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In Memory Of Bob Sorbello

Robert (Bob) M. Sorbello, Ph.D., a pioneer and leader of the satellite industry, passed away unexpectedly on July 15, 2009. He was a loving husband and father, an extremely talented engineer, a well-respected colleague, a trusted friend and admired mentor. He was 61 years old and lived in Potomac, Maryland.

Dr. Sorbello leaves behind an extraordinary body of work, including significant contributions to the development of ground-breaking satellite programs over the past four decades, including work that spanned the satellite programs of **Hughes, Comsat Labs, Loral Cyberstar** and **Orion, AirTV** to **TerreStar** and, most recently, at **SkyTerra**.

Few attained his level of intellectual originality, professional importance, and peer-group recognition. Dr. Sorbello was both a great theorist, with many inventions and patents to his name, and also a great practitioner, having managed multi-million dollar satellite programs with not only enormous skill but also with understated personal grace. Dr. Sorbello's satellite programs will continue as his living legacy, but equally so will his legacy continue in the hearts and minds of his friends and colleagues.

Dr. Sorbello earned two advanced degrees from **Harvard**, including his *Doctorate in Applied Physics and Mathematics* and he had the privilege to study under the late and renowned Dr. *Ronald King*. He had a unique balance of intellectual competence and business acumen that would result in him being recognized as an industry leader and top performer in the satellite arena.



"He quickly impressed all who came to know him at COMSAT with his intelligence, willingness to tackle new challenges, and his intensity to get the job done," says *Dan DiFonzo*, a longtime friend and colleague who hired Dr. Sorbello at COMSAT. His colleagues observed that he was one of those rare engineers who understood both the big picture as well as the extremely detailed aspects of his work. His breadth and knowledge extended from the technical, to regulatory matters, to the business aspects of

the entire range of satellite development programs.

Dr. Sorbello spent 14 years at COMSAT where his influence and prestige throughout the industry flourished. He enjoyed numerous successes, including development of the world's first commercially viable flat plate antenna for direct broadcast satellite TV reception and management of numerous multi-year multi-million dollar contracts. He then moved to Orion Satellite, where his leadership and immense talents allowed him to play a critical role in the development of Orion's three satellites and management of their major teleports servicing the Americas, Europe and Asia. "Bob's contributions to the design and development of these satellites were integral to the success at Orion," noted *Denis Curtin*, Dr. Sorbello's supervisor at Orion.

Dr. Sorbello's exceptional leadership qualities as mentor, supervisor and technical expert enabled him to achieve a record of success envied throughout the satellite communications industry. Over the span of his impressive career, he was the recipient of numerous industry patents related to satellite communications and published author in several dozen international technical and conference journals.

In Memory Of Bob Sorbello

When **Mobile Satellite Ventures** (now **Sky-Terra Communications**) and its subsidiary, **TerreStar**, was seeking to build a team of satellite engineers, they were privileged to select Dr. Sorbello to lead the effort. "We were elated that we could attract someone of Bob's background. Bob came extraordinarily recommended and had the caliber and capabilities to build and lead and direct our satellite engineering team," said *Alexander Good*, chairman, CEO, and president of **SkyTerra**.

When Dr. Sorbello joined MSV and its then subsidiary, TerreStar, a concept of next generation satellites existed, but little had been done on how best to achieve such a result with a satellite based network. Upon his arrival, he took firm grip of the reins to do the detailed technical design work together with the manufacturers and systems partners to turn the vision into a reality. His background and capabilities were perfectly suited for the task.

He eagerly began work and led the contract award process on first the **TerreStar** satellites and secondly the SkyTerra satellites. At one point, he was simultaneously developing a detailed bid process for the SkyTerra satellites while program managing the early build stages for the TerreStar satellites.

Although Dr. Sorbello did not live to see the launch of the new SkyTerra satellites, he did see the successful launch of the TerreStar satellite. He took a very special joy in watching the success of the TerreStar satellite program as the team recently launched the largest mobile communications satellite ever manufactured. He was so pleased not only with the successful launch but when that satellite successfully deployed its enormous antenna. He had the opportunity to witness the culmination of his early work on this satellite and, would have been gratified, but certainly not surprised, to know that TerreStar has now completed a call from this satellite to a cell phone sized device. The early vision has become a reality.

Dr. Sorbello was passionate about his work, becoming a satellite industry visionary. However, he loved his family even more and that was his first priority. He worked to achieve the right balance between personal and professional pursuits after marrying his beautiful wife *Eleanor* and raising and spending quality time with his two wonderful children, *Natalie* and *Robert*. While

generally reserved about matters of family, there is no question of his devotion to his family.

His family recollected that he never missed Robert's soccer games or Natalie's singing/dancing performances. "He was a stellar father, making sure to teach his children the importance of integrity and the value of hard work." Eleanor, Natalie, and Robert noted that he was sometimes regarded as a human encyclopedia, as he always had a robust knowledge in many different subject areas. "Bob had many passions including travel, which entailed taking many family vacations, with his favorite being the family trip to the Grand Canyon. He was always willing to provide help and direction to Robert and Natalie regardless of the particular subject, and was always supportive of their future goals."

Not unlike their father, both of his children are pursuing challenging careers of their own. Natalie is now in dental school and Robert holds a B.S. in Electrical Engineering from Villanova University and plans to enter graduate school at Penn State this fall. Dr. Sorbello was extremely proud of both of them for their academic achievements and for the people they have become.

At the time of his death, Dr. Sorbello was overseeing the development of **SkyTerra I**, one of the largest commercial satellites to ever be constructed. The satellite is scheduled to launch in the Fall of 2010. When it does, the mission will be dedicated to Dr. Sorbello and his name will be emblazoned on the rocket carrying Skyterra I into orbit. "It is only fitting that we do this, given Bob's leadership, commitment and dedication to ensure that the concept of this satellite system and of integrated networks became a reality," said Good.

While this remembrance is but a small tribute to a man who made such an impact on his family, his colleagues, the satellite industry and to his profession, as in all that Dr. Sorbello did, it is an acknowledgement that has been deservedly earned. He was a wonderful individual who will be deeply and dearly missed by his friends and family.

Of Shows & Satellites

The companies involved in the European satellite and related markets, as well as those companies providing services and product into the European segment, are amazingly productive and innovative. European companies are making significant strides in increasing their market share throughout the world, with new contracts and new products supplying various communication needs. Need proof? Digest the European-related activities in the BEAM jump, starting at page 75. Right now, let's impart information dealing with a variety of issues that are important to us all... industry analysis and trade exhibition info, for starters. From SATCON to GSTC-SATTECH 2010, Euroconsult to NSR as well as the U.S. Geological Survey, glean on!

SATCON — The Major SatShow In New York

Another gathering of the industry that we consider to be extremely important is SATCON, a trade show that explores applications for satellite and content delivery over satellite, fiber and hybrid networks. Additionally, the conference addresses video, voice, data, broadband and mobile communications for categories, such as media and entertainment, telcos and ISPs, military and government, and enterprise firms. Given the increasing interest in satellite broadcasting, SATCON is definitely a "must attend" for professionals involved in any of the aforementioned market segments.

Marking its eighth annual show, **SATCON Conference & Expo** again opens its doors to the satellite industry's finest from **October 14-15, 2009** at the **Javits Convention Center** in New York. What is truly unique about SATCON is that this is actually three shows in one — SATCON is joined by the **HD World Conference & Exposition** and the **IP Media Expo** to form **Content & Communication World (CCW)**. Those in attendance will have access to exhibits and seminars for all three shows with a single conference pass.

Why is SATCON important? "In this rapidly changing market, SATCON's conference offerings remain a strong resource for industry professionals," explained *Michael Driscoll*, Vice President and Event Director for the event. "After eight years, attendees know they will take away the latest solutions, strategies and tactics needed to succeed in their business efforts." With the current economy placing added focus on how corporate dollars are spent, SATCON is offering qualified end-users the opportunity to obtain complimentary passes to all three shows where they can network with other industry professionals, listen to the keynotes and attend the sponsored sessions. "Organizations forced to cut expenses due to economic concerns now can access the resources our shows bring to the table without having to worry about the financial impact," *Driscoll* said.

Under the CCW banner, attendees will take part in the most in-depth presentations and more than 35 end-user sessions related to satellite communications and content delivery. Topics will include;

- **The fundamentals of satellite communications**
- **Innovations in distance learning**
- **New challenges in disaster response**
- **Improving the integration of satellite communications with the Global Information Grid**
- **Future planning solutions for satellite communications**


A returning favorite at SATCON will be the **Satellite CEO Panel**, which features industry leaders who will discuss the opportunities and challenges they face in an economic downturn during the unscripted, round-table discussion. Industry leaders participating in the discussion include *Robert Bednarek*, President and CEO of **SES Americom / SES**

New Skies, Daniel S. Goldberg, President and CEO of **Telesat**, Pradman P. Kaul, President and CEO of **Hughes**, and Dean Olmstead, President of **EchoStar Satellite Services**.

Additionally, conference attendees will also have access to an exhibit floor that features hundreds of leading solution providers, allowing business and technology executives to learn new strategies and see new technologies in action. “Under CCW, the SATCON, HD World and IP Media conference tracks will continue to promote the evolution of these industries,” said Driscoll. “Our focus is to uphold our industry standard to provide attendees with knowledge and enable them to become leaders in their respective fields.”

By the way, SATCON is the anchor event for “Satellite Week” — a week in New York City that will feature a series of events that bring the satellite industry and its customers in media, enterprise, and government together. Among the featured events is the **2009 Future Leaders Dinner** on **October 13** at the **Princeton Club**, which honors young men and women who are making a difference to the satellite industry, as well as executives who have distinguished themselves as mentors.

A portion of the proceeds from the Future Leaders Dinner will go to **SSPI's Educational Fund**, which works to attract qualified young people from around the world into the industry.

Also taking place during Satellite Week is a special panel discussion called the **2009 SkyREPORT Multiplatform Matrix** presented by **MediaBiz**. The two-hour seminar will focus on finance within the multiplatform marketplace with emphasis on the state of market data presentations, industry panelists and a keynote interview showcasing the multiplatform matrix from satellite operations to end use media companies. 

GSTC-SATTECH 2010

Trade shows, exhibitions, conferences and the like play extremely important roles in the growth and maintenance of our industry. From “meet and greets” to contract brokerings, new product demos to personnel changes, a satellite conference is a terrific way to track the successes of our industries.

Futron Corporation, a leading consultancy in the Space and Telecom industry, is a long time contributor to **SatMagazine** and **MilsatMagazine**, offering our readers highly valued insight into various market segments. Futron has worked for a diverse group of clients that spans the public and private, as well as non-profit, spheres, presenting thoughtful insights into risk management, delivering accurate market analysis, and delivering strategic communications. As Futron is constantly seeking new venues to assist companies across the globe in order to promote a healthy business environment, as well as building venues where executives can meet and trade insights, an upcoming satellite and space mega event in Singapore is particularly noteworthy.

GSTC-SATTECH 2010 is the venue and Futron is proud to play a role in this event’s organization. Now in its third year, GSTC-SATTECH is a Satellite and Space conference that’s conducted in the Republic of Singapore, organized with the full endorsement of Singapore’s *Economic Development Board (EDB)*, all with the aim of showcasing important Satellite and

Space companies at the Singapore venue. **SATTECH 2009** occurred in February and was a great success. The new and improved GSTC-SATTECH 2010 will be in session from **January 28th through January 30th, 2010**, directly preceding the **2010 Singapore Air Show**.

Futron has already secured a number of prominent participants, including **Arianespace**, **ST Satcom and Sensors**, and **Thales Alenia Space**, among others. Futron is seeking the participation of other leading Space & Telecom companies and is especially interested in soliciting American sponsorships and exhibitors for the show. Futron has prepared a list of the various attendance and display options that are available to companies desirous of GSTC-SATTECH 2010 participation. Please contact Ms. Catherine de Peuter at cdepeuter@futron.com or Mr. Mathew Abraham at Mathewa@defencedirectory.com with your inquiries.

LANDSAT

We would like to offer some interesting information from the **U.S. Geological Survey**, which is offering an invaluable resource to scientists who are studying global issues. The entire archive of **Landsat** satellite data is now available at no cost, via the Internet.

What does this represent to the global science community? Professor *Jose Achache*, Director of the International Group on Earth Observations Secretariat, said, “The basic story of land can best be told through



Artist's concept of a Landsat satellite.
(NASA photo G-75-070259).


the impartial eyes of Earth-observing satellites. The wide availability of images from Landsat and other Earth-observation satellites will be crucial for both developing and developed countries, especially as the world's increasing population deals with the effects of climate change and the limitations of water, petroleum and other vital resources.”

Landsat 1 was launched in 1972 and **Landsats 5** and **7** continue to collect data of the land surfaces of the planet. The archive of some 2.4 million scenes are freely accessible under a recently developed distribution system that includes an open data policy. The nearly four decades of global observations represent a continuous record of moderate resolution imagery useful for studying natural and anthropomorphic changes. The data have been used to measure the effects of the Chernobyl incident, tsunamis, wildfires, urban growth, and drought.

Electronic access to the data has already been a tremendous success. Since fall of 2008, when the first scenes were made available, over 800,000 individual scenes have been downloaded. Scenes can be previewed and downloaded through two **U. S. Geological Survey** tools:

<http://GloVis.usgs.gov/>
and
<http://earthexplorer.usgs.gov/>

More detailed information on the Landsat system and the processing formats can be unveiled at the following website: <http://landsat.usgs.gov/>

The release of the Landsat archive is a precursor to the next generation of Landsat missions. **Landsat 8**, called the **Landsat Data Continuity Mission**, is scheduled to be launched in 2012. All data from that satellite, compatible with the archived Landsat data, will be collected, processed, and distributed through a high speed Internet system. 

EUROCONSULT Growth With FSS

There's a truly interesting study just published by **Euroconsult**, a leading international research and analyst firm that specializes in satellite applications, communications, and digital broadcasting. The Company announced that growth in the *fixed satellite market (FSS)* has remained strong, despite the adverse economic environment. According to Euroconsult's soon-to-be-released report ***Satellite Communications & Broadcasting Markets Survey, Forecasts to 2018*** the fixed satellite sector grew in terms of transponder demand (+9 percent) and overall revenues (+10.7 percent), representing a peak in the current decade. Digital entertainment and emerging digital markets remain the primary growth drivers, with corporate networks, military communications, and broadband access uptake also contributing to growth.

"Digital TV broadcasting remains the primary growth engine for the satellite sector. Last year, 18 new satellite pay-TV platforms were launched for a total of 109 platforms now in service. Over 24,000 TV channels are now broadcast by satellite, with more than 2,900 TV channels added last year," said *Pacôme Revillon*, CEO at Euroconsult. "Transponder demand also remained strong for communication services, particularly corporate networks, government communications and cellular backhaul. While a slowdown is expected as a consequence of the global economic downturn, growth should remain solid in 2009, potentially at approximately 7 percent and could still reach 5 percent in 2010, depending on the depth and length of the economic crisis. Compared to the telecom and pay-TV crisis of the early 2000s, core customers of satellite operators are relatively less impacted by the current crisis thus far."

Average fill rate for commercially available satellite capacity currently stands at nearly 74 percent and may even reach even higher in 2009, following a four-year upward trend. This high fill rate is an important factor as it limits competitive pressure between market players, prevents a drop in capacity prices, and protects revenue growth and profit margins. However, in the short term, some operators, particularly smaller operators, may find it difficult to obtain the financing required for replacement or expansion of their satellite fleets. Export-import banks in the U.S. and Europe

have been increasingly proactive to partially relieve some of these issues. While most known projects are still expected to obtain financing, delays in the procurement of certain satellite systems would not come as a surprise. This, in turn, could limit the addition of new capacity to the leasing market, which may cushion the impact of a possible slowdown in transponder demand.

According to the Euroconsult report, which segments the world into 12 regions, growth in transponder demand remained particularly strong in emerging satellite markets, which include **Latin America, Africa, Central Europe**, and large parts of **Asia**. These regional markets represented 53 percent of capacity usage worldwide in 2008 and 71 percent of the net increase in capacity leased last year. Most of these are young, fast-growing digital television markets and still have heavy needs for telecom traffic carriage using satellites as a backbone for fixed and mobile traffic in areas not covered by terrestrial networks.

While the economic downturn could impact the development of satellite services in emerging markets, growth is expected to remain stronger in these regions than in the most established markets, such as **North East Asia, North America, and Western Europe**. As the result, emerging regions' share of total capacity demand could reach around 58 percent by 2013, up from 53 percent last year. In emerging satellite markets, competition between satellite operators and terrestrial solutions is expected to increase in the coming years. The future competitive environment and trends in capacity prices will largely be defined by the number of operators in service, local regulations limiting market access, procurement decisions for new satellites and the emergence of local leading operators in most regions.

The consumer broadband-access-by-satellite market reached more than 1.2 million subscribers (+30 percent) last year. Growth was primarily in the U.S., followed by Asia, and was due to the availability of dedicated broadband service (BBS) satellites. In the U.S., two market players, **WildBlue** and **Hughes**, are locked in intense competition and driving market growth. In Asia, **IPSTAR**, traditionally based in Australia and Thailand, is pushing hard to penetrate new Asian countries. The shape of the broadband satellite market is expected to change significantly in the next three years. New BBS payload projects in Ka-band

have begun to flourish, and new systems with much larger capacity are expected to be operational in North America, Europe, the Middle East and North Africa (MENA) by 2011. Beyond consumer access, those systems are expecting increased use to serve the enterprise as well as potentially other market segments. Prospects are strong for the broadband satellite market with up to 10.5 million subscribers worldwide by 2018. However, a number of challenges will need to be addressed. Beyond technical aspects and regulation, the ability to build strong distribution networks in fragmented markets such as Europe will be key to guaranteeing the success of satellite solutions.

Euroconsult expects the global market value of capacity used for the traditional FSS market to reach around \$13.4 billion in 2018, or \$16.8 billion, including wholesale revenues from emerging BBS systems dedicated to satellite consumer broadband access. Industry consolidation, which will continue, will be offset by the emergence of new regional satellite systems backed by either private or public investors. According to Euroconsult, growth is expected in all regions of the world in the next decade with a much stronger showing in emerging markets as the most established markets tend towards maturity for the leasing of classical satellite capacity.

In markets such as North America and Europe, capacity usage on BBS satellites could represent a new growth driver for operators though significant uncertainties

persist regarding the potential size of this market. Average revenue growth for “regular” capacity leasing of approximately 5 percent is still expected in the next five years. This estimate is largely in line with the Company’s previous forecasts, as a slowdown in the economic cycle of the satellite sector was already anticipated due to the end of analog broadcasting in certain markets, the adoption of improved compression techniques for satellite transmission, and a potential new consolidation phase in the burgeoning digital TV market.

The **World Satellite Communications & Broadcasting Markets Survey, 10 Year Outlook**

is now in its 16th edition. This report is the definitive work and analyzes the current state, and future prospects of, the FSS industry, serving as an essential business planning tool for industry actors. The report includes analysis of all fixed satellite communications applications, an in-depth strategic review of satellite operators' business models and financial performance; and a 12-region breakdown of the world including transponder demand trends and 10-year forecasts by application and by region. The report also looks at transponder pricing trends, supply and demand match by region and frequency band, and operators' market share by region and by application.

NSR — Make Mine MSS

NSR has released a new market survey and forecast report entitled **Mobile Satellite Services, 5th Edition**. This report is a comprehensive analysis of MSS demand trends and covers eight regions of the world for equipment and services as well as transponder demand for satellite handhelds, maritime, land-mobile and aeronautical platforms, and MSS-ATC/CGC for the period 2007-2018.

In total, **NSR** forecasts the global MSS market will grow from 1.8 million in-service units in 2008 to more than 15.5 million units and \$18.6 billion in revenue by the end of 2018.

"With just fewer than 2 million in-service units in 2009, most of the MSS players are holding their own in the difficult economic environment," stated *Claude*

Rousseau, Senior Analyst for NSR and author of the report. "Some parts of the market have taken a hit, but at much less strength than what was expected. With the MSS industry entering a high-risk phase that will either see it get a facelift or go through an extreme makeover, NSR is more cautious than ever about the short- to mid-term prospects."

Indeed, the industry may look very different in the next 12- to 18 months as some consolidation, consumer-play products, public offerings and bankruptcies or shutdowns could change its composition. The near term will tell if huge looming debt repayments will be handled easily and place the MSS market on more solid foundations and expectations. MSS operators, as a whole, experienced growth last year of almost 8 percent, even while some players were not so healthy.

What looks inevitable is that the MSS market is on track to offer more bandwidth than ever, which will stretch most operators who need new targets to surmount the economic uncertainty. The economic jitters of the past 12 months are influencing some MSS operators who are setting their revenue targets to single-digits in the near-term as they take into account delayed or lower communications budgets in key verticals.

However, one market that is seemingly unfazed is data. With one-way or two-way data communications proving to be the killer application of the MSS market, data is helping operators garner more revenues as the fastest growth area of the MSS business today and providing value across all platforms.



**Near Earth
LLC
Satellites In
The Clouds
Kuni Takahashi**

is a vice president with Near Earth LLC. His focus is on areas of corporate finance and advisory services. Recent assignments for Kuni have involved clients and investors in digital media, telecom, and wireless technolo-

gies. He is an MBA graduate from Georgetown University with significant satellite and telecommunication industry experience. While at **Intelsat**, he consulted Earth station managers on business operations and corporate strategy. Prior to attending business school, he was a design engineer for **Space Systems / Loral**. He was a member of the development teams that manufactured communication satellites for **PanAmSat**, **Intelsat**, **CD Radio**, **Chinasat**, and **GOES**. After Loral, Kuni helped start **Yegwa Communications**, a systems integrator focused on networking technologies. Other work has included marketing strategies for **XM Satellite Radio**, and working on the **NASA Mars Pathfinder** mission.

Cloud computing has the potential to transform the enterprise IT landscape by offering a variety of benefits such as reduced capital costs, data center efficiencies, on-demand computing resources, faster and cheaper software development capabilities, and even environmental benefits. **IDC**, a market research firm, estimates that global IT cloud services spending will increase from \$16 billion in 2008 to \$42 billion in 2012, representing a compound annual growth rate (CAGR) of 27 percent.

Cloud computing is at the convergence of many technologies and concepts by combining the operational benefits of virtualization, scalability benefits of grid computing, and system design benefits of service oriented architecture (SOA). As such, many companies view cloud computing as a useful technology as well as a potential market opportunity. Attracted by its growth prospects, web-based companies (**Amazon**, **eBay**, **Salesforce.com**),

hardware vendors (**HP, IBM, Cisco**), telecom providers (**AT&T, Verizon**), co-location sites (**SAVVIS, Rack-space**), software firms (**EMC/VMware, Oracle/Sun, Microsoft**) and others are all jockeying for position in the cloud. Therefore, we must ask, "What role will satellite companies play?"

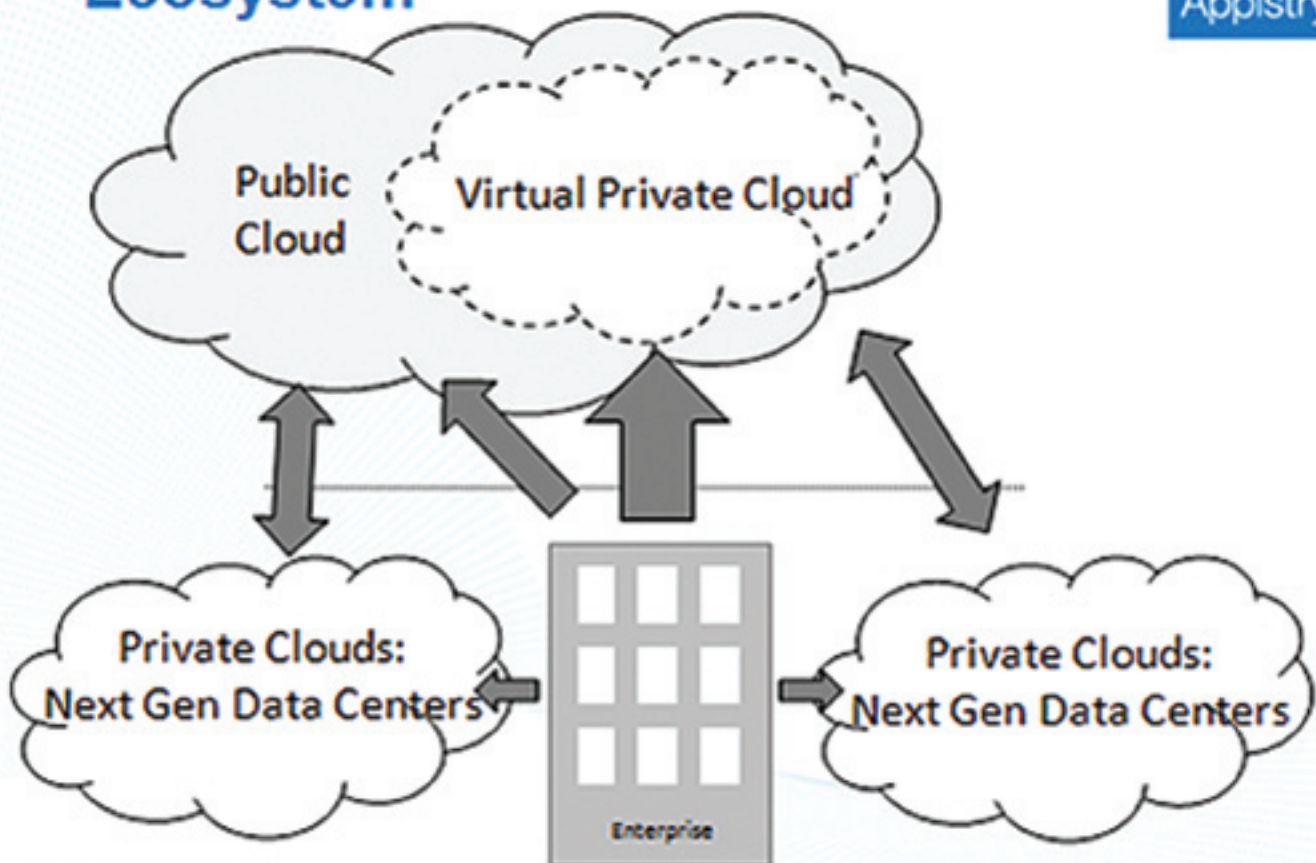
From a vendor's perspective, satellite based networks will be significantly impacted by cloud computing and its virtualized ecosystem. Satellite communications are sometimes the only wide area networking (WAN) option for multi-national corporations with branch offices in remote or rural areas. As these corporations embrace virtualization and cloud computing as part of their IT strategy, they need to make sure their branch offices continue to have access to the same IT resources. Vendors such as **Expand Networks** have WAN optimization solutions that integrates with virtualization products and *Space Communication Protocol Standards* (**SCPS**) to improve the speed and

performance of applications over satellite links to remote sites. Expand Networks recently worked with **IPSTAR** to optimize their broadband offering particularly for their banking and corporate customers, placing remote users in virtual proximity of critical business applications.

WAN optimization and application acceleration technologies are also being used by **TeleCommunication Systems (TCS)** for its *World-Wide Satellite Systems* (**WWSS**) contract with the U.S. Army. TCS partnered with **Citrix** to use their branch optimization solution to seamlessly deliver data and applications to troops on the ground. Therefore, we expect satellite vendors to continually adopt and develop new technologies to better integrate with cloud based applications.

From a user's perspective, **GeoEye** was one of the early adopters of cloud computing. GeoEye processes large amounts of raw image data through a series of

Emerging Cloud Computing Ecosystem




The Fabric of Business

www.appistry.com

proprietary, compute-intensive applications for image sharpening, geocorrection, and so on. According to GeoEye, traditional approaches to develop software applications at the scale required by the business was a growing challenge for their developers. Moreover, the company was concerned with the rising cost of building, operating, and maintaining expensive IT infrastructure. GeoEye partnered with **Appistry**, a cloud computing application platform, to help offload its infrastructure requirements to the cloud.

Now, GeoEye is able to quickly develop new imaging applications by leveraging the cloud infrastructure without being concerned about scalability and cost. The cloud solution allows GeoEye's developers to focus on algorithms rather than IT and reduces their hardware and software costs by an estimated 77 percent, versus the traditional approach.

The cloud computing industry is in the early stages of the technology adoption cycle, as many products are still "vaporware" that face major hurdles, particularly in the area of data security. However, **Near Earth** expects cloud computing in one form or another will eventually be part of most IT organizations due to its significant cost savings. The environmental benefits of cloud computing is also a key driver as many technology companies are going to great lengths to make eco-friendly data centers. As an extreme example, **Google** was recently awarded a patent for a floating data center that would be located 3 to 7 miles off shore that incorporates wave energy machines to create electricity from ocean waves to power its servers. Whether Google will actually build these floating data centers is debatable, but if Googlers can build a data center in the ocean, why can't the satellite industry build one in space?

This was *Jim Grady's* concept when he presented the idea of "Cloud Computing On Orbit", which uses on orbit satellites powered by solar energy as space based server farms (see <http://satcom.nict.go.jp/English/e-50/SJOpinion.Web2.E.pdf>). Whether these ideas are realistic or not is not really the point, the point being that IT infrastructure is rapidly evolving with cloud computing and the satellite industry uniquely positioned to be a part of some very innovative technology solutions in the future... 

(Go to Page 75 for more — **BEAM** —)

Executive Spotlight On...

Nigel Gibson, Vice President, International Sales, Telesat

Nigel Gibson is Vice President, International Sales for Telesat, where he is responsible for expanding utilization and revenue on the company's global Telstar fleet consisting of: **Telstar 11N** and **Telstar 12**, which mainly serve the America and EMEA regions — **Telstar 14** in the Americas — **Telstar 18** in Asia. A new satellite, **Telstar 14R**, announced in July, is now under construction.

Telesat is a long-time North American satellite operator that has expanded significantly upon the completion of its merger with **Loral Skynet** in 2007 and the subsequent addition of Skynet's Telstar fleet. Today, Telesat has two main satellite sales organizations: North America — responsible for Telesat's **Anik** and **Nimiq** satellites; and International — responsible for Telesat's fleet of **Telstar** satellites, which is led by Nigel Gibson.

Nigel came to **Telesat** from **SES New Skies** where he was Vice President of Sales for Europe, the Middle East, and the CIS. He has also held senior positions with **Globecast** in Europe and with **Sky Television** in the U.K. Nigel is very well versed on the drivers of demand for fixed satellite services (FSS) and **SatMagazine** was pleased to spend a few minutes with him leading up to **IBC2009** to discuss the growth outlook for FSS markets around the world.

SatMagazine (SM)

Congratulations, Nigel, on assuming your new role with Telesat. We expect you have been finding ways to keep busy since coming on board in June. What do you see as some of the hot satellite markets and key drivers of demand right now?



Telstar 11N satellite

Nigel Gibson

Thanks for giving me this opportunity. Lots of exciting things are happening for Telesat and our industry. Some of the fastest growing FSS markets are for services across Africa, these include broadband, VSAT, cellular backhaul and video services.

Mobile broadband for maritime and aero customers is another rapidly growing global market. This has historically been served by L-band operators who do not have sufficient bandwidth to support higher data rates that users have become accustomed to at work and at home. The FSS industry is making great inroads in mobile broadband and Telesat is the leader in the Atlantic Ocean Region coverage with both Telstar 14 and Telstar 11N.

SM

How is the global economic downturn impacting the take-up of mobile broadband?

Nigel Gibson

As trade around the world has slowed, the transport sector has been in a cost cutting mode. Despite this, Telesat is still seeing strong demand from maritime and aero service providers seeking Atlantic Ocean coverage. Passenger vessels in the Caribbean and Mediterranean — mostly cruise ships and luxury yachts — are continuing to add broadband

Executive Spotlight On...

terminals. Shipping companies are equipping their fleets to exploit the operational benefits of broadband and provide e-mail and web access to their crews. In aviation, mobile broadband is mostly for private and government aircraft flying the Atlantic, but growing interest from commercial airlines is very encouraging for the satcom industry. There is no question that an effective technical solution exists. The key challenge is finding the right business model and I believe one or more airlines will get there very soon.

SM

Turning back to Africa, how do you assess trends in that market, and do you see the new submarine cables as a threat to your business?

Nigel Gibson

We are seeing exciting growth in Africa across a wide range of applications. Increased mobile usage and the trend toward more data hungry applications is driving demand for cellular backhaul. Companies and governments are using VSAT solutions to stay connected with their remote sites across the region, especially in the mining and oil and gas sector. There is a steady growth in data rates and this is driving an increased need for satellite capacity. The broadcast sector in Africa is also performing well as new channels and platforms emerge to serve local markets. Satellite demand in Africa remains strong despite the continued proliferation

of submarine cables and the build-out of WiMAX networks. As fiber communications improvements reach Africa's coasts and some cities, interior countries and other many areas that will not be served by fiber will face increasing demand and the best solution for many of these for years to come will be satellite. In short, I think the future is bright.



Executive Spotlight On...

SM

What about Latin America and the various developments in that market?

Nigel Gibson

The good news is that most analysts believe the region is in far better shape to weather this economic downturn than it was a decade ago. Many Latin American economies today are better managed and more resilient and this is resulting in continued strong demand for satellite services from both the government sector with “digital inclusion projects” and from business — across video, VSAT and broadband. Telesat believes the long term outlook for the region is highly favorable, and that was behind our recent announcement to procure Telstar 14R.

SM

Much has been happening in the government sector lately, especially in the all important area of MILSATCOM. How do you see that changing the next few years?

Nigel Gibson

It goes without saying that the largest user of MILSATCOM is the United States and that country has been reevaluating its relationship with commercial operators following the cancellation of the **TSAT** (transformational satellite) program. For a while, it looked as though the U.S. and other countries were going to increasingly rely on their own proprietary SATCOM systems to meet future needs.

It now appears commercial operators such as Telesat will continue to play a key role in providing MILSATCOM services for years to come. Even with the withdrawal of U.S. troops from Iraq, we expect reconstruction projects in the region to continue to drive FSS demand well into the next decade. Furthermore, other countries, particularly the U.K. and France, are

turning to commercial satellite operators, notably for non mission critical traffic such as citizen welfare.

SM

This is all very interesting, Nigel. Our readers would welcome your insights on other regions and markets, but let's leave that for a future interview and conclude by asking you to describe how the FSS user community should view Telesat and its international business?

Nigel Gibson

It's really quite simple. Our focus is to invest in new capacity to serve growing markets. And then provide customers with a great technical solution and a high level of service.

We offer global coverage with premiere satellites such as Telstar 12 that offers solutions from the Americas and Europe to/from the Middle East. Telstar 14 serves Latin America and the Atlantic Ocean. There is also Telstar 18 in Asia and our new Telstar 11N that connects the continents of North America, Europe and Africa.

Our activity doesn't stop there. We also have a new satellite on order, Telstar 14R, which will nearly double the capacity of the existing Telstar 14. Additional growth opportunities are also being evaluated.

SM

Thanks Nigel. Anything else?

Nigel Gibson

I'm hopeful your readers will stop by Telesat's booth at IBC. We look forward to meeting with people in our industry and matching Telesat solutions with customer requirements.



New Global Satellite Services Leader

Telesat is one of the largest and fastest growing operators in the global satellite services industry. We were formed by the merger of two of the most respected and experienced satellite services companies: Telesat Canada and Loral Skynet.

Savvy Providers Move Quickly

by Michelle Wagner-Suziedelis
Director of **Vizada Americas** Product Management and Customer Care

As is true within any industry at this time, satellite service providers are being asked to find efficiencies wherever possible. While the pressure to save costs has obviously increased in the last many months, this drive for efficiency is not entirely new — and, in fact, has been slowly gaining momentum over several years, both from a cost standpoint and a competitive management perspective. At the same time, businesses of all types are being held to a greater level of accountability, fueling the demand for instant information access and the ability to tightly control and manage accounts. The confluence of these market forces has ushered in a new era of high expectations for service in the MSS industry and the development of business management tools for enhanced customer administration a welcome necessity. It's imperative that service providers hear the call of efficiency and get positioned to operate with and pass the benefits of efficiency to end customers.

Helping Service Providers Succeed

There are a plethora of new services, products, and end-to-end solutions available for service providers to “up” their game and weather the challenges in today's business environment. One example, **The Source**® by **Vizada**, serves as a central nervous system for service providers to manage their business instantly at an exceptional level of detail across the full range of network services Vizada offers. Using a single portal interface, The Source helps service providers increase activation speed, boost revenue power with value added services, ensure cost control for end customers, provide detailed and accurate tracking reports, and troubleshoot problems to ensure high service quality. Given the focus not only on cost-saving but on improved business management, capabilities such as those provided through The Source are needed more than ever. Vizada's network of more than 400 service providers has 1500 plus individual users who actively rely on The Source today.

Over the last two years, Vizada has doubled its investment in customer service resources, including the continued development of The Source. Vizada is committed to ensuring that The Source operates and continues to evolve as a sophisticated business management platform giving service providers the business function they need in the ever changing MSS marketplace. As part of this ongoing development, Vizada has been, and will continue to roll out a series of enhancements to The Source throughout this year.

Grady Jeffreys, technical specialist at **Mackay Communications**, commented recently that, “The Source is a great Service Provider interface and a pleasure to access. I get the reports I need with a single click. The Source has helped our company greatly. I look forward to each new enhancement.”

Shared Benefits for Service Providers/Customers

Tools such as The Source not only help service providers be more efficient but also help their customers closely manage risk and ascertain information essential to running their day-to-day business. This level of customer control and immediate access to their business data helps service providers pass value and be more responsive to their end customers. By setting account limits for example, The Source enables service providers to help customers manage financial risk with automatic reminders to renew their purchase orders/service contract or to top up their account. Limits and alerts provide customers with regular, automated updates regarding their traffic/usage profile/pattern to better manage and control costs.

Vizada also knows that versatile billing capabilities are important to service providers and their customers. The Source offers service providers use of either our free of charge, proprietary system called **IBIS (Innovative Billing Information System)** or a billing system of their choice. The IBIS end user billing system allows service providers to brand invoices for their end users with their own logo, define service rates, manage end user accounts and terminals, manage tariffs including currency and language of invoices, as well as create and print invoices. And, at the touch of a button, service providers can generate custom reports for informed business decision-making or end-user analysis. As Vizada deals with hundreds of small service providers without a deep internal team, the goal is to find new ways to make it easier for them to grow their business and meet customer needs.

“The Source is a prime example of how Vizada helps our service providers maximize revenue from their MSS business,” said *Lawrence Paul*, Vice President of Business Development and Portfolio Management. “Vizada has known for some time that the trend toward enhanced business management tools and service automation was coming and that was the impetus behind the development and growth of this business management tool.”

Speed To Service

Speed to service activation is a critical element of revenue generation for service providers. Simply put, the faster you activate new service subscriptions, the greater the impact to your bottom line. With some commercial customers and government users spending hundreds and even thousands of dollars a day in service usage, every minute it takes to activate

a satellite terminal is important. The Source helps service providers significantly increase their service activation rate for all Inmarsat, Iridium and Thuraya services. Vizada’s new batch activation capabilities can increase activation speed 20:1.

New satellite user accounts can be activated or suspended singly and in batches as needed. Previously, service activation required calls to multiple vendors and could take days to finalize. Now those same steps and more take as little as a few minutes. Service providers have become used to this speed of service in other aspects of their business and expect it even when dealing with complex global satellite networks involving multiple network operators.

Collaboration between Vizada and its partners is the key to these innovations. For instance, when emergency response customers needed to save precious time, Vizada took action and added the batch activation

BGAN Package 898709905442141026

		Status:	ISSUED
		Activated:	
Owner:	VIZADA, INC. - MICHELLE C. WAG	Last changed:	2009-04-23 20:14

Package details

Master MSISDN	(To be assigned)	Package Type	BGAN - Anytime Plan - min.10MB per month; 12 months commitment
Own reference	P.O. 67301	Market Sector	Enterprise
IMSI	901112112141026	Industry	Broadcast media
ICC id	898709905442141026	Country	Sweden

Services

Please select services to activate

☐ Telephony ☒ Voice Mail ☐ SMS ☐ IP Services ☒ ISDN Services

[Edit details >>](#)

[Back](#) [Continue](#) [Cancel](#)

BGAN Package 898709905442141026

		Status:	ISSUED
		Activated:	
Owner:	VIZADA, INC. - MICHELLE C. WAG	Last changed:	2009-04-23 20:14

Please select package configuration and service options.

Package configuration

Package type	(Please choose)
Market sector / Industry	(Please choose)
Home country	

[Back](#) [Continue](#) [Cancel](#)

BGAN - Anytime Plan - min.10MB per month; 12 months commitment

BGAN - Anytime Advance - 120MB upon activation for one year; 12 months commitment

BGAN - Standard Plan; 12 months commitment

BGAN - Essential Plan - Voice and background IP only; 12 months commitment

BGAN - Entry Allowance Plan; Monthly - 20MB; 3 months commitment

BGAN - Mid Allowance Plan; Monthly - 100MB + 30 mins voice; 6 months commitment

BGAN - Entry Allowance Plan; Annual - 240MB

BGAN - Mid Allowance Plan; Annual - 1200MB+360 mins voice

BGAN - Geographic Pricing - Russia; 12 months commitment

BGAN - Geographic Pricing - China; 12 months commitment

BGAN - Geographic Pricing - South America; 12 months commitment

BGAN - Geographic Pricing - Southern Africa; 12 months commitment

BGAN - Scratch & WEB

Inmarsat - BGAN Prepaid

feature. This solution for services such as **Iridium** and **Thuraya** now allows for as many as 20 accounts to be up and running in mere minutes. That was unheard of just a few years ago. Batch activations for **BGAN** and **FleetBroadband** terminals will be available later this year.

Growing Revenue With Customer Loyalty

While basic connectivity is the key component to any satcom solution, end user customers receive enhanced capabilities and service providers more revenue benefit when services are bundled at the point of activation. Vizada Solutions™ are Vizada's proprietary portfolio of value-added services. Through The Source, service providers are able to instantly enroll their customers in value-adds such as flexible IP networking or fixed-to-mobile solutions. New services and features of the Vizada Solutions suite will be available for online activation via The Source later this year.

Prepaid services also continue to gain ground especially in the Latin American and African markets, as well as more and more here in the United States. The Source allows partners to order, activate and reload cards, as well as access card history, all with the click of a mouse.

Soon The Source will also provide service providers immediate access to available promotions and special pricing offers during service activation. Integrating promotions and activa-

tions in a self service format enables service providers to be more efficient while providing better value to customers at the same time.

Lastly, the ability to troubleshoot systems helps service providers maintain revenue and service levels. **Satcom I** and **Phoenix Avionics Systems**, two Vizada service providers serving the aeronautical market for example, use The Source to track and troubleshoot communication problems onboard aircrafts. Through this online tool, they can constantly monitor

— Product Perspective —

List SIM cards with the following:

SIM serial (ICC id)	IMSI	Status	
<input type="text"/>	<input type="text"/>	ISSUED <input type="button" value="v"/>	<input type="button" value="Go"/>
Billable Firm			
<input type="text" value="(None)"/> <input type="button" value="v"/>			

Activate checked SIM's Batch Activate SIM's

	SIM serial (ICC id)	IMSI	Status	Type
<input type="checkbox"/>	8988169316000549019	901033160065410	ISSUED	Prepaid
<input checked="" type="checkbox"/>	8988169316000549027	901033160065411	ISSUED	Prepaid
<input checked="" type="checkbox"/>	8988169316000549035	901033160065412	ISSUED	Prepaid
<input type="checkbox"/>	8988169316000549043	901033160065413	ISSUED	Prepaid

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Standardized VSAT

Mobile Satellite Services

BGAN
FleetBroadband
SwiftBroadband
Traffic monitors
B, M, Mini M, GAN, Fleet, Swift
C Services
Iridium Services
MSISDNs
SIM cards
Traffic log
Transfers
Thuraya Services
Aero log

Vizada Solutions

Prepaid SIM and Calling Cards
Satellite Direct®
Usage and Payments

Iridium summary

SIM card summary

Status	Postpaid	Prepaid	Crew	Total
IDLE	0	0	0	0
ISSUED	0	0	1	1
ACTIVATING	0	0	0	0
ACTIVE	3	1	0	4
SUSPENDING	0	0	0	0
SUSPENDED	0	0	0	0
UNSUSPENDING	0	0	0	0
BARRING	0	0	0	0
BARRED	0	0	0	0
UNBARRING	0	0	0	0
DEACTIVATING	0	0	0	0
DEACTIVATED	1	0	0	1
CHANGING	0	0	0	0
VERIFYING	0	0	0	0
LOST	0	0	0	0
DAMAGED	0	0	0	0
KILLED	0	0	0	0
ERROR	0	0	0	0
Total	4	1	1	6

Traffic Monitor Bob's Hardware

Type:	Ordinary	Status:	ACTIVE
Owner:	VIZADA, INC. - MICHELLE C. WAGNER-SUZIEDELIS	Last changed:	2009-05-12 04:04

Enable limit

Limit	Fires on usage of <input type="text" value="100000"/> units and on expiry at <input type="text" value="2010-05-11"/> (yyyy-mm-dd)
Warning	Send warning at <input type="text" value="30000"/> units before reaching the limit and <input type="text" value="30"/> days before expiry
Renewal	<input type="text" value="No renewal"/> with no period <input type="text" value=""/> until <input type="text" value=""/> (yyyy-mm-dd)
Limit text	<input type="text" value="Your SIM card(s) have reached its Purchase Order limit or end date and have been automatically suspended. To renew your service contract, please contact customer.care@serviceprovider.com or +1-301-555-1000."/>
Warning text	<input type="text" value="Your SIM card has almost reached its Purchase Order limit or end date and will be automatically suspended soon. To renew your service contract, please contact"/>
E-mail addresses	<input type="text" value="end.user@company.com"/>
Remarks	<input type="text" value="Purchase order on file"/>

for network outages and see if any particular issue is linked to the satellite, the ground network or the hardware on board the aircraft itself. This allows them to closely monitor costs and provide a rapid and more effective response to their customers. All of these capabilities help the service provider increase end-user loyalty and retention.

Savvy and Smart = Success

Savvy service providers today have many new tools they can tap into that allow them to operate efficiently, increase revenue, all the while building customer loyalty. The key is to identify *which* tools will impact your business the most.

Vizada's The Source is one solution with the potential to add tremendous business value to service providers and, ultimately, to

end customers and, at no cost. By addressing the complete customer business cycle, from activation to up-selling, from ongoing service to account management, a self-service tool becomes a critical component to strengthening customer relationships and an integral part of a service provider's day-to-day business. Customers and service providers are pushing Vizada every day for greater and greater levels of information and additional features and functionality through tools like The Source.

In a business climate that demands we do much more with less, it's important to offer service providers ways to take care of their own needs while creating win/win scenarios for them and their customers.

FIFA World Cup Finds For Comtech

The Fédération Internationale de Football Association (FIFA) will host the 2010 World Cup in South Africa. The month long tournament of football matches will occur between June 11 and July 11, 2010 and will be played in 10 South African stadiums. This will be the first FIFA World Cup ever to be held in Africa — the event will draw upon an international audience and will be of great importance to the African continent.

Johannesburg will be the home of the **International Broadcast Centre (IBC)** for all television operations and the world's news agencies for the 2010 World Cup. The high-tech IBC facility possesses a satellite teleport and telecommunications infrastructure, which supports a transmission capacity of 40 Gigabytes per second. A dedicated network will link the 10 tournament venues and the world. The 2010 World Cup will be the first to be broadcast in high-definition television (HDTV) to billions of viewers around the world.

PROVIDING THE BROADCAST BACKBONE

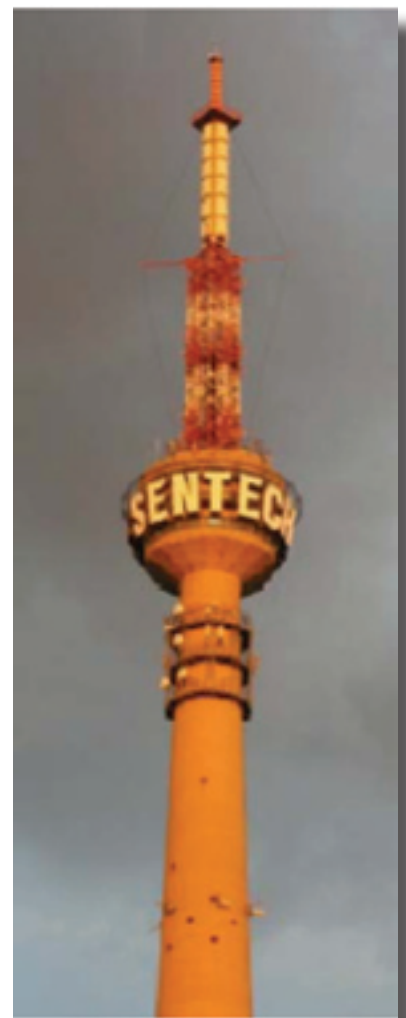
Based in South Africa, **Sentech** is a broadband network business that supplies communication solutions and services to wholesale and retail customers in South Africa as well as the rest of the continent. As South Africa's common carrier, Sentech is quite literally the backbone of the Southern African broadcasting complex. They own and operate a large number of terrestrial broadcasting transmission sites that serve most broadcasters in South Africa.

Sentech also owns and operates digital satellite transmission systems to provide linking for terrestrial transmitter networks and direct satellite broadcasting services. Satellite transmission for direct-to-user reception is provided for public broadcasting services and provides communications channels used by business and public enterprises for corporate communications, information distribution, datacasting, and distance education/training. In recent years, Sentech embarked on a project to upgrade South Africa's analog broadcasting infrastructure to the digital realm.

Sentech's digital broadcasting infrastructure will play a major role in the 2010 World Cup in South Africa. To facilitate the satellite-based communications between the 10 stadiums, where a total of 64 soccer matches will be held and the International Broadcast Center, Sentech selected the **DVB-S2** transmission standard and **Comtech EF Data's CDM-710 Broadcast Satellite Modems**.

The Comtech Solution

As a long-time supplier of modulator, demodulator and frequency conversion equipment to broadcasters, Comtech products are installed in more than 160+ countries, with their broadcast solutions encompassing contribution and distribution for various broadcast applications. The products are fully compliant with key *Digital Video Broadcasting* standards, such as **DVB-S2** and **DVB-S**, and interoperate with major satellite service providers and key encoding device vendors.





The CDM-710 Broadcast Satellite Modem is based on the latest transmission standard, DVB-S2, and is ideally suited for HDTV

transmission. The broad range of modulation and coding formats of DVB-S2 enable link performance optimization — delivering, on average, 30 percent greater throughput when compared to DVB-S services.

Users can tailor a link for the available bandwidth and power. Whether a link is for Direct to Home (DTH) or Digital Satellite News Gathering (DSNG), Contribution or Distribution, there is a format available to suit each application. Offered with either an ASI or Gigabit Ethernet interface, the CDM-710 supports legacy and nexgen video encoder / multiplexor

platforms. The modem is augmented with a wide selection of redundancy options ensuring that broadcast clients have the most reliable transmission system available.



The CDM-710 Broadcast Satellite Modems will be used to power the video uplink services between the 10 stadiums and the International Broadcast Center in Johannesburg. By using DVB-S2, the Modems will enable the bandwidth-efficient delivery of the HDTV coverage of this international tournament. Sentech selected Comtech's DVB-S2 Satellite Modems based on a proven track record of supporting leading providers of digital television entertainment services in other regions.

Executive Spotlight On...

David Justin, CEO, GlobeCast America

David Justin was the former

Chief Executive Officer of GlobeCast Asia and now serves as the Chief Executive Officer of GlobeCast America. In his previous position, Mr. Justin managed all operations in Asia, including a master control center and teleport in Singapore, and liaison offices in New Delhi, Tokyo, Seoul and Beijing.



SatMagazine (SM)

Mr. Justin, would you tell our readers about your background and what the impetus was that enticed you into joining GlobeCast in the first place?

David Justin

I started in aerospace and satellite engineering and operations and then moved towards both business development on one side and towards the content rather than the infrastructure on the other. Also, I've always worked in very international environments. When the opportunity came to join GlobeCast in 2002, I didn't hesitate. It has been a very interesting experience ever since, with an extremely rich variety of challenges throughout the different jobs I've had in engineering, marketing and development, and more recently as CEO of GlobeCast Asia and now CEO of GlobeCast America.

SM

Could you tell us about the teleports that operate within the scope of your office?

David Justin

GlobeCast has 12 teleports around the world. Two of those are in the United States — in Sunrise, Florida (near Fort Lauderdale) and Culver City, California. These teleports are fully connected with our other ten teleports in Europe, Asia, and Africa through a state-of-the-art, fully redundant, fiber network. This makes it pretty easy to bring our customers' content to the world. All in all, we uplink to 23 satellites on a permanent basis and occupy 82 transponders.

SM

Over the last five years you have moved from a mature market in France to a more dynamic growth market in Asia and now you are CEO of GlobeCast's American office. In your experience, what are the major differences between these three markets?

David Justin

The differences are principally in the business environment of each country, both on the content side and on the distribution side. France has a vibrant IPTV market, a very liberal regulatory environment, but not so much content with international potential. In the USA, it is the cable market which is dominant in distribution, and media groups are very powerful with an important international presence.

Asia is quite different with many countries still heavily regulated both on the content and on the distribution side, but with a fast growing population hungry for quality programming. Thanks to our broad international presence, the strength of GlobeCast is to be able to advise our clients and build them a solution to maximize the revenue they can derive from their content anywhere in the world.

Executive Spotlight On...

SM

GlobeCast works a lot with Multicultural content in the United States through its WorldTV DTH platform. Can you tell us what is new with WorldTV, what is happening in this market in the U.S. and what regions do you see deriving most growth?

David Justin

WorldTV found a lot of success as a DTH platform, but more importantly as a source for international content. The WorldTV team is now providing that content to multiple other platforms, such as **VerizonFios**, **AT&T U-Verse**, and a major hotel distribution network. Multicultural content is a perfect fit for the U.S., thanks to its extremely diverse population. In particular, there's a growing demand for international content from the Middle East and from Eastern Europe, as well as from Asia. Our World TV DTH service allows a very large variety of international content to be broadcast in the U.S. Furthermore, by offering IPTV and cable operators to add selected international channels to their line up, we allow them to improve customer loyalty and boost ARPU, and at the same time this multiplies the distribution possibilities for our premium TV channels.

SM

Latin America is an emerging market for broadcast. What developments are you seeing in the region and what are your plans for this region in the near future?

David Justin

We're extremely active in Latin America and have several major clients for whom we deliver content to and from Latin America and South America. We have satellite coverage of this region and are actively working on extending our international fiber network to Argentina and Brazil.



Executive Spotlight On...

SM

2010 is a big year for sporting events all around the world. What does GlobeCast have planned for rights and non-rightsholders?

David Justin

Of course we'll be delivering services from the **FIFA World Cup** in South Africa as well as from the **Winter Games** in Vancouver. We'll be setting up a broadcast base at both events from which we'll offer services to rightsholders and non-rightsholders. The details of what those services will entail will be coming soon. But of course we are looking to do lots of HD and to provide both the world feeds and uni-laterals of these events as successfully as we did last year for the Beijing games, for example.

SM

What developments is GlobeCast America looking forward to in 2010?

David Justin

I see the current worldwide recession more as an opportunity than a threat for GlobeCast. It offers us a new opportunity to show broadcasters the value of going international to find new revenue streams as well as outsourcing their technical functions to benefit from economies of scale. So, 2010 will be a strong growth year for GlobeCast America as we

fully benefit from the extension of our fiber network in South America, further develop the packaging of multicultural content for distributors nationwide and invest in content management capabilities in our Technical Operations Centers.

SM

How is GlobeCast addressing the ever increasing interest and drive for mobileTV? How do satellites play into this content delivery, and how important is this market to your company? Could the same be said for IPTV?

David Justin

We're part of the **France Telecom Orange Group**, so we've been their partner for Orange for Mobile TV and IPTV from the beginning. We built their IPTV and Mobile TV headend in Paris actually. Here in the U.S. we work less on IP headends and more as content aggregators in the Mobile TV and IPTV areas.

SM

Is there a significant growth factor in the Enterprise and Retail services segment of your firm? From in-store POS to multi-screen plasmas, how do you see this segment ramping up over the next year or so? And exactly what are GlobeCast's Business TV solutions?



Executive Spotlight On...

David Justin

This is an area in which we're very active in Europe. We provide a product called **GlobeCast Captive Audience**, which allows for remote-controlled in-store delivery, including playlist customization, ad insertion, and more. As content delivery solutions converge, we're expecting to see more growth in this area.

SM

Given the various content delivery channels for GlobeCast, how do you and your firm decide on the appropriate codecs for such delivery? And given the need for various hardware accoutrements at either the content uplink or downlink side, what methods does GlobeCast use in selecting preferred providers?

David Justin

We have a decade of experience and dozens of experts at offices around the globe that work towards choosing the right technology and the right partners. We try to future-proof as much as possible, but occasionally upgrades are driven by specific customer demands. I think we are quite responsive to that. We just made a major upgrade in the U.K. for HD contribution services, investing about 2 million Euros, following a deal with **UEFA** to deliver the **Champions League**, a major soccer event. So even when we don't have a particular technology in-house, we're quick to respond and to invest when a need arises.

SM

Another area of future growth is that of 3D... there are various technologies at work and in the process of being developed. How does GlobeCast see this market growing and will your firm be part of this technology expansion, whether to digital cinemas or to the home entertainment center?

David Justin

We've been working with Orange a lot on live 3D events actually. In the past six months, we've delivered soccer matches, an opera, and the **French Tennis Open** final, live in high-quality 3D to movie theatres in France and Spain. The reaction to these experiments was instant and very positive.

SM

Lastly, David, where do you see GlobeCast's main strengths and ROI success over the next year or two? How does that play into the Company's International plans?

David Justin

Our main strength has been our ability to expand both in geographic and technical terms, to function as a global company, and to keep in touch with customer and market demands. Our international strategy is to continue this growth and to remain a reliable partner that stays ahead of the technological curves and provides management and distribution of video content worldwide to any kind of device.

Advanced Satellite Coding + Modulation (NSR)

by Carlos Placido, **NSR**

Advanced coding and modulation technologies, often used in various combinations, offer a quantum-leap in efficiency that brings structural changes to the ground segment business of most satellite-delivered applications. Satellite sectors and applications that benefit from advanced modulation and/or video compression include DTH, video distribution and contribution, satellite broadband and IP trunking/backhaul, HITS, digital cinema distribution and SCPC.

DVB-S2 modulation and MPEG-4 AVC (H.264) video compression have been widely accepted as the prevalent standardized means to optimize satellite links in video broadcast and point-to-multipoint (P2MP) networks. Nevertheless, business and technical conditions are also inducing the use of non-standard advanced techniques such as frequency reuse and flexible LDPC coding in point-to-point and P2MP scenarios to match new trade-offs associated with bandwidth, power and latency in interactive applications.

Despite wide industry acceptance and validated bandwidth savings, questions remain as to what speed will these advanced technologies be deployed, where and how for the relevant scenarios. Depending on a number of industry and application-specific considerations, the case for deploying advanced systems against traditional systems can vary substantially from region-to-region and from application-to-application. Factors accelerating or deterring new system and migration deployments include HD growth, costs of advanced set-top boxes (STB), current/planned satellite footprint and frequency bands, installed base of legacy components, space segment cost, network scale and collective switching issues.

The drivers and contextual considerations for each of the sub-sectors where advanced coding and modulation apply mean regional-specific degrees of adoption speed and tipping points for hardware vendors, operators and service providers to take into consideration when planning deployments in both greenfield and replacement scenarios.

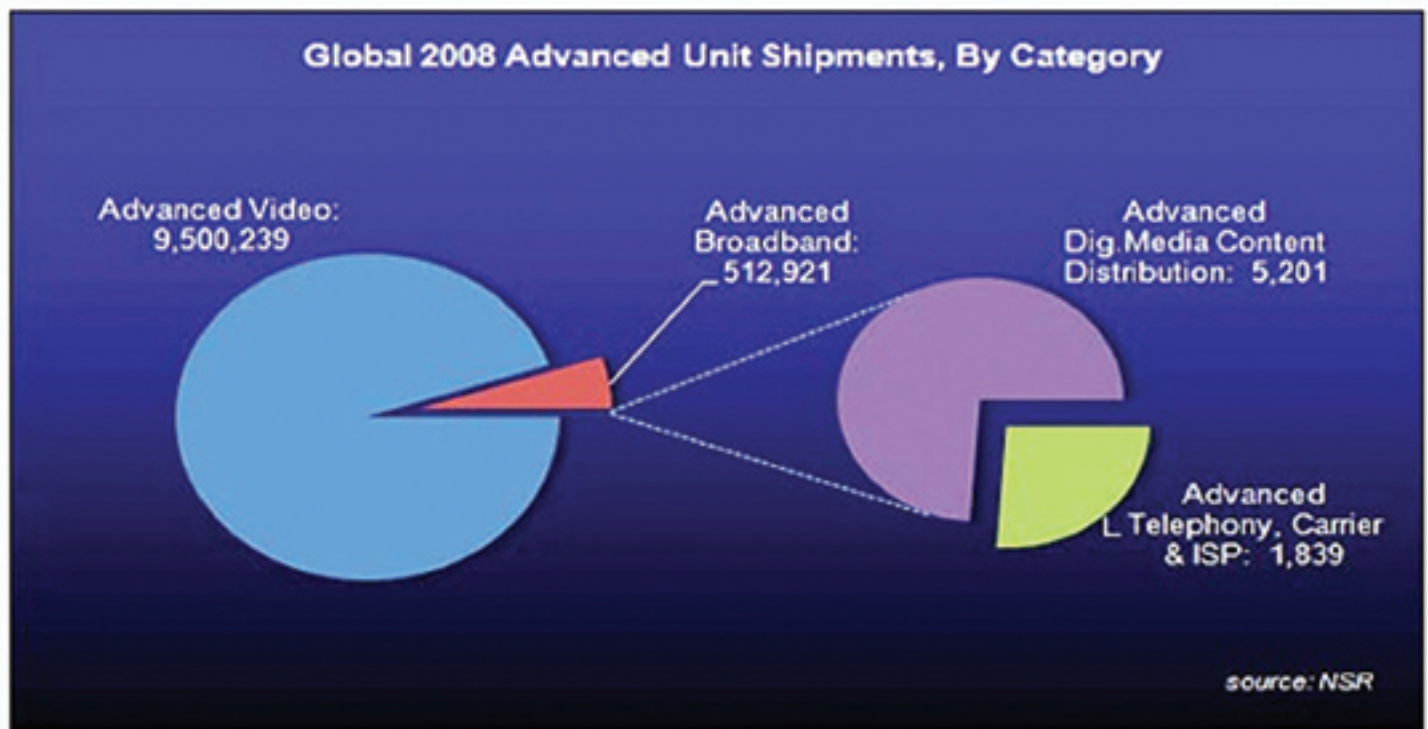
This second edition of NSR's comprehensive study on the advanced coding and modulation market has expanded in scope and depth, with more granularity in equipment forecasts for both end-side and teleport-side equipment, as well as the addition of categories not covered in the 1st edition. This report is the result of extensive research, development of application-specific "bottom-up" forecast models and interviews with industry-leading hardware suppliers and service providers in the sectors of DTH, video broadcast, satellite broadband, IP Trunking, SCPC and digital media distribution.

Advanced satellite channel modulation and coding and video compression technologies offer a quantum leap in efficiency that fuels structural changes in satellite-delivered entertainment and connectivity across a wide range of scenarios. Applications that benefit from advanced satellite coding and modulation and/or video compression range from satellite HDTV distribution and contribution, to professional applications, to star-type satellite broadband networks, to the emergence of new "HITS" platforms, content "push" for digital media distribution and application backhaul over satellite. Additionally non-DVB-S2 standard advanced coding and modulation technologies apply to the markets of consumer satellite broadband access, LDPC-coded SCPC and carrier signal canceling.

NSR projects shipments of more than 142 million advanced end units and almost 50,000 teleport advanced equipment units between 2009 and 2014. Equipment manufacturers and vendors

are expected to achieve revenues of over \$18 billion for the sale of these advanced units. The global market of advanced equipment shipments is expected to grow at a compounded annual growth rate (CAGR) of 7 percent between 2009 and 2014, reaching 32 million annual unit shipments worldwide in 2014 and generating \$3.6 billion in OEM annual revenues.

While the projected schedules result from a combination of distinct products for different applications analyzed separately in this study, the vast majority of the projected sale of end units will come from the growing use of MPEG-4 video decoding and DVB-S2 demodulation in DTH set-top boxes and DTH-DVRs. Furthermore, the sale of these end units will increas-



ingly weigh more in the revenue mix. While in 2009 NSR projects that the sale of advanced set-top boxes and DVRs will account for almost 58 percent of total equipment revenues, these devices will represent 78 percent of total advanced equipment revenues by 2014 as MPEG-4 and DVB-S2 continue being adopted in DTH HD offerings and operators push for DVR massification.

The main driver behind DTH momentum is a set-top box replacement cycle that started almost exclusively in North America. This situation was fostered by DirecTV and EchoStar through extensive HD offerings aimed at helping them differentiate against cable VOD and triple-play competition. 2008 could be considered a key growth year for DTH-HDTV in North America, and expansion in some Western European countries such as in the U.K. via **BSkyB** and **FreeSat**. Nevertheless, during 2008, many DTH operators started offering HD services in most parts of the world, a situation that, while still embryonic from both a channel count and subscriber base, is set to further enable an expanding replacement market for advanced STBs.

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2008 could also be considered a key year for the use of MPEG-4/DVB-S2 in high growth, low-ARPU DTH markets. The *Telecom Regulatory Authority of India (TRAI)* proposed new rules during 2008 for HITS and DTH services that, among other things, require new DTH players such as **Bharti (Airtel Digital)**, **Sun Direct** and **Big TV (Reliance)** to adopt MPEG-4 and DVB-S2 for their standard definition DTH services. These new Indian players using exclusively MPEG-4 / DVB-S2 systems had together more than 3.2 million subscribers in January 2009 after less than one year in operation and have been adding subscribers at a pace of more than one half million subscribers per month between the close of 2008 and the start of 2009. Due to the sheer potential scale of the Indian DTH market, this TRAI mandate is expected to positively affect the market for advanced STBs and translate into enough demand to bring the price of standard-def DVB-S2/MPEG-4 STBs down faster and lower the market risk for STB makers.

While the 2009 global economic slowdown is expected to negatively influence business growth, a number of key counteracting factors that took place are set to pave the way for a healthy market during the entire

period of analysis. Such factors facilitating the business of advanced equipment include:

- ***DTH uplink (teleport) infrastructure upgrades near completion for both HD offerings in North America and new, fast-growing MPEG-4-based DTH platforms in emerging markets such as India***
- ***A large untapped market of HD-ready households without HD services in Europe***
- ***Chipset convergence and lower end unit costs cannibalizing the business for traditional MPEG-2/ DVB-S market***
- ***High space segment costs encouraging the use bandwidth-saving technologies such as carrier-overlapping or LDPC***
- ***Advanced DVB-S2 satellite broadband expansion, among other factors***

Consequently, NSR believes that, provided global markets do not collapse into a crisis of unprecedented proportions resulting in a long and deep global recession, the business climate should improve towards 2010 (as many economists anticipate), and the market for advanced satellite coding and modulation equipment should hold up well during the period of analysis. In fact, 2008 inertia from capital expenditures in uplink equipment upgrades are expected to drive short-term sales for end unit shipments in both replacement markets (such as the U.S. HD-DTH) and growth markets (such as for Indian MPEG-4 DTH platforms).

Research carried out by NSR on the advanced satellite coding and modulation market, including a large number of interviews with leading industry players, reveals a good degree of resilience to the global economic crisis for some (not all) of the applications analyzed. This resilience does not apply homogeneously to all sectors for advanced coding and modulation technologies, but it does seem to show that the combination of high growth and replacement markets are positive, diversified global influencers for sustained business. 

About the author

Carlos Placido has more than 12 years of progressive experience in the areas of consulting, program management, research and engineering in telecommunications and entertainment. Mr. Placido has carried out independent business development,

technology assessment and management activities, including market research studies for NSR, assessment of regional business potential for vendors and project management at Telefonica.

Until 2004, he led a development team at Intelsat in Washington, D.C. where he was responsible

for identifying and validating emerging video and data technologies for their potential applicability to new and existing services. Mr. Placido's development efforts at Intelsat included advanced video networks, IP television, satellite multicasting and

broadband, having made significant contributions including spearheading satellite IPTV, improving Internet throughput enhancement and pioneering high-speed satellite LAN-to-LAN.



Prior to joining Intelsat in 1999, Carlos was a specialist engineer with Telintar, the international carrier of Argentina, where he engineered and managed the implementation of a number of infrastructure projects including satellite earth stations, transmission systems, digital voice compression and mobile occasional-use international services. Prior to joining Telintar, he spent two years as a post-sales network support engineer at Impsat Fiber Networks, a company acquired by Global Crossing in 2007.

A Greater Escape

Last year, Australian Satellite Communications (ASC) launched a high speed maritime service to accommodate the new commercial Sea Tel 2406 Marine Stabilized Antenna (60cm diameter reflector). ASC delivers leading edge SATCOM solutions for the maritime leisure industry and their client, The Great Escape Charter Company, is quite unlike any tour operator you have ever encountered. They are committed to providing experiences, which are genuinely extraordinary. Their hospitality is unique, personalized, and world-class — the accommodations are luxurious and customized for each passenger.



With the ever demanding corporate environment, business executives expect to recharge their batteries in luxury, whilst still keeping a finger on the pulse of their business and pure leisure seekers enjoy the ability to contact family and friends to share their experiences aboard The Great Escape.

The Brief

The goal was to deliver a cost effective, compact satellite communications solution providing high quality Internet access and voice communications to enhance the passenger experience on a prepaid basis. Additionally, the SATCOM solution had to cater to advanced bridge and crew voice and data applications on a post paid basis and also offer stability and reliability in a wide range of sea weather conditions.

With proven reliability, stability, and availability over the **GE23** satellite, **ASC** delivered a customised solution using **iDirect** broadband IP technology. This





provided robust voice communications and high-speed Internet access for multiple users over an onboard wireless access point and cordless VoIP base station. Connected via a 60cm **Sea Tel** stabilized antenna situated in an 80cm raydome, continuous communications were established even in the harshest of sea weather environments. **The Great Escape** cruised north of *Broome* to *Ashmore Reef* then further north almost all the way to Indonesia, with very good performance and happy clients who were able to access fast Internet connectivity.

The Result

By combining four discreet services (*Pre-Paid VoIP* and *Pre-Paid Internet* access for guests, as well as *Post-Paid VoIP* and *Post-Paid Internet* access for bridge and crew applications) over a single satellite link, ASC demonstrated its expertise in designing, implementing, and supporting a unique, customized satellite communication solution for a highly demanding customer.

Due to the success of this system and the highest level of customer satisfaction, *The Great Escape* has extended its brief to include a **TVRO Sea Tel** (*Television Receive Only*) system. This system will provide a wide range of high quality TV entertainment for guests, increasing to five the number of combined services over a single link. The **USAT 24** uses the same dome as Sea Tel's **Coastal 24 TV-at-Sea** antenna, providing the perfect entertainment system for the small yacht or charter.

This solution has opened the door to the small to medium luxury charters, dispelling the myth that satellite communications solutions are only for big vessels — these antennas use the minimum of onboard real estate. In January this year, the Great Escape the luxury *Kimberly Coast* cruising vessel, Captain *Chris Tucker* (fondly known as *Trippy*) steamed to *Geraldton* for the annual refit. On the journey from *Broome*, he passed through the *WA North West Shelf* area, in which cyclone *Dominic* was active.

Trippy reports, “I have just navigated the Great Escape around the peripheral of cyclone *Dominic*. Our new marine VSAT satellite voice and data system from Australian Satellite Communications, using the small commercial grade Sea Tel 2406 antenna, was used continually. We downloaded live weather information and maintained phone contact with our *Broome* head office during cyclonic type weather that including some torrential rain conditions. Critical decisions needed to be made quickly in these arduous conditions and reliable high speed broadband Internet assisted greatly throughout the entire journey.”

Kylie Bartle, Great Escape Charter Company’s General Manager, says, “We are now able to conduct our business from offshore and shore-to-ship reliably. At the same time, we can also provide our clients with affordable high-speed Internet and voice via our prepaid voice and Internet systems for safety, business, and keeping clients and crew in contact with families. From the remote *Kimberly Coast* region and nearly north to *Indonesia*, the Australian Satellite Communications MSAT service works extremely well and has made a major difference.”



The Chronicles Of SATCOM: Trade Shows

Following a decade of faithful service to a large satcom company where I served in a variety of technical roles, our senior management identified a character trait in me that, in their view, potted my destiny for a life in Sales. So with the grace of an alley cat being shoved into a washtub of water, I was plucked from the nurturing womb of Engineering and cast into a new trade, a trade that seemed to lack a prerequisite for any apparent skills what so ever. Was this punishment? Let's face it. Engineering carried with it an air of sophistication and mystery. Back in the day, satcom was an esoteric new field where rules were being written and boundaries defined. "Procurement" was a back-office entity – engineers ruled!

Following the transition, rack elevations and wire lists gave way to a whole new set of challenges. Challenges — and perks! At least, perks as they are viewed through the eyes of a naive new sales warrior. Perks — such as the trade show! Ah yes, the trade show!

Remember the trade shows of the renaissance era of satcom? Exhibitors and attendees alike donned elegant suits and traipsed among the floral bouquets that adorned the ornate and sophisticated stands. We manned our elaborate displays like distinguished ambassadors eagerly awaiting passing customers, attempting to bait them with trinkets like mouse pads and risqué posters. All in hopes they would stop to view our latest wares. And after-hours, numerous companies would host festive hospitality suites where lucrative deals were discussed over lavish gourmet spreads and champagne bars. Ah yes, those were the days.



But as the saying goes, "Nothing lasts forever." Speaking for someone who has "done the time," "paid the dues" and continues to passionately serve this industry, what a difference a couple of decades can make! Like I, and the scores of individuals that call it home, the industry we know and love has aged, and not necessarily with grace.

Though no longer considered a perk, I still make my ritual pilgrimages to a number of trade shows every year. As I board the plane to embark for the "city of convention," I usually recognize a number of my fellow passengers — many now stooped and gray, with briefcases once stocked with mechanical pencils and slide rules — now stuffed with bottles of Lipitor and Diovan. And I ask myself, "Is that my future?" Thanks to my astute investment strategy, I could only be so lucky.

When I finally arrive at the convention center, I see that the acres of multi-story stands from years past have given way to small portable displays and cloth-clad picnic tables, giving the appearance of an upscale flea-market. I'm greeted by half the industry that I happen to know on a first name basis, at least those that survived the span of time since the previous show.

Exhibitors' three-piece suits have given way to polo shirts and Dockers, though they jealously admire attendees decked out in the same cut-off shorts and open sandals they wore to Woodstock (the first one). I'm just waiting for the day that the presenter of the opening commencement speech will be clad in coveralls and sporting a mullet.

I stand on the corner of my modular booth feeling more like a Wal-Mart greeter than a distinguished ambassador, my eyes glaring with distrust at my counterpart on one of the neighboring


booths, even though he used to work for me — or I for him. Passersby also have less bounce in their step. Anxious curiosity has been replaced with attention-spans shorter than one or two wing-flaps of a hovering hummingbird.

Scavenging tickets to a gala hospitality event has now given way to scalping invitations to Silvano's open wine bar. Thanks, Silvano, for keeping the dream alive! The Dixie cup wine-glasses are certainly in vogue for the event.

Thanks to the constant “ebb and flow” — the proverbial game of “musical chairs” characteristic of our industry, any semblance of “the secret sauce” has been tossed into the wind only to fall like fairy dust onto the latest entrepreneurial spin-off. But does it matter? Open-standards and interoperability have forced all but a few products into wearing a boringly similar skin, where brand-selection is analogous to selecting fruit at the local farmer's market. But an occasional technology break-through (or a clever re-packaging of last year's break-through) is all that's necessary to invoke the return of the masses — return to once again partake in the ceremonial reunion.

Though satcom has yielded little in the form of wealth and prosperity for more than a chosen few, the gift it has given to the veterans of the trade is the opportunity to resurrect old stories perennially spewed at fraternal gath-

erings throughout the event. With a seemingly scant infusion of fresh meat, our social circle is comprised of an ever shrinking industry base; an ever receding gene pool of passionate die-hards.

The question remains, “Will the last standing satcom member please not forget to turn off the lights?” 

More Radford ruminations [at this link](#).

Maintaining Quality: Satellite to Set-Top Boxes

by Simen Frostad, **Bridge Technologies**

Your content is downlinked from satellite, and your IPTV infrastructure is up and running, ready to for delivery to an eager subscriber base. So, what's to go wrong?

Well, quite a lot, in fact. Between the satellite and the viewer's screen, there is a massively complex chain of components and technologies — a delivery chain that spans the broadcast and IT worlds. Due to this complexity, and the different skill sets of broadcast engineers and IT technicians, it's a considerable challenge for IPTV operators to ensure good, consistent quality of service to their various subscribers.

There are plenty of broadcast monitoring solutions to tell operators about the signal quality at various stages in the chain, and there are monitoring solutions for the IT world, as well. For many IPTV operators during the "early years," the assumption was that monitoring with a collection of these tools would be enough for the task. Indeed, for many years, there was no alternative to using isolated monitoring tools, each looking only at a small part of the delivery chain.

However, as the IPTV industry matures, operators are realizing the pitfalls of this approach. There is growing awareness that errors in one part of the chain may manifest themselves further downstream, and that errors can "cross the boundary" between the broadcast and IT domains. Yet, the vast majority of traditional cable or IPTV headends rely on downloading satellite signals and redistributing them in their network, without ever knowing that the signal from the satellite is free of errors.

To the subscriber it doesn't matter if the fault occurs in the satellite downlink, in some part of the IP network, or in the conditional access system — if it affects the quality of the viewing experience, the service operator has a problem.

Consider some of the complexities of the chain. The broadcaster encodes the media, and it's sent to a MUX system, and from there via a microwave link to a satellite uplink centre where it's probably decoded and re-encoded in a new MUX. It's then uplinked to the satellite, downlinked, descrambled, re-encrypted for streaming, and sent over the network that is, itself, a complex, tiered structure.

This kind of signal chain is a nightmare to debug and when faults occur, it's often difficult or impossible to isolate the cause using monitoring tools that only look at part of the chain, without relating the data to any other part. This is why being able to obtain a comprehensive view with the monitoring system gives operators a much easier route to fault finding and correction.

Without a system-wide overview, maintenance staff have no reliable way of determining where the cause of a fault lies and the problem cannot be remedied quickly. Headend operators have, therefore, tended to adopt an expensive redundancy strategy, so that service can be maintained on alternative infrastructure in the event of failure. If you can't find the fault quickly, your first line of defence is to switch to alternative hardware and try to find the fault later.



Not only is this an expensive strategy, it's also one that does not guarantee finding the fault: let's say the fault is at the transponder — unless you monitor the satellite with external equipment, you would not be able to identify the problem — even switching to an alternate path would not remedy the failure. The level of investment required to achieve this redundancy is a limiting factor on the growth of the IPTV market.

The key to this situation is possibly in that divide between the IT and broadcast worlds. Technicians on both sides have their expertise, as do manufacturers, and they tend to focus on their own areas of excellence. Even at this year's **National Association of Broadcasters** show, where IPTV is an important theme, while there were monitoring solutions for individual parts of the chain, there was still surprisingly little recognition of the need for an end-to-end solution that would allow IPTV operators to have a complete overview of the chain from satellite to set-top-box (STB), with the ability to focus in on any part and obtain detailed data in the context of data from upstream and downstream.

Looking back five or six years, there simply wasn't a demand for IP monitoring and analytics capability: this was because there was little understanding that errors here could cause problems for an IPTV operation. That's still the case within the IT industry — a lot of people don't appreciate that this technology can cause problems downstream.

In the satellite industry, there's a good history of validation with technology that monitors confirmation diagrams, RF parameters, and digital data from satellites, and there's a clear understanding that it's important. The IT and telco industry is quite used to having applications that correlate between different technologies, between known metrics such as jitter and packet behaviour on a transport network.

However, there is a lack of correlation between the broadcast and IT domains — the emphasis is on separate monitoring devices, rather than a single server system that can encompass all the different technologies and correlate between broadcast parameters, such as faulty repetition rate on the PCR stream

encapsulated in an MPEG2 transport stream — parameters where telco and IT specialists don't possess a lot of knowledge.

There remains a lack of solutions providing a comprehensive view across the broadcast/IT divide — systems that show a fault is caused by a network element, such as excessive jitter causing packet loss in the transport, or another fault caused by a broadcast parameter at the uplink site.

At **Bridge Technologies**, we span the divide between broadcast and IT to develop the technology providers need to ensure that pictures and sound reach the subscriber's screens at the highest possible quality as well as ensuring the subscriber experiences the highest standards of service and interactivity. The **VideoBridge** system, with its IP-probes and server-based architecture, provides a complete end-to-end solution to meet these needs. VideoBridge monitoring systems are used by satellite and cable operators as well as in IPTV applications. The organic nature of IP means it's especially vital that IPTV systems are monitored end-to-end. With more than 450 systems, ranging from 5 to 170 IP-probes installed by the start of 2009, our IPTV customers include **FastWeb**, **Telenor**, **Portugal Telecom**, **Telmex**, and **Kabel Deutschland**.

A real-world example of how a comprehensive system operates illustrates the kind of scenario that can arise, while demonstrating how easily a problem can be traced with an end-to-end system.



Bridge's microVB monitor

A series of faults occurred at an 80-channel headend in a system equipped with VideoBridge monitoring, where engineers were alerted by a warning that three channels had been lost. In fact, the channels were still streaming, but had gone from being unscrambled to scrambled. As the monitoring covered the bitstream and the scrambling characteristics, it was easy to identify the culprit: a descrambler had developed a fault. It took an engineer about 20 seconds to identify this fault.

On investigation the receiver module proved to be beyond immediate repair — a replacement was installed and that seemed to fix the problem. However, when the engineer returned to the monitoring station, there was another error, this time causing another channel to fail. The error message indicated a duplicate destination address from the streamers, and by drilling down with the analysis tools, the engineer was able to see that the channel in question had two sources — an element that is not legal in an IP environment. The new receiver just substituted for the faulty component with a preset source address in its streamer capacity. This meant that now, suddenly, there were two addresses. All became apparent within 20 seconds or so, allowing the engineers to go straight to the cause of the problem and make the correction.

This is a good example of two causally-linked events, which would usually be extremely difficult to track down and remedy using a number of isolated monitoring systems. If the engineers had been monitoring only from the dataset, they would not have been alerted from the available data — even if the channel is streaming black, everything appears normal. Only by monitoring both the content and the streaming path is it possible to identify problems such as identical IP addresses. With the monitoring of the complete chain from the satellite down, engineers can disqualify possible causes such as transponder failures, and get to the heart of the difficulties.

The **VideoBRIDGE** system is comprised of a range of monitoring and measurement devices that operators from the headend, through the core networks and regional/metro networks, down to the access level and directly into the subscriber's premises. The system delivers data accurately and speedily from all points in the delivery chain, and makes end-to-end monitoring and measurement a practical and financially viable proposition for operators.

The latest addition to the VideoBRIDGE system is the **microVB™**, a miniaturised monitoring device that enables IPTV operators to monitor service quality at the point of delivery — in the subscriber's premises. With plug-and-play installation, microVB™ makes it cost effective and practical for the first time for operators to assure quality 24/7 at the STB, rapidly addressing service issues remotely and saving the cost of truck rolls to the subscriber. The microVB™ reports the QoE parameters, allowing remote monitoring and analytics for advanced trouble shooting. Potential savings to the IPTV operator in transport and technician costs are very significant.

The microVB™ forwards alarm states to a remote MDC server system. The entire process is automated and fits into the overall architecture of the total Bridge Technologies system. The microVB™ supplies data about the end-points in the network, and by using the VideoBridge IP-Probes, the operator will also gain a system-wide overview. Pinpointing potential and actual problems before they affect service is the only way to lower service costs and retard subscriber churn.

Properly monitored, IPTV networks generate volumes of data, and while this needs to be presented accurately and quickly to engineering staff, it also needs to be intelligible if such is to be used to identify and diagnose potential points of failure and sub-standard performance. VideoBridge uses innovative and ergonomic ways to present data in order for

engineering personnel to easily monitor advance data from large infrastructures and to immediately understand the implications. Our patented **MediaWindow™** visualisation technology is built into all of our IP-probes giving status-at-a-glance displays and clear UDP packet loss detection and analysis. We also have patents pending on our **microETR™ TRI01290** visualisation technology which produces readily understood status displays with real-time response for large numbers of services.

An IPTV system comprises many interdependent components, from the headend, through the core network, to the regional/metro networks, and finally to the access networks. Then there's the middleware and the set-top box, and all these components need monitoring because each has the potential to develop faults that disrupt the viewer's experience. Middleware monitoring, for example, is just as important as monitoring of the signal quality and reception, because a subscriber's experience of the service is formed just as much the interactivity and functioning of the control interface, as by the quality of pictures and sound. At Bridge Technologies we set out to create a truly end-to-end monitoring solution, and this includes every part of the IPTV operation – middleware included, through our FSM™ (Full Service Monitoring) technology.

To ensure that our customers can integrate detailed monitoring efficiently into their business, data and status information can be presented in timeline displays of up to 200 channels per page, with enterprise-level reporting of SLA and proof-of-carriage compliance in pdf for for screen or print, and advanced trending statistics for management or engineering analysis. The Bridge Technologies Eii (External Integration Interface) also provides a framework for third-party integration, with real-time measurements, scalable for thousands of probes. Integration with the customer's analysis and business systems is important to ensure monitoring data and performance analysis becomes core to the IPTV provider's operation.

Efficient monitoring systems don't just ensure customer satisfaction: they also deliver sizeable cost-saving benefits, by making it unnecessary to install redundant infrastructure, and by allowing a small maintenance staff to maintain services to a large subscriber base. One of the most advanced European IPTV operations, at Norway's Lyse Tele, serves as a perfect example. Equipped with a full end-to-end VideoBRIDGE monitoring system, it's a highly efficient operation: over 225,000 Lyse Tele STBs are served by engineering team of only twelve — a ratio of 19,167 to 1, a ratio of 19,167 to 1 when operating a large IPTV-based system.

About... Bridge Technologies

BRIDGE Technologies was founded by a team of people with backgrounds from the Broadcast, Telecommunications and Media industries. With deep knowledge of the marketplace and industrial product development, BRIDGETECH products have been deployed in a large number of networks worldwide.

Globuses

Our main focus is the area between the Broadcast and Telecommunications spheres. **BRIDGETECH** systems is acting as a facilitator between the two, giving equal access and a common paradigm of understanding media flow from two different perspectives.

The dramatic drop in cost of bandwidth, storage and processing power is changing everything in the networking space. We at BRIDGE Technologies are working to make these technical advances also benefit the content production in the television and video industries.

Conversely, broadband network operators see benefits in moving into the multi service offerings of Telephony, Internet, Mobility and Television. BRIDGE Technologies is working to make this transition as seamless as possible for Operators.

BRIDGE Technologies Co AS is a privately held company with headquarters in Oslo, Norway, and has worldwide sales and marketing operations through business partners in the European, U.S. and Asian markets.

Forrester's Focus: Solaris Mobile Set-Back

by Chris Forrester

Solaris Mobile is the joint-venture between SES Astra and Eutelsat, two players not best known for co-operation, but both recognising that in the uncertain world of Mobile Satellite Services, a problem shared is a problem halved. Solaris Mobile took an S-band payload onto already planned Eutelsat craft (W2A) and then sold the capacity to Europe's mobile telephony operators and maybe even a proposed Europe-wide pay-radio system.

The craft was launched in April and all initially looked good. Now it is known that the satellite's S-band payload is badly flawed. Everything else is working well, including **Eutelsat's** Ku and C-band transponders. We now know that an insurance claim is being made, and that **Solaris Mobile's** two joint-venture partners are already discussing a replacement payload, as well as other potential 'fast track' solutions to replace capacity. Perhaps every bit as important is the fact that both the project's backers remain confident of success, despite what is now clearly a significant set back for the scheme.



**Dave Krueger, CEO of
Ondas Media**

The news has also prompted a strongly supportive response from **Ondas Media's** CEO Dave Krueger, confirming his company's wish to see a prompt resolution to Solaris Mobile's problems. Ondas Media has already signed up the likes of **BMW** and others to its pay-radio plan, similar in scope to **Sirius-XM**.

We understand the technical and engineering tests on the S-band payload are more or less concluded. They have shown there's a problem with the Harris-manufactured giant antenna — a very similar device is on board **TerreStar I**, launched in early July.

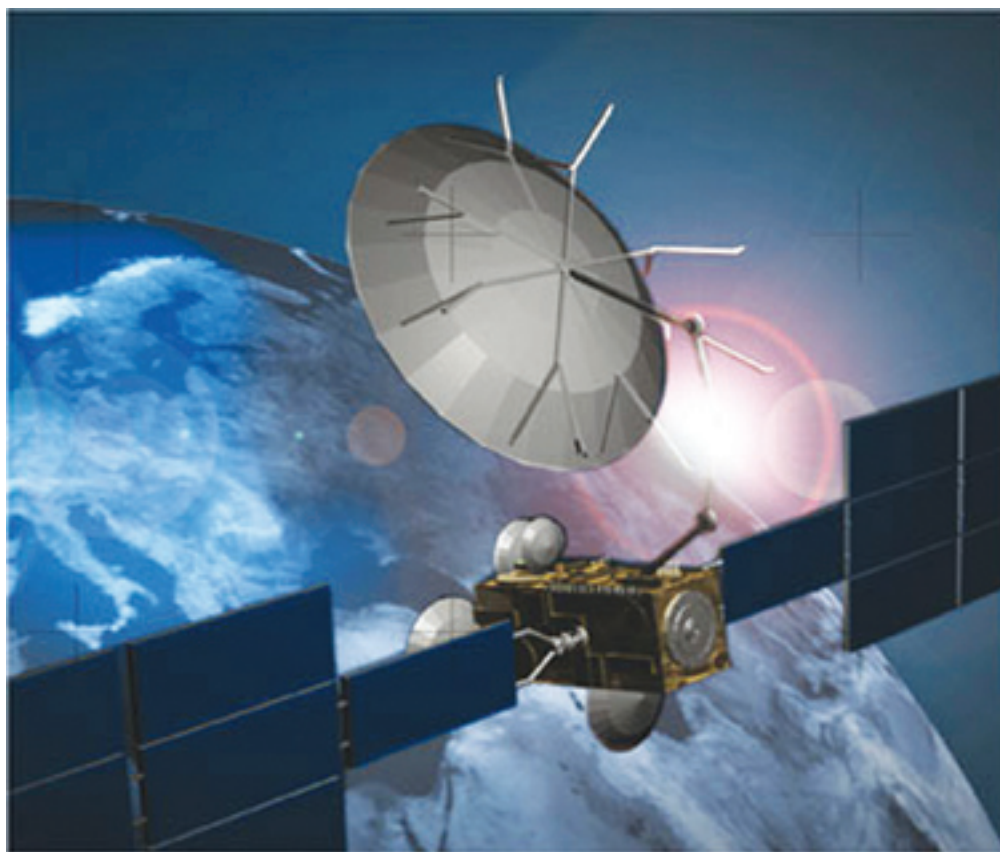
While the satellite's electronics seem to be working well, it has taken some time to pinpoint the reason for the antenna's poor performance. The satellite has no camera on board — few commercial craft carry such equipment — in order to see

the state of the antenna. This is why it has taken so long to track down the precise problems. The technicians have tested power levels, beam focus and general efficiency — the insurance claim filing revolves around the fact that the S-band payload is performing below nominal and designed expectations. Moreover, the tests have attempted to evaluate whether the 'problems' could be remedied or improved, and whether the satellite's payload is stable — in other words, whatever the problem is, can it now be depended upon to remain operationally consistent?

The issues have been identified with a reasonable degree of confidence, and the shape of the antenna seems to be the problem. Data was received shortly after launch that the antenna HAD been deployed — apparently satisfactorily. It was only a few days later when signals were fired at the craft's S-band payload that problems began to emerge. It quickly became apparent that the specification wasn't in order. The S-band payload wasn't functioning as designed. The most likely conclusion of the experts is that the antenna has imperfect shaping. Following exhaustive tests the belief is that in all key measures the S-band payload isn't performing nominally.

Hence the insurance claim, based on the degraded performance levels, and operating below specification. However, there's a glimmer of hope. The technicians have discovered that by slight

Insight



TerreStar-1 satellite

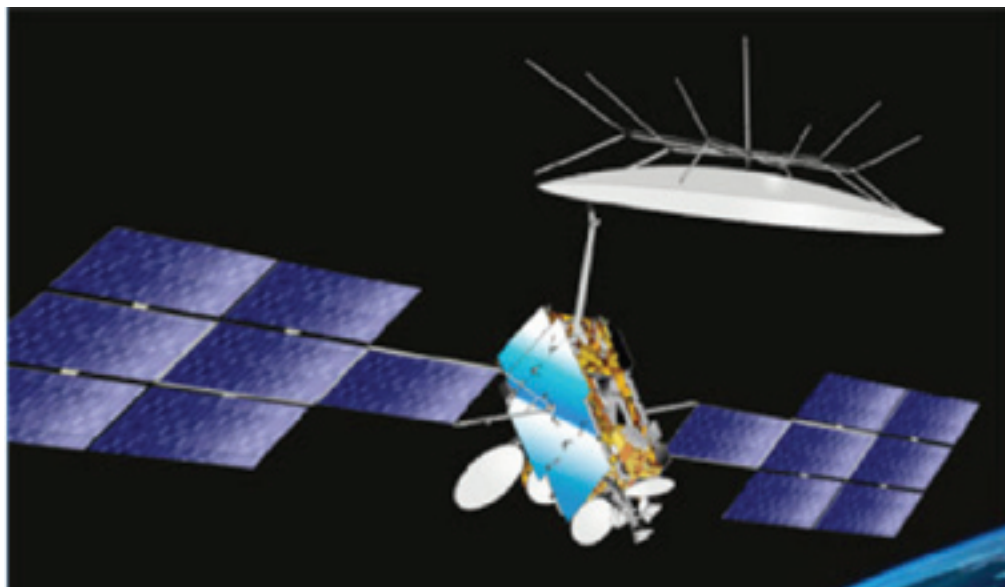
tweaks, including twisting and modifying the in-orbit - and planned - functionality, the payload can be teased to provide a somewhat limited service. It seems to mean using the antenna in ways beyond its original specification. The tests have created options whereby the satellite can deliver a level of service, albeit limited in scope and coverage. Specifically we understand that its S-band service levels can match and comply with the commitments given in Solaris Mobile's spectrum application. However, our understanding is that the sort of service levels available are well below expectations.

This means that Solaris Mobile can offer some or certain services, as yet undefined. But while some services can be offered, it is nothing like those anticipated originally, and nowhere near

the number, or range of services, needed to achieve commercial profitability.

The final piece of this complex jigsaw is that Solaris always anticipated it would need a second satellite. Both **SES Astra** and **Eutelsat** have a long-established commitment of in-orbit back-up, and as well as introducing new services. **Solaris Mobile "2"** was in the longer-term plan, and this was in the original spectrum application. What this means is that Solaris Mobile will now have to bring forward its plan — or search — for additional S-band capacity to complement or replace that which is aboard **W2A**.

Solaris Mobile believes its insurance claim is wholly valid based on the technical results achieved — or not achieved. However, it's likely that some hard bargaining will be needed with the insurers to reach a settlement that's acceptable to all of the concerned parties.



W2A satellite (Eutelsat)

It is understood that the antenna's deformation is in one main segment only. However, all of the beams are affected and do not emit the designed power levels. This overall power level output is one key problem. The other is that the antenna seems to be unable to correctly focus its output. The end result is that Solaris CAN focus and deliver some beams, by more or less abandoning activity on the other beams. By using a combination of the better beams, and reducing power, some services could be sustained.

As far as a second satellite is concerned, the various options are now being considered, and our understanding is that both SES Astra and Eutelsat remain 100 percent committed to the project. A decision will be made in conjunction with the dialogue with the insurance sector, and is therefore likely to be months rather than weeks away.

One dilemma now facing the project is Solaris Mobile's potential client base. There were no firm contracts in place with either the cellular industry or other clients. All were waiting for the payload's clean bill of health. Solaris Mobile's view is that despite these challenging problems they are still out ahead of their rivals in terms of the concept — and perhaps a limited service can be promptly started.

Ondas Media's View

Dave Kreuger, Ondas Media's CEO, said: "Ondas is deeply interested in the Solaris impact assessment and especially their long range plans. Ondas significantly influences a number of leading replacement options for satellite capacity in the 2GHZ band and we are pleased to work with Solaris to offer these opportunities as part of a total solution. It is necessary that the network architecture have all the attributes required for Ondas automotive quality and availability of service."

He continued: "We would like to assure our investors and customers that we do not promote a commercial service that is vulnerable to a single satellite failure. We have made it clear to the industry from the beginning that no commercial service can operate with the threat that a satellite, launch or subsystem will fail and subscribers are left without service for any length of time. Investors will not meaningfully finance a business that can disappear with one anomaly, nor will customers install the service in their cars. Therefore

the Ondas architecture is fully redundant so that even if we lose a satellite we still operate with extremely high service availability and quality.

“Ondas will maintain its momentum in the 2GHZ band for our satellite radio service and we represent interested investors and customers who desire to take full advantage of the band to provide superb satellite radio services into automobiles. To that end we offer our full support to Steve Maine and the Solaris team during this re-planning stage.”

But if the possibilities — and backers — for Europe-wide pay-radio remain optimistic, there are other commercial problems now facing the project, in that the industry has changed quite dramatically over the past few years. Three or so years ago the cellular industry was full of optimism about the prospects of **DVB-SH** services to handhelds and vehicles.

“There is a certain risk in this new challenge,” admitted *Giuliano Berretta*, Eutelsat’s CEO, announcing the creation of Solaris Mobile with SES Astra in October 2006. As *Barry Flynn*, of **Farncombe Research** says in his recent study of S-band prospects: “Looking back, this seems like the understatement of his career. At the time, Eutelsat could be sure neither of the future size of a pan-European mobile TV market, nor that the new JV, Solaris Mobile, would be awarded vital S-band frequencies above Europe.”

Flynn continues: “It would not be unfair to say that since then, Europe’s mobile broadcast TV market has under-performed. And it would be a brave person who suggested today, as Berretta did two-and-a-half years ago, that a total universe of between 30 and 50 million mobile subscribers would be using television services in the eight European territories to be covered by its W2A satellite by 2015.”

Solaris was awarded 30MHz of spectrum by the EU on May 14, in the 2.2GHz band (**Inmarsat** has the same amount of spectrum in its licence award). Two failed applicants in the European spectrum bid were **ICO Global** and **TerreStar**. Both are pursuing assorted legal challenges to the EU’s decision, which if nothing else seems to suggest that the two challenging businesses still see merit in a Europe-wide business plan.

Solaris Mobile had two other thrusts amongst its potential portfolio of services, including the already mentioned satellite-delivered pay-radio to vehicles and handhelds, and to provide first-response wireless services to rescue and emergency services. One can only guess at this stage, but one suspects that it is this latter business option that Solaris might now be seeking — pending the decision of its insurers.

About the author

London-based Chris Forrester is a well-known entertainment and broadcasting journalist.



He reports on all aspects of the TV industry with special emphasis on content, the business of film, television and emerging technologies. This includes interactive multi-media and the growing importance of web-streamed and digitized content over all delivery platforms including cable, satellite and digital terrestrial TV as well as cellular and 3G mobile. Chris has been investigating, researching and reporting on the so-called ‘broadband explosion’ for 25 years.

Optimizing Mobile Satellite Services Bandwidth

by Jeffrey Weaver, **XipLink**

Similar to many projects that have evolved from research initiated by the European Space Agency, the Canadian Space Agency and NASA, the characteristic reliability and scalability of the solutions they develop later on solve an unanticipated problem using the same techniques — think about Velcro!

This article explains how *Space Communication Protocol Specification* (pronounced “skips”) based bandwidth optimizers are being installed in *Mobile Satellite Services* (**MSS**) networks to increase the bandwidth to remote mobile users worldwide. This was not an original goal, but the strategic thinking involved in SCPS research laid the foundation for the rapid adoption of the same solution.

Mobile Satellite Services History

In 1994, at the request of the **U.N.’s International Maritime Organization**, a not-for-profit company called the **International Maritime Satellite Organization (Inmarsat)** was created to establish a satellite communications’ network for the maritime community, primarily to improve the safety of life at sea. The Inmarsat satellite network quickly expanded into the aero and commercial community, providing global satellite communications to private planes and other mobile users, such as media reporters and researchers.

Inmarsat was converted to a private company in 1999 and the bulk of the operation became **Inmarsat PLC**, while a smaller part of the organization branched off to become a regulatory body called the **International Mobile Satellite Organization (IMSO)**.

MSS Service Offerings

While the scope of the original network has changed dramatically over the intervening years, the name Inmarsat has come to represent general mobile satellite services with access to both voice and data from virtually anywhere on the globe. However, more and more operators continue to deliver similar services.

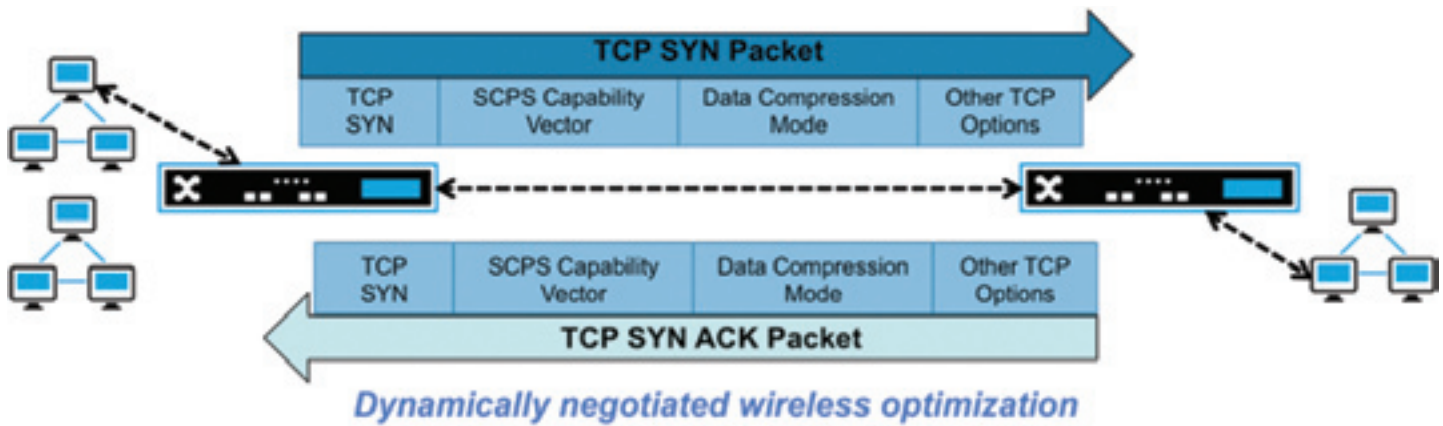
The original data offering included an *Integrated Services Data Network* (**ISDN**) type connection, operating as a single, or bonded, 64Kbps link, which today remain widely used around the world by the media, military, researchers, NGO’s and commercial users. These ISDN services are time based, with users paying by the minute for the amount of time the terminal is connected to the network.

With the recent completion of a constellation of very large satellites called the **I-4**, which include advancements in technology such as spot beams, Mobile Satellite Services users now have access to an “always-on” high speed GPRS type service called *Broadband Global Area Network* (**BGAN**). This is an IP based connection operating at 492 Kbps with coverage almost anywhere on the globe. Other new services with guaranteed bandwidth are also available in limited coverage areas, but at this point the user demand for remote wireless bandwidth from everywhere seems insatiable.

Broadband services such as BGAN are volume-based, so users pay for the amount of data sent in Mega Bytes (MB), rather than by the amount of time they are connected.

Any mobile MSS user can set up a small portable terminal with an integrated antenna quite easily. For other applications, tracking antennas can be used on ships, aircraft, and other vehicles. The BGAN network is a critical adjunct to military satellite communications based on its global footprint, lightweight terminals, and ease-of-use. This makes inter-operation with encryption

TechWork



devices a critical aspect of any value-added solutions a Distribution Partner may choose to offer. Inmarsat also provides *global maritime distress and safety service (GMDSS)* to ships and aircraft as a public service for no charge.

Understanding The SCPS Specification

The *Space Communication Protocol Specification (SCPS)* originated with aerospace research that began with a desire to increase the communications bandwidth between on-board spacecraft payloads and Earth stations. Once in operation, it was quickly recognized that these same techniques also worked very well when optimizing the complete end-to-end wireless link from ground-station to ground-station. Researchers were also pleasantly surprised that standards-based TCP proxy techniques had only positive effects across all of their TCP based applications, which led to wide acceptance across the space community and eventually the DoD.

This pioneering research in bandwidth optimization resulted in the SCPS specification and has been widely used in space communications for more than 10 years. The SCPS combines recommendations for the use of several standard *Internet Engineering Task Force (IETF)* protocols as well as methods for the dynamic and transparent negotiation of other unique vendor options, such as advanced TCP acknowledgment schemes, error recovery methods and data compression capabilities.

The Interoperable Performance Enhancing Proxy (I-PEP) specification from **SatLabs** builds on the SCPS specification by defining the default minimum

options that must be supported to ensure basic operation between any two I-PEP compliant devices, which would use the SCPS specification to communicate. The specification also accommodates more sophisticated option negotiation when any two SCPS devices bracket a link with similar capabilities, leading to the use of advanced algorithms by the vendor community; otherwise the default options are used across the wireless segment and vendor interoperability is assured.

While the IETF has introduced some standards for TCP improvement over the years, the SCPS specification and specialized wireless optimization algorithms developed by vendors for space communication continue to deliver the most efficient wireless optimization capabilities today.

SCPS based acceleration is converging with Mobile Satellite Services in two key areas. On hub-side systems, *Logical Network Classes* are being used to apply rate controls and traffic prioritization to each individual remote terminal. On the remote side, small portable SCPS devices are being introduced to compliment the portable MSS terminal.

How Wireless Optimization Works

A SCPS based wireless optimizer will “split” (or proxy) TCP connections between any two remote networks. As SCPS functionality is designed for installation in the network infrastructure, ideally bracketing the wireless space segment, no pre-configuration is required as would be necessary for an application accelerator installation.

Any two networks that have a SPCS device installed in-line will optimize data over the wireless link when connecting clients and servers. If no optimization device is installed on a network, traffic passes without further modification, and the SCPS vectors added to the TCP options are simply ignored.

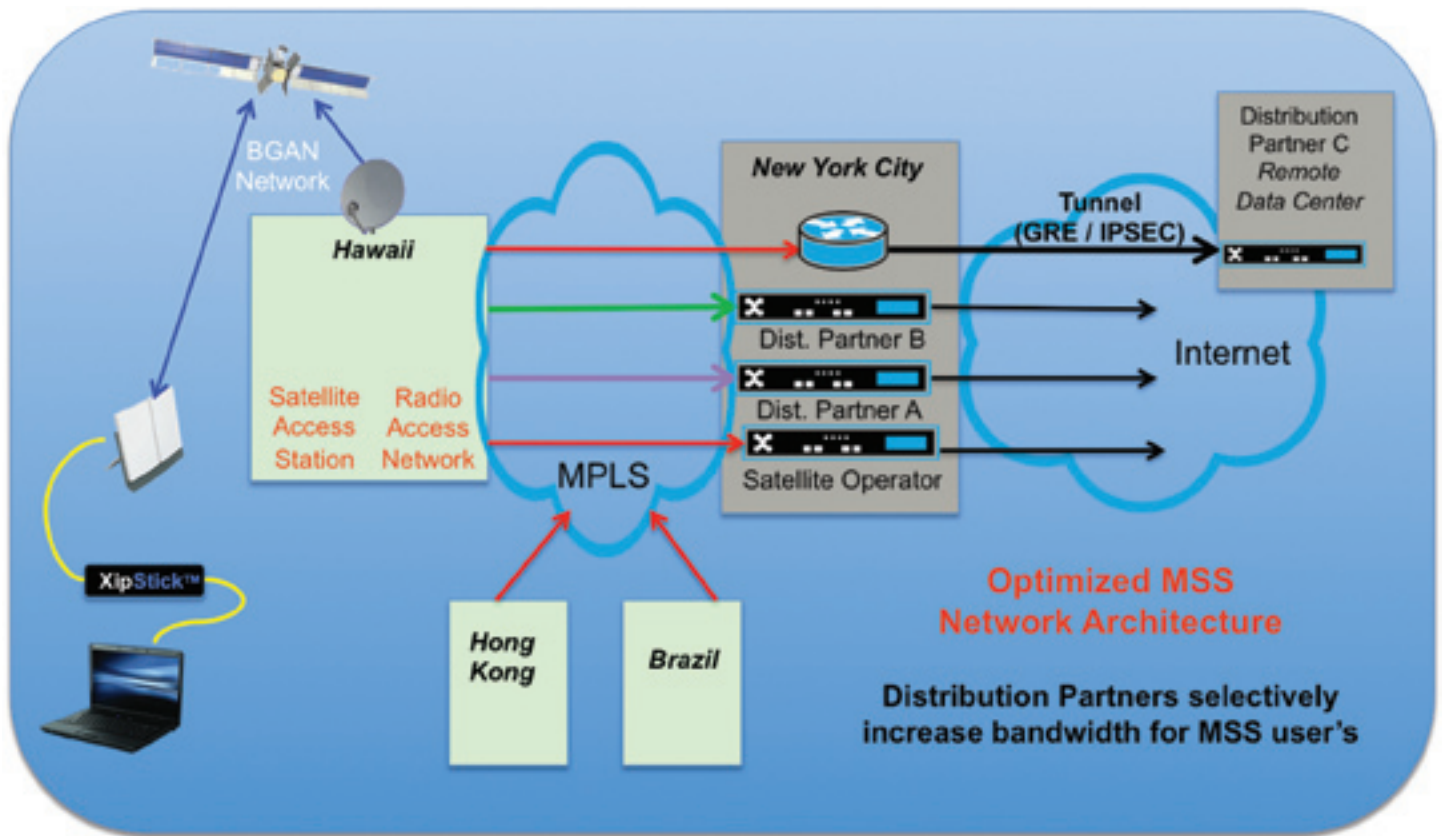
When data is secure, the optimizer is installed in-line prior to any encryption, ensuring that the data is fully optimized then encrypted. This chaining can be external, when using Type I military encryption devices, but it is also common to find IPSec functionality internally combined with wireless optimization on many devices.

Once in operation, a SCPS optimizer will dynamically open a new TCP connection over the wireless link for each originating session on the LAN. SCPS vectors are added to the TCP options in the SYN packet and attempt to negotiate the best set of algorithms the device is capable of supporting. Based on the CPU and Memory of the device on each end, different types of error recovery and data compression may be used, but this negotiation and the functions themselves remain completely transparent to end users.

Complex rate control algorithms, QoS, and data compression can be applied to each session by the optimizer on each end of the wireless link. Once packets arrive at the receiving end, they are forwarded along using standard TCP. By design, this standards-based TCP performance enhancing proxy technique is completely transparent to the

network routing elements, the end users, and to TCP applications. The optimizer is installed in-line with user data that is to be optimized, but from a networking perspective, can operate as a transparent Layer 2 bridge or a full Layer 3 IP router.

As SCPS optimization functions operate at the TCP layer, existing optimizer solutions can be rapidly adopted into any wireless environment. Existing rate control algorithms designed for dynamic links are very effective over MSS networks and hub side logic ensures that deployments are economical and scalable.



MSS Distribution Partners

When an organization or an individual purchases Mobile Satellite Services, they work with a “Distribution Partner” that delivers service and support for various offerings in a specific vertical market — such as maritime, aviation, military, or commercial. These satellite Distribution Partners compete for end-user business based on the value-added features they offer.

User terminals delivered by a Distribution Partner are provisioned so that any session can land at any Earth station with proper authentication credentials pre-configured into each terminal. Each Distribution Partner maintains a connection to the global MPLS backbone that is used to inter-connect the *Satellite Access Stations (SAS)* and the centralized data centers. Distribution Partners often share co-location facilities with the satellite provider, which also provides a meet-me-point for traditional wire-line ISP and voice network interconnections.

Once each terminal is authenticated over the satellite network at the SAS, the *Radio Access Network (RAN)* matches each terminal to a Distribution Partner and the service offering. The user session can arrive from a SAS located anywhere in the world. Once the terminal is

identified, the data is routed over the correct *MPLS Label Switched Path* with the proper quality of service settings directly to the Distribution Partner’s point of presence. This MPLS and co-location architecture is important as we consider the convergence of Space Communication Protocol Specification (SPCS) based optimizers, originally designed for VSAT and SCPC links, with Mobile Satellite Services, as the hub-side SCPS optimizer will be installed in the data center with other equipment belonging to each DP.

Historically and contractually, the satellite communications provider delivers basic connectivity, but value-added features such as wireless optimization have generally been left to each Distribution Partner. This situation has enabled a competitive and progressive environment in Mobile Satellite Services by encouraging the Distribution Partners to continue to enhance their service offerings.

MSS Network Deployments

Today, QoS features on hub-side SCPS devices have evolved to support optimization for users of different types of wireless networks, such as VSAT and SCPC in a single appliance. Using these same *Logical Network Class* capabilities, an MSS Distribution Partner

can quickly enable their network for select users to achieve higher throughput when they use a remote, SCPS capable device. Each remote network is independently delivered the benefit of protocol acceleration, data compression and pre-fetching based on a logical class assignment. An MSS Distribution Partner typically will combine offerings such as Swift64, BGAN and streaming services in a single hub appliance.

Once a Distribution Partner installs a hub optimizer in the satellite co-location facility, or at their own point of presence, possibly over a tunnel, any remote users with a **XipStick™**, or any users behind a small or medium **XA-Appliance**, or even users that are running an embedded version of **XipOS** in another device such as an aviation router, will have their combined TCP data transparently accelerated and optimized, generally achieving 3x to 10x un-optimized bandwidth.

From a provisioning perspective, the provider can use routing policies to determine whether to forward the

remote user traffic to the hub optimizer or selectively bypass unauthorized users. This flexibility leads to the business option for each Distribution Partner of charging a fee for a premium service or simply increasing capacity for all users.

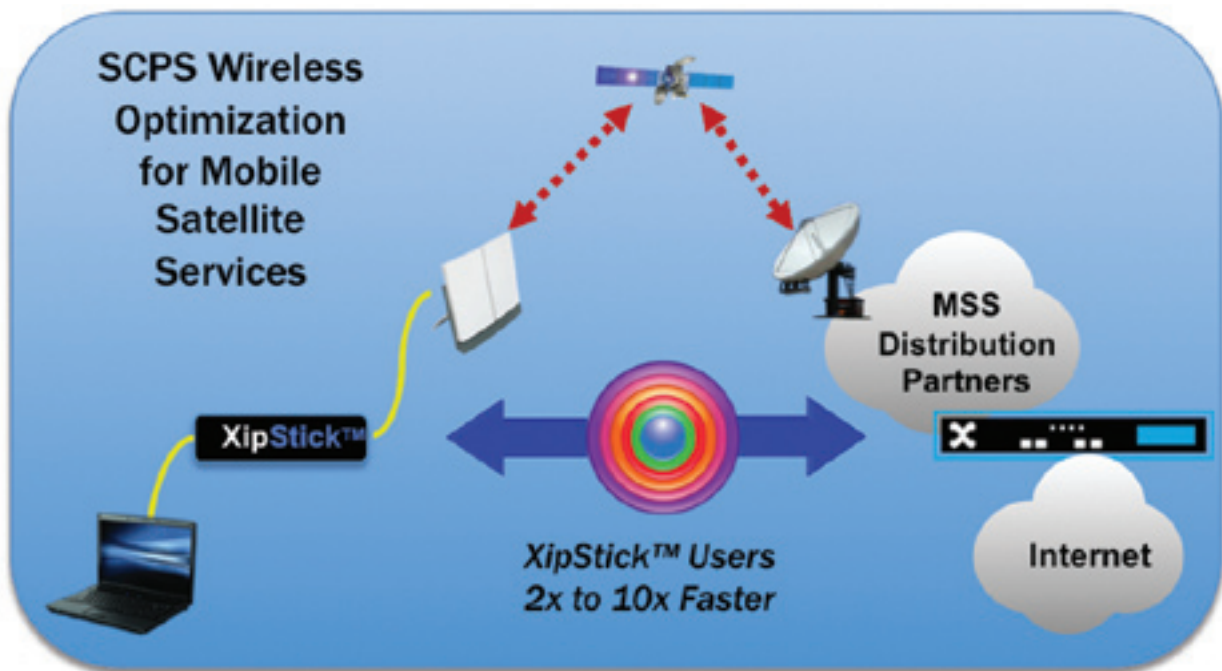
XipStick™ Portable Optimizer

Just as important in solving the economic and technical challenges of deploying wireless optimization from the hub side, is the need to deliver an economical, self-contained and portable remote device.



**XipLink's XipStick
Optimizer**

The recently announced **XipStick™** portable optimizer measures only 3 1/2 x 2 3/4 x 3/4 -inches and is powered from a USB port on the remote PC or from an external power supply. The user installs the XipStick™ between



the remote PC or LAN hub and the wireless terminal, just like a VSAT or SCPC satellite user would install a larger appliance. Once connected to the network, the hub optimizer at the Distribution Partners co-location facility brackets the link and SCPS negotiation takes place. Wireless optimization features available on the XipStick™ include protocol acceleration, streaming data compression and Internet pre-fetching based on the SCPS specification, with an optional IPSec client.

The Results


The benefits of protocol acceleration apply to all TCP based connections and will reduce initial server connection times by at least a third. Depending on the content being optimized, users may see bandwidth gains from 3x to 10x based on the type of data being transferred. Some are highly compressible, while others cannot be further compressed. Typical web surfing users will also receive the benefits of TCP fast start and web pre-fetching and see an average one third the page load time of an un-optimized session, often higher.

As many MSS users are aware, in the early years of MSS network deployments, software based optimizers were offered to address some of the issues now being discussed — high latency, high bit error rates, asymmetric connections and mobility. If we consider that the bandwidth of these early services was typically a maximum of 128Kbps, it would be reasonable to assume a single user or PC utilizing this link.

However, as link speeds increase, we find that these connections now typically support more than just a single user, often serving an entire remote LAN with multiple users or devices. When data from more than one device is being optimized, it is important that the optimization function observe all of the data being sent, maintaining priority for voice and other select data and not over-driving the link capacity and causing packet loss, as would occur if multiple PC based soft client optimizers were being used. Each would attempt to ratchet up the capacity of the link, but would in turn cause packet loss and retransmissions to other users.

As packet rates increase, it is also necessary to add CPU and Memory to drive the optimization function so as not to burden the host operating system, which has lead to the release of the XipStick™ portable wireless optimizer. While designed for MSS networks, the system architecture and XipStick™ can be used in any wireless data network including terrestrial wireless networks like WiMAX.

Advanced hub side logic allows unique rate controls, error recovery and data compression for each remote site and combined with small, portable optimizers in the field increase the typical MSS data rate for all TCP applications by a factor of 3x to 10x.

The increased capacity of an optimized connection for commercial and government networks on a global scale is enabling applications that could not operate on the limited bandwidth available otherwise. 

Peloponnesus, Grapes + An Earth Station (EMP)

“We’re really in the heart of Greek wine country here,” remarks Christopher Slaney, VP Business Development of Europe Media Port (EMP), as he slows down for farm vehicles coming the other way along the narrow road flanked by vines. In a broad valley, bordered by tilled hills interspersed by ranks of olive trees, all we can see are grape vines and storage silos, until we come upon a cluster of huge, white satellite dishes. This is the Nemea Earth station, the heart of EMP, one of Europe’s fastest growing satellite service providers. “We want to bottle a limited edition of wine under our own label and hand it out as gifts to visitors. But the new rules on flying with liquids on carry-on baggage has put an end to that idea,” says Slaney. We agree to share a glass or two at the local taverna before heading back to Athens.

Nemea Earth station is in the **Peloponnesus** region of Greece, some one hundred kilometers west of Athens. It takes its name from the nearest village, a historical site associated with *Hercules* where the ruins of ancient temples attract visitors from around the world. By the time we get to the main gate, the ‘**OTE**’ logo can be seen on the biggest dish, and this explains how the newcomers at EMP came to be based in such a great facility.

OTE — or **Hellenic Telecommunications Organization** — is the Greek national telecom carrier that built the Earth station in the early 1990s. **EMP**, a company formed by private investors and headquartered in Nicosia, Cyprus, entered into an agreement with OTE in 2007 to jointly develop new business and market services based at the Nemea teleport and a second Earth station at Thermopylae, close by the ancient battle site of the same name.

The Nemea Earth station occupies a 20,000 square meter site with two antenna arrays set on either side of the management building, control center, and workshops. It’s difficult to imagine anyone except a government-funded national carrier having the means to build something similar, and for the time being in Europe, that scenario is unlikely to reoccur.



EMP has room to grow at the Nemea site and this is something they are keen to stress. “I have a presentation which lists 10 points why you should come here instead of investing money and time on building or enlarging a teleport anywhere else,” says *Slaney*. He then sums it up like this, “If you want to play tennis, you don’t need to build your own tennis court, you just join a club. If you want to be in the SATCOM business, don’t spend years going through site surveys, planning permission, appealing for approval from government regulators, choosing suppliers and integrators and fretting over cost overruns. Don’t even tie up any capital. Come to us and get everything you need out of a teleport as a service paid for on a yearly basis, even if you want to install and run your own network operations center.”

In its second year of business, EMP reported traffic via Nemea is around 40 percent TV related, and 60 percent non-TV, which can be loosely described as ‘data’. On the TV side, EMP operates a multi-channel platform on **Thaicom 5**, uplinks single-channel-per-carrier content to several other satellites and hosts payout and other channel management services.

Although *Slaney*’s background is in television, right now he’s also interested in the opportunities presented by the ‘carrier-to-carrier’ market, especially in Africa and the Middle East. He cites the geographic location of Nemea and its array of C-band antennas as giving them a clear advantage.

“The Earth station is much further south and east than any other similar facility in Europe,” he says. “From Nemea we see satellites in an arc from 85 degrees East through to 45 West which is

ideal as a turnaround point for transmissions between Europe and Asia, and being closer to center-beam for some of these satellites results in better link budgets.” The weather that favors the grapes grown around Nemea is also cited as an advantage. The dry Mediterranean climate means less rain-fade; a factor not to be overlooked when communicating with remote sites which might be in rain-soaked tropical Africa.

Nemea already hosts communication hubs for **Gateway Communications**, **Cielux Telecom** and two government services. EMP is in talks with another company with a similar profile to those of Gateway and Cielux that has an interest in the rapidly growing African market for satellite based Internet and GSM backhaul services. *Slaney* hopes the next service contract will be for hosting a client’s complete C-band Earth station for a 10 or 15 year term.

Already after EMP’s first full year of operation, Nemea received honorable mention from the **World Teleport Association** in its ‘**Fast Twenty**’ ranking the world’s 20 fastest growing teleports. “Of course

it was a tremendous boost to be able to come into a business where OTE had already established a major presence,” says *Slaney*, who also cites OTE’s technical facilities and terrestrial connectivity as well as its highly trained and motivated personnel.

This sentiment is confirmed by *Giannis Manos*, who heads OTE’s **Special Networks Division**, “We at OTE are very happy that we serve EMP business needs by our two Earth Stations at Nemea and Thermopylae. We are expanding our Earth stations to include new services and new clients. This is a very exciting market. We provide our satellite Earth stations services with historically high standards of service assurance.”


Slaney sums up EMP’s second year in business, “It’s a busy market right now with several companies like ours chasing every deal. Despite the current global economic woes we remain confident of steady growth in the communications sector, especially in developing markets. You just have to remember all those people who still have no access to a phone, and the businesses



struggling without a reliable Internet connection. In Africa and parts of the Middle East ‘hotspots’ still outnumber the ‘hotspots’ and satellite is the fastest, most efficient way of getting people connected.”

Terrestrial connectivity is through **OTE GLOBE**’s network with ample bandwidth and plans for expansion well under way. “Right now, there are twin local loops of 2.5 gigabit each at the Earth station and we forecast needing three times that by the end of 2010,” says Slaney and adds that having a sole provider for the fiber connectivity has not prevented them from being very competitive on price.

Expansion plans also include the installation of additional uplinks. The facility is operating at almost full capacity and has recently had to defer some business due to a lack of available antennas. A decision has been made to add at least three more C-band antennas. EMP is also developing a product for the maritime sector using dedicated bandwidth to deliver high-end services to the owners of ‘mega-yachts’. Slaney hints that one of the world’s most demanding yacht owners is already online with the service, but respect for client privacy prevents him from saying more. “As of now we provide the service to people who are definitely early adopters,” but he predicts it will soon be rolled out to a wider market.

At last we make it to the taverna to sample the Nemea vintage. It really is quite good. 

About the author

Mr. Chris Slaney, head of business at Europe Media Port is a former journalist with a rich and robust

resume including bureau chief and senior broadcast production positions at APTN and World Television News (WTN) throughout the globe including in the Middle East, China and South Africa. Holding a degree in economics from University College, London, Slaney has managed multi-million dollar budgets and multi-



continent broadcast services for a range of organizations.

Executive Spotlight On...

Adam Davison, Corporate Vice President, Sales, Expand Networks

Adam Davison is the corporate vice president of sales and marketing for Expand Networks and is responsible for implementing sales processes as well as coor-

minating and initiating global efforts and alliances to enhance Expand's worldwide presence. Davison has more than 14 years experience in sales, management and business development roles in networking companies and has been successful in building markets and maximizing sales in EMEA for international start-ups. Davison has been with Expand since 2001.



SatMagazine (SM)

First of all, Adam, would you please take us through your background and how you made the decision to join Expand in 2001? What changes have you seen the company undergo during your tenure with the firm?

Adam Davison

I've always held business development roles in growing networking companies and in particular I enjoyed building markets, and maximizing sales across European regions for international start-ups. With Expand, I saw a vendor developing a new technology and evangelizing in an exciting new space. I jumped at the opportunity to be part of the vanguard of WAN optimization and application acceleration, and be the first to market. Since 2001, the company has grown dramatically, pioneering the market for WAN Optimization, Expand has grown to be the leading provider of Virtual Proximity solutions. With three offices when I first joined, Expand now has 20 offices globally and more than 3,500 customers, with 40,000 units deployed.

The technology has also evolved significantly over this time. As innovators of *Virtual WAN (VWAN)*

Executive Spotlight On...

Optimization capabilities Expand is the only vendor that can provide a wholly virtualized offering today and most recently, the launch of our Mobile Accelerator Client, has transformed the economics of WAN Optimization for branch offices.

In line with all of this expansion, my own role has changed a lot since 2001, as well! From U.K. channel manager, I moved to VP of Sales for EMEA and now to a global VP role, where I am responsible for initiating our global efforts and alliances to enhance Expand's worldwide presence even further. One of the more recent projects for Expand Networks centered around a relief and development agency in the United Kingdom, **Tearfund**.

SM

What caused Tearfund to seek out help with their mission? As a Christian relief organization with worldwide concerns, and probably a limited budget, how did Expand Networks come to their attention?

Adam Davison

Tearfund wanted to ensure resilient communications across its global network of aid teams. Experiencing latency and packet loss over its satellite networks, its employees located in remote locations across the globe had limited access to applications and bandwidth capacity was becoming an increasing concern. With this in mind, they looked to optimization to improve the performance of the satellite links, in order to provide reliable connectivity for its overseas workforce. We actually came to their attention through Nettitude, firstly because of our joint success with other large global charitable organizations, and

we are marketing the activity for registered charity organizations, in order to communicate the benefits of optimization within their industry.

SM

Certainly there had to be at least two main issues for Tearfund — would you please describe those issues? How did Expand decide to tackle those challenges?

Adam Davison

Tearfund had several challenges that they looked to address. This included very poor Internet access, which meant that they were unable to efficiently read and edit centrally stored documents. There were also huge challenges with running their finance application which was hosted in London and delivered across the WAN using *Microsoft Terminal Services*. In central Asia for example, the latency on the satellite links was so high that establishing a VPN to the London network was not even possible. With the variety of optimization techniques Expand uses, we concentrated on deploying compression technologies to provide virtual bandwidth which would increase the amount of data throughput, as well as using the local devices at each remote location as a web cache to provide a much faster and more stable access to the web.

SM

What was the base factor for Tearfund in finally selecting Expand to assist with their global needs? Did your Company identify and focus on a single factor and then build out from that issue to encompass the entire needs structure?

Adam Davison

Tearfund initially evaluated three suppliers and, during the evaluation period, Expand out-performed the competitors from a technology standpoint. In particular, **Expand Accelerators** demonstrated its ability to support a VPN and accelerate traffic even on very poor links. Using low latency, lossless techniques that worked on all applications, Expand Networks consistently deliver average bandwidth increases between 100 and 400 percent, with peaks of more than 1,000 percent. It was also important to Tearfund that the vendor of choice helped to both manage and support them during the POC process and the deployment phase.



Executive Spotlight On...

SM

What processes did Expand use to satisfy the customer? How did SATCOM play its role in producing solution sets for Tearfund? Optimization most definitely was required — how was such achieved?

Adam Davison

Tearfund works in 60 countries in the developing world, through 300 indigenous, church-based organizations and supports more than 1,000 front-line staff responding to natural and man-made disasters. With so many staff working in the field where fixed IT infrastructure is not available, satellite communication links are imperative to the work that is carried out by Tearfund.

Expand's solution is integrated with *Space Communication Protocol Standard (SCPS)* technology and so excels in satellite environments, such as Tearfund's, to help mitigate the traditional low bandwidth and high latency obstacles of the satellite links.

A combination of optimization techniques gave the equivalent throughput of 2Mgs across a 300Kbps satellite connection.

SM

How successful has the Expand Networks' implementation proven to be? Is this solution workable across the globe and across various projects? What has Expand learned from this project?

Adam Davison

Implemented first with Tearfund teams in central Asia, its most problematic region for connectivity, the integrated WAN optimization technology within Expand enabled Tearfund to immediately compress and accelerate traffic across the satellite links.

Expand has been deployed in six of Tearfund's global locations. With regional hub sites experiencing great improvements in network throughput, plans are also

Executive Spotlight On...

being made to deploy Expand to optimize satellite links at Tearfund's field sites across the globe. The implementation has proven to be a great success, not least due to the training which they undertook on the Expand products, which has now resulted in an extension to the initial roll-out.

SM

On the technical side, Adam, would you describe the technologies involved and how each played its role in producing a satisfying solution?

Adam Davison

We combine SCPS with compression, byte-level caching and layer 7 QoS, to offer 'virtual' capacity on the satellite links. For example, these compression techniques used in conjunction with the varied protocol acceleration tools allowed Tearfund to enable multiple users with access to the finance application over Microsoft Terminal Services, whereas prior to the Expand deployment only single-user access was available at best. For reading and editing centrally stored files, we used **WAFS** (Wide Area File Services) to provide a virtual file server at each branch location. This virtual file server stores local copies of files and allows real time reading and editing while maintaining a constant synchronization with the centrally stored master copies.

SM

Where do you see Expand Networks heading in the immediate future? Do you have additional projects being worked on currently? If so, could you enlighten us as to them?

Adam Davison

Expand is taking satellite optimization beyond the traditional latency mitigation of PEPs. Our integrated technologies provide four times the capacity on a satellite link, making the RoI almost immediate and enhancing visibility and control on the network.

With this in mind, we have numerous satellite optimization projects in play at the moment. Specifically, we are expanding our network of satellite service provider partners across the globe, whereby our technology is enabling them to provide optimized managed services.

As an example, we've just completed a project with **IPSTAR**, **Thaicom**. This alliance has seen the world's largest and most advanced commercial satellite



IPSTAR satellite


system provide accelerated IP services with optimization from Expand. The WAN optimization technology is helping to maximize their existing broadband service to ensure fast, resilient and cost-effective satellite communications for IPSTAR's corporate customers.

SM

Lastly, given your expertise in this industry, what technologies do you feel will play an important role over the next two years? Five years? What market segments do you feel are ripe for growth?

Adam Davison

WAN Optimization has moved from a nice-to-have technology to a must-have technology over the last 24 months, and it will certainly continue on its upwards path. As I have stated above, I believe that optimized satellite services will be even more key in the years to come. We are already seeing many satellite service providers look to optimization technology as a value-add service that they can pass onto their customers, and I think we will certainly see this accelerate moving forward.

Across APAC in particular, we have seen heightened interest amongst service providers for optimizing their offering to better manage the flow of traffic over satellite links, and we will see this expand globally. Using SCPS and compression to ensure they achieve maximum potential, it all results in improved levels of services at reduced network costs, which is something we all want to see. 

Navigating The Complex World Of Maritime VSAT

by Alan Gottlieb, Managing Director, Gottlieb International

Numerous VSAT providers are rushing to the maritime world. In a market once dominated by Inmarsat, fixed priced broadband is making significant inroads into commercial shipping markets. Competition is rapidly intensifying as new players like Speedcast, Singtel, KVH Industries, Orange Business Services, Satlynx, Hughes Network Systems, Intelsat, Ship Equip, Globecom, Caprock and Norsat take aim at established commercial VSAT maritime providers like Inmarsat, Radio Holland, Vizada/Marlink, Globe Wireless and Stratos.

Based on a quick, statistics-based market analysis, the commercial shipping market appears to have enormous potential. With more than 50,000 vessels, a relatively low VSAT penetration rate, and increasing demands for fixed priced broadband at sea, VSAT use appears likely to grow significantly. Due to the 12 to 24 months sales cycle, those companies who enter the market now stand to benefit substantially as the industry recovers from the recession.

However, despite the lucrative potential for this market, those companies seeking to gain a significant share of this market should beware of its complexities.

Consider the containership segment that consists of approximately 5,000 ships. While the market appears to be large, only 20 companies control 70 percent of these vessels. Expect the battle to win customers in this segment to be extreme, as a dozen or more providers vie for the business of the largest fleet owners while **Inmarsat** and other providers struggle to hold onto their market shares. Already, Inmarsat has been reported to be offering **FleetBroadband** at extreme discounts to its largest customers at prices significantly below their expected pricing.

Those companies who expect to achieve a 5 percent share of this market and whose projections are based on selling bandwidth and hardware alone will likely fall victim to the inevitable vendor consolidation. Clearly, successfully competing against Inmarsat and the other players will require a clear understanding of the needs of each individual customer and the ability to differentiate product and service.

A Highly Segmented Industry

Those who know the shipping community know that the industry is not homogenous but rather a collection of numerous segments that cannot be sold a universal solution. Each individual segment is distinctly different and varies in their communication needs based on the cargo they carry, fleet size, regulatory issues, and the sophistication level of corporate IT management.

For example, carriers of hazardous cargo such as oil, LNG, and chemicals are subject to very stringent safety and operational requirements that generate a critical need for acquisition and transmission and analysis of data monitoring ship performance. As oil companies use this data to evaluate tanker companies for charter contracts, the need to know how well a fleet is meeting the required standards becomes a business acquisition issue. Here, VSAT becomes the ideal medium for transmission of the data to shore allowing management to monitor, analyze and enhance vessel conformity to meet or exceed regulatory standards.

On refrigerated cargo carriers, DSL is used to transmit critical information on temperature to a central server where it can be transmitted to cargo owners to demonstrate that refrigeration has been maintained at proper levels during the voyage.

Insight



Understanding such differing requirements between industry segments becomes the basis for successful high margin, solutions-based selling, rather than the traditional VSAT selling strategy of offering generic solutions at a low price.

Furthermore, it is important to understand that the shipping industry — as a whole — is generally unfamiliar with the myriad of potential cost saving applications that can be supported by fixed-priced VSAT as well as the software and IT controls necessary to manage the resource aboard a vessel.

Justifying VSAT Installation + Bandwidth Costs

IT departments in most cargo carriers have traditionally restricted the use of data services due to the high cost of pay-by-the-byte Inmarsat services and are, therefore, unfamiliar with the potential benefits and technical issues related to installation of a fixed-priced broadband service.

When confronted with a VSAT offering, shipping IT managers typically note that their current usage of data is less than 100 Megabytes per-month per-ship at a cost of \$1,000 per/month or less. Why should they make a substantial investment in hardware and pay more for unlimited fixed priced bandwidth?

Thus, the ability of a sales executive to construct a viable economic argument based on potential cost-savings made possible by new VSAT dependent software and data transmission applications is absolutely critical in making the sale.

For example, one of the many VSAT potential economic benefits is related to the growing popularity of electronic chart updates. Currently, **Chartco**, the leading service vendor, offers electronic chart updates over Inmarsat at a fixed monthly cost. However, to receive the service, each vessel must be equipped with a \$4,000 decoder. Installation of VSAT eliminates the need for the decoder resulting in significant savings.

Consider a second example: Fixed priced VSAT facilitates automated downloading of data on winds and currents that support automated operation of **Sperry Marine**'s new fuel optimization programs which can save tens of thousands of dollars in fuel costs per/voyage.

Or a third: Using VSAT facilitates the unlimited transmission of photographs in support of maintenance and procurement operations thereby eliminating the need for extensive descriptive text in reports. With photography, crew can clearly and easily document spare parts requirements and other visually detectable maintenance requirements such as corrosion repair.

Of course, there are many more software related and data transmission applications that become possible with VSAT that are not economic with a pay-by-the-byte service such as Inmarsat.

In addition to economic justification of VSAT, vendors must be able to provide shipping customers with a complete solutions package capable of managing VSAT aboard the vessel. The fact is that shipping company IT managers need extensive VSAT vendor support to select and implement such solutions. To be successful, vendors must move beyond provision of hardware and bandwidth.

Managing Ship Board VSAT

Contrary to popular assumption, most shipping company IT departments are unprepared to deal with the technical aspects of managing a VSAT resource. Having dealt only with pay-by-the-byte Inmarsat throughout their careers, they generally lack the knowledge of how to identify and select and implement the necessary software applications to provide the required functionality. Typical questions raised on sales calls include:

- **“What happens if the crew uses up all the bandwidth cutting off critical business related voice and data communication?”**
- **“How do I manage security when crew use their own laptops via WiFi?”**
- **“What happens if crew members loose sleep because they are instant messaging instead of sleeping and, as a result, accidents occur?”**
- **“How do I restrict access to selected websites?”**
- **“Can you provide a VPN?”**

Clearly, a vendor must be able to provide software that incorporates such management functionalities and others as part of its offerings. Such packaged solutions for the management of VSAT aboard a vessel do exist and VSAT providers can either incorporate them into their offerings or develop their own set of solutions. Whatever the course, functionality to manage the VSAT must be offered.

Other Critical Elements

In addition to justifying the cost of VSAT and providing solutions for the management of fixed priced broadband aboard a vessel, there are other critical elements that need to be addressed in the selling process.

Reducing capital cost of the required hardware and installation to the absolute minimum is vital in the current economic environment. Limited budgets and reluctance to invest new capital tend to favor 60 cm antenna offerings over the conventional 1.2-meter Ku antenna offerings. Assuming competitive bandwidth costs, use of 60 cm antennas can reduce the cost of hardware by as much as 40 percent and lower installation costs as well as minimizing blockages and the associated need to switch to Inmarsat backup services. Adding leasing packages offers a further incentive to the customer.

One stop service management is also a major consideration. Vendors must be able to take complete responsibility for the maintenance and operation of the service and provide customer reporting and problem resolution through a single point of contact. Customers expect “turn key” management and service and will not be satisfied with shouldering the responsibility of iden-

tifying which, of many, hardware, software and bandwidth providers are responsible for service disruption.

Service portals that offer access to such functionality as tracking usage and monitoring performance of the VSAT links are also effective catalysts to the selling process. Ship Equip in Norway offers a unique package developed by Parallel UK, which allows each customer to log in over the Net and monitor the performance of its own network.

Finally, there is no substitute for effective solutions selling. Vendors must not ignore that they are working in a conservative, consultative selling environment that demands customer education and the building of trust over an extended period. They must keep in mind that selling solutions tailored to each type of vessel's needs is a vital element of success and that selling a “plug” in an emerging, new market at a low price is not a viable sales strategy.

As always, knowing the customers business and demonstrating how it can be improved is the basis of successful selling.

About the author

Mr. Gottlieb is Managing Director of Gottlieb International Group Inc. His firm, Gottlieb International Group Inc., specializes in market research, business development and sales and business development of satellite and wireless communication technologies to numerous vertical markets. In particular, his firm specializes in assisting satellite providers in penetration of Maritime, Oil and Gas, International Construction and Mining markets. His career encompasses an unusual diversity of sales and marketing background in many segments of the wireless industry including VSAT, Cellular and Mobile Commerce. He has served as Vice President of Sales for Audiovox Communications, Director of Sales for Southeast Asia for COMSAT and Aether Systems, and Corporate Market Research Manager for a Division of Baker International (now Baker-Hughes). Major clients have included KVH Industries, Intel-sat, Inmarsat, Verestar, Globecom Systems, Sonic Telecom, Frontier Technology, THISS Technologies, (Singapore), Sonic Telecom, Parallel Software U.K., the National Technical Information Services and the Office of Post and Telecom of French Polynesia. He can be reached at +1-703-622-8520. <http://www.gottliebinternationalgroup.com>

Educational Assets Via iNetVu

by Bhumika Bakshi

Satellite communication (SATCOM) systems have made it possible to deliver information into areas where no connectivity exists. This is particularly true in the case of rural and remote areas. SATCOM makes cooperation between countries and within regions possible and allows for linking people with technologies that go far beyond boundaries, be such a nation's borders or technical competence. While developing countries continue to struggle to equip schools in rural areas with computers and the Internet, the developed world is highly desirous of providing high-speed Internet access into every school and learning center. Satellite technology plays a crucial role in making this goal possible.

A World Wide Initiative

One of the areas wherein satellite communications makes a most important contribution is in the broadcast of educational resources to schools and colleges. A world wide effort is being made by various organizations and bodies, formed to foster and facilitate the use of satellite technology and information broadcasting into the field of education.

An essential pre-requisite to such opportunities is building the infrastructure and indigenous capabilities for the development and use of SATCOM. The international community has recognized this pre-requisite because, if the application of satellite technology is to succeed in the education sector, devoted efforts must be made at the local level, especially in the developing countries. For example, many African schools are extremely remote. Some children travel many miles every day to attend school. Internet access through a terrestrial network is not a viable option. SATCOM can deliver e-learning resources directly to the schools and to the teachers and pupils that need them.

NEPAD (New Partnership for Africa's Development) has identified the access to communications technology as one of the most important steps to improving and increasing the educational programs across Africa. **ESOA (European Satellite Operators Association)** members are at the center of a number of projects that also aim to achieve this goal. The organization strongly believes the benefits of e-learning can extend beyond schools to provide training and to improve the skill development of African employees, as well.

In addition, the **European Space Agency's (ESA)** directorate of **Telecommunications and Integrated Applications (TIA)** states there has been a growing consensus over the

CONNECTIONS (%)	All Schools	Urban Schools	Rural Schools
Dial-Up	8.6	4.5	20.7
Always On	85.8	89.3	75.6
ISDN/DSL	31.6	33.1	27.2
Optical Fiber	22.8	26.9	11.1
Cable Modem	15.3	17.2	9.8
T1 Line	11.6	12.3	9.7
Fixed Wireless	7.6	6.5	11.1
SATCOM	4.9	2.4	12.4
Unknown Type	9.5	9.1	10.7

Note: The percentages may not equal 100 percent, as some schools may have more than one type of Internet connection. Statistics Canada, Information and Communications Technologies in School Survey (ICTSS) 2004

importance of satellite technology applications for sustainable educational development across Europe and Canada.

At a very advanced level for research students, corporations such as **AMSAT (The Radio Amateur Satellite Corporation)** provide facilities and infrastructure to bring the youth of the world in live contact with the astronauts of many countries through the **ARISS (Amateur Radio on the International Space Station)** program. AMSAT North America continues to be the largest non-government funding source for the ARISS program. Students in elementary through high school, on every continent, have the opportunity to talk with the astronauts aboard the International Space Station as it orbits the Earth.

At the ground level, as per the **Information and Communications Technologies in School Survey (ICTSS)**, substantial investments have been made over the past several years to connect schools and classrooms to the Internet in Canada — nine out of 10 computers are connected to the Internet and available to students, ranging from a low of 88 percent in Nunavut, to a high of 96 percent in New Brunswick, Nova Scotia, the Northwest Territories and the Yukon. Among the most popular methods to access the Internet was “ISDN/DSL” and the least explored method was the satellite connection.

The table at the bottom of Page 71 illustrates the methods used by Canadian schools for Internet access.

The reason for an overwhelming majority (86 percent) of schools using broadband technologies is the increasing demand for applications like video conferencing (for distance education, professional development, sharing Internet pages, library catalogues, documents or software) that require a high data transmission rate. Broadband can help reduce the barriers of distance and isolation, enabling schools particularly in remote areas to access educational applications previously beyond their reach. There is a large potential market for satellite technology in the education sector that is yet to be explored.

The **Saskatchewan Indian Institute of Technologies’ (SIIT)** Mobile Career Coaching Units function as the ‘Life Coaching Office,’ based in the

school’s main campus in Saskatoon. The Life Coaching Office is designed to provide integrated, wrap-around support for SIIT learners in the area of career assessment, career path building, leadership development, wellness, experiential learning, and mentorship. Life Coaching Office staff support both campus learners as well as clients that access services on the Mobile Career Coaching Units.

These units are intended to travel throughout the province visiting residents of Saskatchewan First Nations and providing them with on-board career assessment and career path building personnel capable of providing first-step community-based career planning expertise. SIIT has two units in operation, as of June 2009. Each of the trucks are equipped with an iNetVu 1.2m antenna, 7000 Controller, 4 Watt Block-Up-Converter and an iDirect 3100 modem, delivering Internet and VoIP services wherever the vehicle goes. This vehicle is operated by two counselors who conduct the assessments using as many as eight laptops and one VoIP phone per vehicle. C-COM has provided the equipment and airtime for the initial 24 months of this project.

“We are very pleased to have been able to provide a state-of-the-art technology solution to SIIT. The services delivered through these iNetVu equipped vehicles will make it possible for First Nation residents to get important career building advice from highly trained personnel, who can travel to virtually any location in the province. The iNetVu mobile is delivering solutions to many educational institutions around world and is assisting students and educators by delivering to them the ability to communicate over the Internet. C-COM is pleased to be an enabler of this technology to the educational segment of the market, thus assisting through education to improve the lives of many people around the world.” says Dr. Leslie Klein, President and CEO of C-COM Satellite Systems Inc.

The iNetVu mobile systems can assist educational facilities by adapting satellite technology to suit local infrastructure. This makes it now possible to mitigate the effects of inadequate school resources and foster professional development of young people in remote villages and locations.

C-COM has been delivering high-speed Internet services for such environments all across the globe. The mobile education market opened up for the company in 2003 when the **Charleston County Public Library** equipped its first bookmobile vehicle with the iNetVu antenna. This mobile library traveled to a number of remote fishing villages in South Carolina and made it possible for the residents to check out books, use the Internet, as well as check their emails on a daily basis. The library was also a learning resource for the students and residents. This concept started in the U.S., but Europe, Australia, and other regions of the world have been early adopters of this technology.

Excelerate, one of C-COM's first and most established resellers of SATCOM equipment in the U.K., purchased a number of iNetVu systems for educational institutions such as **Hunslow Creative and Media Consortium**.

One of the key requirements for the innovative learning facility of Hunslow Creative and Media Consortium was the ability to stream 'live' video images for viewing over the Internet. The only way to reliably achieve this would be by equipping the mobile unit with satellite technology that supported access to high-speed broadband wherever the vehicle was located. Excelerate Technology supplied and installed a roof-mounted iNetVu 1.2m transportable satellite antenna that could be made operational within four minutes of parking the vehicle. The unit also

features a fully operational professional TV and radio broadcast studio with a digital editing suite, as well as a comprehensive range of industry-standard broadcast equipment including high definition cameras, Apple iMac and MacBook computers, and wireless networking. The new unit provides learning experiences for as many as 20 students at a time. The vehicle can travel between schools and colleges and eliminates the numerous problems that could otherwise occur when attempting to ferry staff and students between different sites.

"This outside broadcast vehicle will not only help increase the learning opportunities for students involved in the Creative and Media diploma, but will also become a shared resource for other collaborative projects within the borough, and ultimately further afield. It has the power to engage the imagination and unleash creativity whilst fostering a team spirit to work on real projects that relate to work situations both locally and further afield." says *John Hurley*, Operations Manager, **Lampton School**, U.K. Other users of the iNetVu systems in the U.K. are **Powys County Council**, **Tresham College**, **North-ern Ireland Libraries** and many more.

Another project, **Invernet**, was developed for the purpose of taking Internet, on-line gaming and counseling facilities into under privileged areas of the local community, as these facilities typically would be unavailable to youngsters who reside in the remote locations of Western Scotland. C-COM's dealer **Primetech** proposed the use of iNetVu" systems for the project to meet the customer's strict systems and tech support requirements. According to Primetech, the systems have been constantly in use since their installation and have proven to be highly reliable.

"Primetech (UK) Ltd. in England has provided us with an outstanding level of customer support and equipment knowledge from concept through to delivery of the finished vehicles. The satellite systems have performed in all weather conditions and are providing an invaluable service to youngsters in the Western Scotland region. We have, and will continue, to recommend Primetech to any organization who approaches us for references," said *Hugh Scott*, Invernet Project Manager.

The mobile auto-pointing iNetVu" antenna system allows the delivery of high-speed satellite based Internet services into mobile environments, while stationary; virtually anywhere one can drive. With the use of iNetVu" antenna systems, numerous educational organizations across the globe are delivering services that are essential for education and career counseling of today's youth, particularly in remote and hard to reach areas.

About... **C-COM Satellite Systems**

Established in 1997, C-COM Satellite Systems Inc. is a leader in the development and deployment of mobile satellite-based technology for the delivery of 2-way high-speed communication services into vehicles or other mobile structures as well as a leading service provider of reliable 2-way high-speed broadband satellite based Internet services.

C-COM designs, develops and manufactures proprietary mobile self-pointing (iNetVu™) antenna systems, intelligent 'One-Button' controllers and accessories that allow the delivery of high-speed communication services into mobile environments, while stationary; virtually anywhere one can drive. The iNetVu antenna system can be activated with the simple push of a button or with the click of mouse. Once activated, it deploys automatically in a few minutes, locks on to the selected satellite and delivers broadband Internet access, VoIP and Video services.

C-COM's product development team utilizes in-house expertise in electronics and software to bring the latest industry features to its iNetVu controller technology. Field feedback and specific requests can be rapidly developed into working customer solutions. This customization makes the iNetVu family of advanced mobile antenna systems the number one choice in thousands of global applications.

There are more than 2,200 iNetVu products deployed across the globe and are considered indispensable to many of customers who rely on this product to deliver essential connectivity.

Astrium Terminals Talking Turkey

Astrium Services Secure Satcom Systems division has delivered the first set of SATCOM equipments to Aselsan for the first of class MILGEM, the prestigious Turkish National corvette program. The Astrium delivery comprises a set of equipment based on Astrium, Mini-SCOT naval terminal. Aselsan, as the prime contractor for the MILGEM SATCOM suite, are responsible for system design and software development of the terminal and the control station, assembly, integration, and test of the terminals as well as the installation, acceptance, and test on board and system delivery. Aselsan and Astrium have previously supplied 16 sets of GEMI shipborne terminals, for the Meko and Perry Class ships,

under the Turkish Military Satellite Communications System (TMSCS) project.

It Takes A CubeSat... Constellation

Clyde Space, among others, fully supports the QB50 Initiative, which is an international network of 50 CubeSats for multi-point, in-situ measures in the lower thermosphere and re-entry. As most are aware, a CubeSat is too small to also carry sensors for significant scientific research. For universities, the main objective of developing, launching and operating a CubeSat is educational. However, when combining a large number of CubeSats with identical sensors into a network, in addition to the educational value, fundamental scientific questions can be addressed which

are otherwise inaccessible. Networks of CubeSats have been under discussion in the CubeSat community for several years, but so far, no university, institution, or space agency has taken the initiative to set up and coordinate such a powerful network. For the QB50 network, double CubeSats (10x10x20 cm) are foreseen, with one half providing the usual satellite functions and the other half accommodating a set of identical sensors for lower thermosphere and re-entry research. All 50 CubeSats will be launched together on a single launch vehicle (a Russian Shtil-2.1 or Shtil-2R) into a circular orbit at about 300 km altitude, inclination 79 degrees. A QB50 Workshop will be held on November 17 through 18, 2009, at the Von Karman Institute for

Fluid Dynamics in Brussels, followed by a Project Kick-Off Meeting on November 19th.

The DEV Is In The Details

DEV Systemtechnik has thoroughly re-designed its L-band Signal Distribution System DEV 2180, equipping the next appliance generation with a controller and SNMP/Ethernet interface as well as hot-pluggable amplifiers as a standard which can be upgraded without interruption of operations. The space-saving: 16 amplifiers (instead of 12 before) can be housed in one chassis. The existing version of the DEV 2180 may also be obtained as Economy model DEV 2180E at a lower price, which comes without controller and offers a reduced choice of configurations. The new system will be showcased at the IBC2009 in Amsterdam from September 11 to 15 at Stand No. 1.D91.

The CryoSat-2 Ice Mission

ESA's ice mission CryoSat-2 is due to launch on a Dnepr rocket from the Baikonur Cosmodrome in Kazakhstan in December. CryoSat-2 replaces the original CryoSat satellite, which was lost due to a failure in the timing of the launch sequence in October of 2005. Just 3-1/2 years after the decision was taken to rebuild CryoSat, the new satellite is awaiting shipment to the launch site and the ground segment infrastructure is in place for launch. The ground segment mainly comprises the Flight Operations Segment (FOS), through which the satellite is controlled and monitored, and the Payload Data Ground Segment (PDGS), which allows the data from the satellite to be received, processed, archived and distributed to the users. ESA's European Space Operations Centre (ESOC) in Darmstadt, Germany, is responsible for controlling and

monitoring the satellite via the ESA/ESTRACK ground station in Kiruna in northern Sweden.

Era To Keep Any Eye On The Azores

NAV Portugal has contracted Era to deliver its wide area multilateration and ADS-B technologies to support surveillance of the Azores archipelago. U.S. company Era was awarded the contract from air traffic services and flight information provider NAV Portugal to deliver its MSS multilateration and ADS-B system. Officials say the Era technologies will support surveillance requirements at Portugal's Horta airport in the central group of islands in the Azores.

FRANCE 24 Via Genesis Networks

New Line TV Company, a telecommunication company headquartered in Miami, Florida, and serving cable systems in the United States, Canada, Central and South America, and Puerto Rico, has selected Genesis Networks for the fiber backhaul and satellite distribution needs of FRANCE 24, a well known 24/7 international news channel. The worldwide video fiber network provided by Genesis Networks allows New Line TV Company to bring FRANCE 24's English and French versions directly from Paris for cable distribution on a Genesis satellite platform that serves the Americas and Hawaii.

BVN Is A RRsat Believer

RRsat Global Communications Network Ltd. (NASDAQ: RRSAT) has announced BVN-TV has expanded its contract with RRsat. This follows the successful launch of services for Asia, Africa, and Australia in 2007. BVN-TV is a collaboration of Radio Netherlands, Dutch Domestic

Public Television, and Flemish Radio and Television and provides Dutch-language programming to Dutch and Flemish communities living outside The Netherlands and Belgium. The BVN-TV Channel is now also broadcast to Europe and the Middle East over the RRsat Global Network, using the Hotbird satellite.

Sun Shines On ND SatCom

ND SatCom, an SES ASTRA company, has received the "Seventh Annual Duke Choice Award" in the category — Java Technology in Network Solution — for its Satellite Communication Management Software. The latest edition of this software is used for the German Armed Forces SATCOMBw Step 2 project. ND SatCom had already developed the forerunner model for SATCOMBw Step 1 and the Dutch Armed Forces. The awards recognize the year's most influential Java technology-based applications submitted by developers and companies from around the world.

InSat Satisfied With SES ASTRA

SES ASTRA, an SES company (Euronext Paris and Luxembourg Stock Exchange: SESG), has signed a new capacity agreement for its 31.5 degrees East orbital position. The German satellite service provider InSat will use one transponder on ASTRA 2C to provide IP backbone services to small and medium sized enterprises in the Middle East and Caucasus region. SES ASTRA will also provide uplink services from its facilities in Luxembourg. InSat is the second customer contracting capacity on ASTRA 2C bringing the total number of contracted transponders to five.

3D Is High For Sky

Sky has announced that the number of customers selecting **Sky+HD**, the U.K.'s only HD service currently capable of broadcasting 3D services, has increased to 1.313 million following record growth. Customers have responded in record numbers to Sky, HD service and has more than doubled the number of HD customers in the last year alone, with over 90 customers an hour joining Sky+HD. In the next step in the Sky+HD journey, Sky will launch the U.K.'s first 3D channel next year.

TSF Trains for Disasters

The European Commission, through the international NGO Telecoms Sans Frontières, is training emergency organizations in Information and Communication

Technologies (ICT). This one year program includes an initial course and a refresher course both taking place near the TSF regional bases in Managua and Bangkok. Within the framework of its collaboration with TSF, the European Commission supports the International Emergency ICT Training Program through its Humanitarian Aid Department with the main objective of improving the quality and effectiveness of humanitarian aid actions, by reinforcing emergency responders capacities in telecommunications and information technology.

Telespazio Gains Polish Agreement

The Ministry of Defense of Poland and Telespazio, a Finmeccanica/Thales company, have signed a 10-year contract worth approximate-

ly 30 million euros to provide Italian Sicral 1B space capacity in UHF frequency band. Telespazio has acquired the rights of commercialization of the military satellite, which is the property of Italian Ministry of Defense, due to its investment aimed to co-fund the final phase of the Program.

Thuraya's MMP

Thuraya Telecommunications Company has further enhanced their ThurayaIP services by establishing a Meet Me Point (MMP) based in Telehouse, London as well as a Point Of Presence (POP) in its Sharjah-based gateway. These infrastructures ensure end-to-end data transfer, while using StreamingIP via ThurayaIP's network.



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