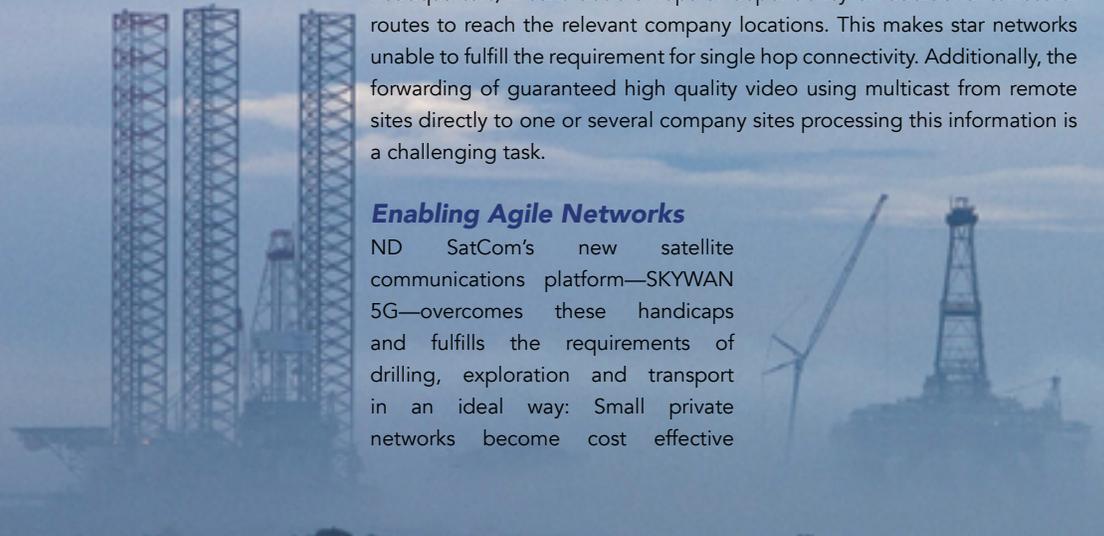
and the communication is fully within the enterprise's sphere. Single hop connectivity between exploration sites, drilling sites, pipeline stations, labs, and management sites or headquarters allow best voice quality for phone, excellent real-time quality for data, fully automatic IP-routing, and best video quality for surveillance and analysis, all at acceptable investment and operational costs.

Companies providing communication services for O&G enterprises can differentiate their offering from that of the competition by providing individual SKYWAN 5G network structures which optimally fit the requirements of their end customers. Agile network connectivity is enabled, without double hops. Your time critical data is transmitted in single-hop directly from their origin to their destination site; avoiding double hops and extra delays.

Bandwidth is allocated as required—connections adapt to the different traffic types, i.e., video gets more bandwidth capacity and committed real-time quality to achieve the best possible image resolution. If required, fast file transfers get all of the available capacity at a certain point and

are completed in the shortest possible time. This dynamic allocation of bandwidth brings substantial savings on satellite capacity cost as the overall network capacity can be reduced, thanks to the statistical effects and mix of traffic in the entire network. Simultaneously, the users feels their traffic is transmitted faster than using mainstream solutions.

The savings can be further increased through the integration of all types of sites into a single network: off-shore platforms, ships, fixed sites, land-mobile and transportable sites and moving vehicles can all communicate in one single project or company specific network. The network can then be seamlessly integrated with the IT environment of the company and still provide controlled interfaces to public networks. Point-to-point, point-to-multipoint, and multipoint-to-point connectivity, including automatic routing of IP traffic, make the SKYWAN 5G the platform of choice for companies who have the need for a certain type of connectivity today with a look forward to what may be needed in the future.

A SKYWAN 5G network guarantees highest availability due to unique redundancy and diversity concepts. Handling and maintenance of your dedicated or virtual private network, which could also be managed by the service provider of your choice, is about as easy as it gets. Best of all, there is complete independence of terrestrial networks and uncontrollable routes.

For additional information, please visit *http://www.ndsatcom.com/*

A Norsat Case In Point:
Sharing FIFA Events With The World

Televisa is the largest multimedia corporation in Latin America. It is a major international entertainment business offering content such as TV shows, sports and newscasts across Latin America.

Televisa's satellite team shared how Norsat enabled FIFA content to be broadcast to millions of viewers around the globe.

The Televisa team was extremely busy with the 2014 World Cup in Brazil. Their satellite team traveled from Mexico to Brazil with their satellite truck, covering the Mexican team and it's opponent's matches. Oscar Herrera Ramirez is the Chief of Broadband and Satellite Network Operations at Televisa. He is responsible for the maintenance of the terminals, remote links with satellite and daily operations of the Televisa satellite team.

When they are not streaming a FIFA game, the satellite team is broadcasting reports, player interviews, location-specific news and more. During the football matches, they install antennas in areas where there are large gatherings of viewers, such as main plazas or city squares.

Mr. Ramirez in front of the antennas during night time in Rio.

Televisa satellite equipment.

Norsat Newslink set up at a hotel for live broadcast.

Oscar explained how Norsat terminals enable the Televisa team to capture the public reaction the moment such occurs. Norsat terminals stream the content to the International Broadcast Center in Rio de Janeiro, Brazil, which is then broadcast to the world. Thousands of fans may be lucky enough to enjoy the football in person, but it's estimated that more than 3.2 billion viewers caught the live TV coverage—Norsat and Televisa had a hand in making certain that happened.

Televisa's satellite operations unit used Norsat LNBs as well as Norsat Newslink terminals. The LNBs that were used for the World Cup were installed on 4.5, 3.7, 1.5 and 1.0 meter C- and Ku-band antennas. Norsat Newslink terminals gave the satellite team at Televisa the ability to provide rapid response to the needs of various Televisa productions.

Oscar also explained that the quality of Norsat products allowed them to be used by Televisa for a long period of time with little need for repair or upkeep. Oscar stated that the primary reasons for purchasing Norsat equipment was cost, quality and technical support.

When asked about the experience of working with Norsat products, Oscar replied that Norsat products give them a great deal of confidence in their job function. He added that the design of Norsat terminals gives them the flexibility to adapt to different types of RF equipment and make upgrades that enable them to keep up with new technologies.

Norsat's Flyaway Satellite Terminals are extremely rugged and transportable and are designed for newsgathering in challenging environments. Conveniently packaged in industrial cases and supported by advanced pointing tools, customers such as Televisa are able to set up and initiate transmissions within a matter of minutes, without technical expertise.

Norsat's Flyaway systems are field proven, rugged and reliable. With units continuously operating for more than eight years (by military and civilian customers) in locations that include Afghanistan, Iraq, and Haiti.

Norsat's LinkControl™ software seamlessly integrates all the tools needed for Satellite News Gathering (SNG) with an easy to use interface and advanced capabilities.

The company's terminals feature tool-free setup and an intuitive deployment strategy. Norsat's flyaway terminals are available in aperture sizes of 45 centimeters to 3.8 meters and include HD support with one or more airline checkable cases.

Televisa's work at the 2014 World Cup is a great example of how Norsat connects the world to share some of the most exciting moments in history.

To find out more about Televisa, visit ***http://www.televisa.com***

The Norsat infosite is located ***http:// www.norsat.com***

Norsat terminal set up in a city street behind the satellite truck.

MENA + Africa's O&G VSAT Market Challenges

By Edwin Haak, Sales Director for Europe, Middle East and Africa, SpeedCast

Africa's proven oil reserves have grown 120 percent in the past 30 years, from 57 to 124 billion barrels, with at least another 100 billion barrels forecasted to be discovered. Proven reserves of natural gas have grown 140 percent in that same time period.

This environment has created a most attractive resources market for foreign and global exploration companies. To date, there are approximately 300 foreign companies (excluding international Oil & Gas (O&G) giants such as Exxon Mobil, Shell, ConocoPhillips, and so on) exploring for oil & gas in Africa, both onshore and offshore, through approximately 600 projects. Furthermore, these explorers employ expertise and technology from hundreds of international companies for their engineering, procurement, construction and management (EPCM) services in the areas of geology, geophysics, rig vessels, offshore drilling, and more.

To support this diverse eco-system, a reliable communications backbone is critical to enable intra-company and inter-company collaboration. The telecommunications network serves as the link between drilling rigs, cargo ships, and operations onshore. That same network should also enable deployment conditions that allow for the optimal work and family balance by providing Information and Communications Technologies (ICT) that support seamless communication between staff who are working away from home, family and friends.

With applications such as Skype, File Sharing and Messenger services becoming a basic need, rather than a luxury, at remote sites, having a diverse bandwidth efficient communications platform is vital to the company's overall operations success.

Although the global market offerings for land and maritime connectivity are extensive, the African and MENA regions present a unique environment for corporate and welfare communications, leaving the international exploration companies with a number of challenges that include...

» *Licensing*

Africa and Middle East (MEA) as a region have strict regulatory frameworks for land VSAT technology. Most countries continue to protect the monopoly of their national telecom enterprise. In countries where private satellite services are allowed, the license fees are usually excessive, with up to 35 percent of ISP expenditures going toward VSAT license and monthly charges. This poses a challenge for international ISPs to rollout services in such complex policy and regulatory environments. As a result, international energy companies operating in the African-MENA region are often forced to use smaller, local providers with limited capacity and no added-value to the solution.

» *Service Quality + Reliability*

This region's telecommunications structure is still in a developmental stage, and while local service providers can effectively complement the terrestrial network for local needs, they often fail to keep up with the bandwidth-intensive global requirements of the international oil and gas explorers operating in the region, including:

- *Reselling of bandwidth without any insight of its use*
- *Offering capped or limited bandwidth services*
- *No service availability or quality guarantees, resulting in frequent service downtime and equipment failures*
- *Lack of welfare and other value-added-services specific to the Oil & Gas industry's needs*

The primary connectivity challenges associated with remote exploration activities are:

1. *Ensuring industry-specific applications are never compromised*
2. *Latest technologies enabling worker welfare are supported*
3. *All applications are continuously optimized to reduce ICT costs*
4. *Sufficient bandwidth capacity is available to meet current and future demand*

Many local providers do not have the infrastructure to support the specific needs of international exploration companies, resulting in high bandwidth costs and poor crew welfare, especially in the offshore operations.

Overcoming Connectivity Challenges

In order to overcome the licensing and technology challenges posed by the local regulatory and socio-economic conditions, exploration companies should engage with a suitable service provider who offers a global infrastructure, one who is able to overcome the regulatory hurdles, and who is able to provide a complete turnkey solution, one that incorporates corporate and welfare needs, all at a competitive price.

Obtaining an operator's license in the African-MENA region can be quite difficult. As a solution, many service providers turn to local partners to supply the end user with a license. In regions where this option is not legally possible, the service provider may assist the customer with their local knowledge and experience in negotiating with the local authorities.

The service quality and staff welfare challenges can be overcome by seeking an end-to-end communication solution which would simultaneously support corporate and welfare traffic. In addition, bandwidth management is required to save costs and allow for the use of bandwidth-demanding welfare applications, without compromising corporate traffic. The network design should also consider supporting workers' existing devices, such as smart phones and tablets, as well as flexible in-room entertainment and information distribution systems.

A service which supports simultaneous, but separated, corporate applications and recreational traffic with managed bandwidth consumption will allow for staff welfare and staff retention, without compromising other corporate units.

When coupled with bandwidth management solutions, an efficient network design will bring the following benefits to remote operations:

- **Reduce ICT and overall operational costs**... *by effectively managing the most expensive asset in remote communications bandwidth. The correct solution will allow companies to obtain more out of their satellite bandwidth using a number of tools that should include WAN Acceleration, Caching & QoS (Quality of Service).*
- **Improve worker retention ratio**... *by providing remote workers with the latest communication and entertainment technology to support improved working conditions, all without the need to add extra bandwidth.*
- **Deliver an optimal balance**... *by striking a balance between corporate and recreational application delivery and budget. This keeps the workers happy, supports mission-critical applications, and effectively manages both costs.*

Finally, the ideal solution should address the three aspects associated with an efficient communications service: developing the solution in-line with the customer's network design requirements; achieving desired balance between CAPEX, OPEX and contract length; and maximizing total cost of ownership over the life of the service.

SpeedCast's Licensing & Engineering Capabilities
Africa and Middle-East

Legend:
- VSAT installation capabilities
- Access to local support
- Access to licensing
- Equipment storage facilities

About the author

Edwin Haak is the Sales Director for Europe, Middle East and Africa and a seasoned satellite specialist at SpeedCast. Haak leads a team that supports the SpeedCast regional sales organization, which is focused on reinforcing the company's competitive positioning and market share in land and maritime communications. Edwin has more than 20 years of international technical and senior management experience in the telecoms industries, with the last 12 years dealing directly with satellite communications.

Your Partner for Satellite Connectivity on Land or at Sea

SpeedCast has more than 30 years of experience delivering satellite networks, with an extensive worldwide infrastructure and global footprint. The company has deployed more than 100 welfare networks for governments, resource and logistics customers. Corporate welfare solutions range from Internet access for 10 men exploration camps to a network of vessels with video entertainment and wireless distribution to support the crews' smart devices.

SpeedCast's key network capability lies in the ability to optimize available bandwidth and ensure that neither the corporate or recreational data are compromised. The company's satellite engineers developed an optimum mix of bandwidth optimization (WAN Acceleration, Caching, Protocol Control & QoS) and transparent customer network management tools that help end users use their bandwidth resources efficiently, which then leads to better cost controls.

SpeedCast has strategically invested in the major oil and gas hubs worldwide, including Europe, UAE, Australia, Malaysia and PNG, allowing us to provide a direct satellite link into any remote location in the world. This ensures maximum service reliability and low latency across all of our networks. SpeedCast has an integrated partner network in Africa and the Middle East and can support local licensing, equipment storage and support capabilities. This allows the company to rapidly extend any of their services to more than 80 percent of the region.

Recent Projects in the Middle East and African Regions

SpeedCast's satellite networks have recently assisted in overcoming the challenges associated with O&G exploration in the Middle East region.

EPC Maritime Vessels in Africa: *SpeedCast's VSAT solution has also recently been adopted by Valentine Maritime, an UAE-based offshore construction company for their EPC project in the Persian Gulf. This redundant maritime service is based on a combination of Ku- and C-band platforms to ensure service availability and uncompromised Internet speeds and voice quality for both corporate and welfare needs. With the added benefit of SpeedCast's SMART (Remote Monitoring) solution, Valentine Maritime now has centralized and remote access to their telecommunications assets within the SpeedCast network. This allows them to track their vessels and barges, manage bandwidth and control their security via a unified management dashboard.*

"High quality telephony and Internet services support our crew satisfaction and welfare as well as operational efficiency," said Jaya C. Raja, Head of Information System at Valentine Maritime. "Valentine Maritime had very specific requirements for our communications network. We wanted a backup solution for two of the three connected vessels and had a particular emphasis on clear VoIP connectivity. SpeedCast's global maritime footprint and redundant infrastructure with their services already running on over 1,000 vessels and rigs worldwide made them the natural choice."

There is more information available at the SpeedCast infosite:
http://www.speedcast.com/

Executive Spotlight: Brian Collins, Founder + CEO, One Horizon Group

Brian Collins was appointed as Chief Executive Officer of One Horizon Group in July 2014 after successfully guiding the company to list on the Nasdaq stock exchange in the same month. Mr. Collins joined One Horizon Group as Chief Technology Officer in 2010, following its acquisition of Abbey Technology, a software company that he founded in 1999. Mr. Collins is the co-inventor of the Horizon software solution.

Abbey Technology specializes in the research, development and delivery of proprietary software solutions for telecommunications operators and has previously delivered software solutions to the Swiss banking industry. Prior to the formation of Abbey Technology, Mr. Collins worked as a software engineer for Credit Suisse First Boston Equities in Zurich. Between 1993 and 1996, he worked as a software engineer for Sybase, an information technology company, in California and Amsterdam. Mr. Collins graduated in 1990 with a BSc Hons in Computer Systems from the University of Limerick, Ireland. He also undertook further software research and development at International Computers Limited between 1990 and 1993.

SatMagazine
Mr. Collins, you have worked within a variety of engineering and telecom positions—what drew you to the telecom industry in the first place?

Brian Collins
There were two main draws for the software side of mobile telecommunications for me, one was the scale of the opportunity from a commercial perspective and the other was what I considered the availability of path-of-least-resistance of Internet technologies in the mobile sector, nothing exciting or innovative was being offered over wireless. I found that just assuming a wireless link can be overlaid with an Internet connection without considering the actual value added service's Internet needs was something that could be addressed, especially in a Voice over IP context. To improve upon the path-of-least-resistance products out there was going to be our way forward and using innovation to get there is in our DNA.

SatMagazine
What did you glean from your work within the banking industry that has prov en to be of benefit to your role at One Horizon?

Brian Collins
My experience is banking software products was primarily in real-time solutions for programmed trading systems for electronic stock markets. It is not such a technology leap to go from high-speed reliable trading messaging to steady-speed predictive delivery of Voice over IP. Both technologies use the Internet as the carrier and software solutions can be applied to improve efficiency, improve predictability and most importantly for VoIP, improve quality.

SatMagazine
You co-invented the One Horizon software solution please tell our readers about your technology.

Brian Collins
Our SmartPacket technology is a brand new approach to Voice over IP. We dispensed with the solutions, in widespread use, that use the Session Initiation Protocol and invented a whole new way of recording the human voice an d optimizing its transmission and playback over the Internet. We use ten times less bandwidth using our techniques, which leads to ten times less load on the wireless radio link.

Wireless radio links come in many forms such as satellite, 2G, 3G, 4G and 5G. Having a highly efficient and high quality Voice over IP solution designed specifically for wireless allows the spectrum use to be optimized by mobile operators, satellite operators as you s imply get more bang-for-buck when using our applications. Our efficiencies are, of course, best delivered on a smartphone, the ultimate mobile computing platform. Being efficient with the Internet has another great benefit for the smartphone, better battery life during voice calls.

We are continuously improving our software in this sector and some really advanced new features are on the roadmap for the coming month. This is a really exciting time for mobile software and we have been delivering high quality, carrier grade mobile solutions for more than four years now.

SatMagazine
Why is this technology so important to the satellite industry? Please explain how Satellite IP functions.

Brian Collins
Satellite is a wireless radio link that has the additional complexity of high latency. Our solutions overcome this issue using SmartPacket technology for Voice over IP. We have deployed our solutions over mobile satellite links such as Inmarsat and Thuraya and over numerous VSAT services to great effect.

Our recent "wins" in the sector are quite significant as our technology is adopted by two of the satellite industries highest caliber operators, Singapore Telecommunications and the Filipino operator Smart Communications. We have benchmarked our Voice over IP using industry standard measurements and are typically ten times more efficient than anything available today.

We have further enhanced our offering in satellite with a Windows PC application that optimizes Internet browsing without the need for on-vessel equipment and without the need for any special satellite-hub hardware. Our satellite IP platform on the Google Android and Apples iOS phone as well as the PC is delivered as a complete pay-as-you-go crew welfare solution where Internet access is managed by top-up vouchers that can

be redeemed even at sea. Vouchers can be consumed for talking on the phone, sending an SMS, writing an email or surfing the web.

SatMagazine

With the various limitations of VoIP, that range from latency to packet los s, how does One Horizon tackle such issues?

Brian Collins

We address these issues by analyzing the problem and writing the software solution from scratch. No third party open source code, all our software is developed by us for wireless Internet. Voice over IP suffers from latency, jitter and packet loss and must also maintain voice quality by using good human voice compression techniques. SmartPackets do just this by running adaptive, variable length packets containing voice, advanced jitter management and voice activity detection solutions that get the best out of the link we have.

SatMagazine

Are such issues exacerbated when data and other content are downlinked to providers via satellite?

Brian Collins

Latency is particularly exacerbated over satellite. Jitter can be quit e a problem too especially is poor weather conditions. Designing our adaptive software playback really does help here. We have millions of minutes operating using our software over satellite and regularly see calls of over one hour at a time, over mobile satellite and using IP. That's robust VoIP, no doubt.

SatMagazine

How are these issues overcome?

Brian Collins

Through the use of our SmartPacket technology and by not having to rely upon exiting VoIP standards but tackling each problem from the bottom up. The "bottom" in the case for One Horizon is the operating system and not an pre-existing standard that must be adhered to. We have much fewer constraints that our competitors in where we can go with our inventiveness.

SatMagazine

What are the benefits of One Horizon?

Brian Collins

A truly efficient, turnkey mobile VoIP solution that is deployed on the worlds ever-increasing smartphone base. For satellite, just grab a Wi-Fi signal, top-up your mobile App and away you go. No bill shock for the vessel owner as all Internet access is secured and pre-paid, no hardware sleeves for a niche physical handsets, no specialized on-board equipment and no special equipment at the satellite hub. Download, top-up and go; it couldn't be easier.

SatMagazine

How can satellite operators and providers play an even more important role in Satellite Voice over Internet Protocol (SVoIP)?

Brian Collins

All satellite operators are looking for the best way to use their spectrum. Monetizing spectrum will soon no longer be just a matter of supplying a data "pipe." Operators should be looking to supply branded Value Added Services to their connections. Installation of telecommunications equipment for access to the regular telephone network (PSTN) at or near the satellite operators hub has a massive effect not the quality of the VoIP solution. You can now really deliver high quality VoIP over satellite.

SatMagazine

What do you see as among the most concerning challenges and possible solutions for the satellite and telecom industries during 2015?

Brian Collins

Avoiding a race to the bottom on spectrum pricing must be a concern. Value Added Services allow the satellite operator and its resellers to engage with the customer on land and at sea to offer innovation and billing-predictability. Solving this means offering reliable, affordable solutions to villagers, oil & gas workers, mariners and, now, their families. Smartphones are becoming affordable. How the satellite sector embraces this opportunity is something that One Horizon will strive to be part of.

SatMagazine

When you review your career to date, what brings a true sense of satisfaction to you?

Brian Collins

The delivery of carrier grade software to mobile and satellite operators and knowing that what we have delivered is really making a change in the way people can communicate with their friends and family. Being a part of t he smartphone-lifestyle really means something today and we are delivering our solutions to more and more people and leveraging the finite resource that is the usable radio spectrum.

Codec	"Talking" bandwidth	"Listening" bandwidth	IP headers	Total call data	Minutes per MB
Horizon Q1	1.9kbps	0kbps	2.46kbps	4.36kbps	32.03
Horizon Q2	3.5kbps	0kbps	2.46kbps	5.96kbps	23.44
Horizon Q3	5.5kbps	0kbps	2.46kbps	7.96kbps	17.56
G.729	8kbps	8kbps	32kbps	48kbps	2.91

Benchmark Testing: Horizon vs G.729

G.729 is a type of audio compression that is typically used in VoIP. Our testing has shown that Horizon is at least four times more efficient, depending on which voice quality is selected. Or, to put it another way, you can talk for at least four times longer. Our SmartPacket™ technology is patent-pending

To learn more about One Horizon, please visit **http://www. onehorizongroup.com/**

It's A Small World: A Talia Perspective

The world may be getting ever smaller, but it's unlikely that the globe will ever be small enough *not* to need more innovative communication methods.

As we search for more sources of energy to support the growing population and to replenish depleting stocks, there are more remote workers than ever before, and more remote outstations, sometimes controlled from miles away with only a skeleton staff to maintain them. Where you have staff, you must have communication, and that essential drives the need for VSAT, Internet access and other methods of connectivity to be smaller, better and more secure than ever.

Take for example the oil & gas (O&G) industries. It's no secret that we are stretching further into remote areas, by air, sea and road to facilitate the retrieval and transfer of these minerals and also well known is how intense the competition is in these fields. From the many oilfields of the Middle East to the gas pipelines in Latin America, there is a enormous demand for the secure transmission of data, particularly with the huge array of devices from smartphones, tablets and laptops in use by companies, many of which are selected by the individuals rather than corporations. This requirement for security is something that many of the bigger companies who make their money in O&G are in greatest need of obtaining.

The requirement for surveillance is also a priority in order to ensure no breach of the oil or gas pipes and to make certain there is no risk to company employees stationed at these outposts. Many of these remote locations require constant surveillance as the political climate can be uncertain—O&G companies are considered ripe targets for militant aggression.

The story is similar when it comes to the construction industry. As the population grows, new places to build must be located. With this need comes the requirement for communication, even at the most remote of outposts and building sites. If a man-made island in Dubai is to be engineered, or a transport network into Africa is to built, after that perfect location for the build is located, construction starts. Communication from the outpost to the mainland must be two-way—data will need to be

Each industry has their own specific problems and, therefore, solutions come in many different forms.

Ideal for those traveling and working in remote locations, there are VSATs (very small aperture terminals) that are light enough to be mounted onto vessels for transmission of data such as SCADA, broadband data, RFID and that also support video communication.

The innovation of mobile communications units, such as Talia's MCU, is a big benefit for numerous industries such as O&G, construction and mining companies. This solution offers a self-contained, rugged, outdoor IT system that can be easily transported, installed and placed into operation quickly. Also ensured is the safe and secure transmission of data from far-flung locations back to base.

Mobile communication units are highly versatile and offer a variety of capabilities, depending upon user needs. Such products are designed to withstand harsh terrains and provide a fully workable IT data center and communication hub at a remote area.

To solve security woes in regard to surveillance and safety, video surveillance deserves solid consideration. If repair is required, or site intrusions are observed via the surveillance cameras, then engineers or security services can be dispatched quickly and this can make all the difference for a

uploaded and updated as the project moves forward to completion. Take a reliable, secure, communications provider out of the equation, and the project becomes an impossibility.

This touches only on the needs of the company. The staff that are posted to these remote places must also be considered—without the provisioning of communications, the ability to attract and keep the best quality staff becomes an exercise in futility. Send a person to the ends of the Earth and if communication with friends and family is unavailable, staff turnover will be fairly rapid—and there could well be disenchanted staff resultant of such communication oversights. At the worst end and some very disenchanted staff at the other. Allow easy communication with loved ones and there will be happier workers who are proven to be far more productive.

company, particularly in an emergency situation.

The need for communication constantly drives innovative ideas for secure communication. Soon, all of Earth's regions will be able to communicate to any locales around the globe—it is a small world, after all.

Additional information regarding Talia is available at their infosite:
http://www.talia.net/

The Talia Teleport.

Executive Spotlight: Rick Lund, Founder + Chairman, SRT Group

Rick Lund has more than 35 years of experience in communications technical operations and continues to serve as a leading subject matter expert on the utilization of satellite and Wi-Fi technology for critical missions in business and government.

His career began with local and state law enforcement agencies in Florida, both in management and in operational support of major criminal investigations. Since then, he has served as a consultant and provider of cutting-edge hardware and services to numerous branches of the US Government, foreign governments, and the telecommunications industry, with experience in more than 30 countries. He launched SR Technologies in 1999.

He has instructed at the Florida Organized Crime Institute; the Federal Law Enforcement Training Center; the National Technical Investigators Association National Conference; the Southeast Technical Investigators Association; the Regional Counterdrug Training Academy; the Illinois State Police Academy; and various US Government and military facilities around the world. For his work, he has been recognized by the US Government, elements of the U.S. Special Operations community, and numerous law enforcement agencies in the U.S. and abroad.

He is a long standing member of the Armed Forces Communications and Electronics Association (AFCEA); National Defense Industrial Association (NDIA); International Law Enforcement Educators and Trainers Association (ILEETA); the International Defensive Pistol Association (IDPA); and the US Practical Shooting Association (USPSA). He also is an NRA-Certified Firearms Instructor. Rick is a strong supporter of charities that assist fallen and wounded warriors and their families, as well as other groups supporting the U.S. military.

SatMagazine
What is the SRT Group?

Rick Lund
The SRT Group of companies was established to deliver mission-critical satellite, Wi-Fi and aviation technologies and services to major business, government and non-governmental customers in the United States and worldwide.

SRT Wireless is our commercial and law-enforcement division; SR Technologies provides products and services for government missions; and SRT Aviation maintains aircraft fitted with specialized equipment to support a variety of assignments. We are located in Davie, Florida, near Fort Lauderdale, and we have always been a 100 percent U.S., self-funded operation.

We like to say that we're "punching well above our weight class" because we do so much amazing work with fewer than 100 people. That is, we're having a major impact on the evolution of SATCOMs worldwide, but with only a fraction of the engineering staff employed by larger competitors. Many members of our team have selected SRT after first working for one of the larger technology companies—they enjoy the "work hard, play hard" atmosphere of our company.

SatMagazine

Please tell us about your products and services.

Rick Lund

I'm not at liberty to tell you about our U.S. Government work, but I can discuss our commercial work, which is really exciting. Our mission at SRT Wireless is to design and manufacture cutting-edge satellite and Wi-Fi communications technologies, with the best features, benefits and support at a competitive price. We offer two flagship products: The VIPturbo Module and the IP Commander.

The VIPturbo Module is a satellite modem, much like the wireless modem that connects your laptop or tablet to the Internet via a terrestrial network, except that our device connects you via a satellite network and enables a wider variety of voice and data services.

What makes the VIPturbo special is that it's the first compact, single-circuit-board device capable of handling all of the services on a satellite network in a customizable package. It's a ruggedized software-defined radio (SDR) and can deliver voice and high-speed data using any of the leading technical protocols. Development of the VIPturbo required approximately two years and 42,000 labor hours, so this is the end product of a most serious team effort.

With the VIPturbo, we've developed a strong relationship with Thuraya, based in the U.A.E. Thuraya's network reaches nearly two-thirds of the globe via satellite and more than 160 nations via GSM roaming. They focus on the convergence of SATCOMs and terrestrial comms, just as we do. To date, they've ordered 5,000 units of VIPturbo, which is going to help them serve their customers better.

As VIPturbo is based on the open, Linux platform, developers are able to address emerging market needs in a matter of weeks or months, not years. Because the module is so multi-functional and easy to customize, the product development cycle is more of a packaging exercise than an engineering exercise.

Our other major product is the IP Commander; this is the first ruggedized satellite broadband terminal designed using MIL-SPEC components and hardened software. The IP Commander provides mission-critical voice and data connectivity, in mobile or stationary applications, in the most extreme and remote environments. This technology is well-suited for military and governmental operations, as well as various industrial applications, including maritime, energy and mining.

SatMagazine

How does your technology differ from that of SRT's rivals?

Rick Lund

We like to say we don't compete directly with others; rather, we find unmet needs and go there. Our business is disrupting the status quo.

As a smaller, nimbler vendor than our competition, we can deliver products to market far faster than others. In that way, we are helping lead the evolution of the global SATCOMs away from some traditional incumbents. We have also won several competitive bids against some of the largest aerospace vendors in the world.

Another key distinction is that our products are 100 percent made in the U.S.A, which is quite unusual in our sector or any technology sector. Each and every product was envisioned and created by our engineering team in Davie, Florida. In addition, we own 100 percent of our intellectual property.

SRT's technology differs from that of our competitors in several meaningful ways. VIPturbo is much smaller than the competition—about the size of a paperback book, compared to the dictionary-size of other products. Also, most other products cover just voice or data; VIPturbo can provide all of the services on a satellite network. And it is also less expensive than other competitive products.

SatMagazine
Why did you start the company?

Rick Lund
In 1985, I transitioned from a career in law enforcement communications to work as a technical contract manager based in Riyadh, Saudi Arabia. I traveled throughout the Gulf region and worked directly for two government ministers. After 12 months, I began working as a consultant and eventually launched a successful consulting business. My business centered on technical operations with an emphasis on emerging technologies and the global expansion of the Internet. Over a 15 year period of time, I traveled to approximately 35 different countries handling consulting contracts.

Those experiences gave me an amazing window on emerging trends that many clients would be seeking to exploit. That's when I started SRT, around 1999, to develop hardware, software and services that focused on the convergence of SATCOMs, cellular, and mission-critical services. As the company evolved, we took on mostly U.S. government contracts, and those projects accelerated after 9/11. We ended up working with all kinds of exotic electronics in a variety of settings. That expertise led to products and services that could meet the needs of commercial and law enforcement customers, and SRT Wireless was established in 2010.

SatMagazine
Is there anything else our readers should know about the SRT Group?

Rick Lund
I just want to emphasize how proud I am of our team. We are much more than co-workers; we're more like an extended family that's been through a lot together. We took some tough hits a few years ago when we lost a major government contract, but we survived and rebuilt our operation to take advantage of new opportunities, and those moves are bearing fruit today.

Readers may learn more at the following infosites...
http://www.srtgrp.com/
http://srtwireless.net/
http://srtwireless.net/products/
http://srtwireless.net/developer-support/