

Brazil Leads the Way in the Hot Latin American Market

by Virgil Labrador, Editor-in-Chief

Brazil's DTH Growing Rapidly

Two satellites launched in the first half of this year exemplified the dynamics of the hot Latin American satellite market. The first was the launch of Amazonas-3 in February, the tenth satellite launched by the Hispasat Group. Amazonas-3 includes nine Ka-band transponders—the first for Latin America. All nine Ka-band transponders were leased by telcom operator Telefónica for its broadband internet service. Amazonas-3 also provided the first Ultra HD transmission trials for Latin America.

Last month an ILS Proton Breeze M rocket roared into space successfully launching the SES-6 satellite. Brazilian telco Oi is the anchor client for the SES-6 satellite, leasing the great majority of the transponders on the satellite. Oi is planning a new Direct-to-Home (DTH) satellite service that will provide triple—and even quadruple play hybrid services.

The launching of new satellites, not just to meet growing capacity demands, but to facilitate the introduction of new and innovative services, are characterizing the Latin American satellite market. More liberal economic policies have turned some South American countries into economic powerhouses. Leading the way is Brazil, the largest and fastest growing country in South America, comprising almost half of the region's market for satellite services.

Oi's use of SES-6 to deliver a new DTH platform comes at the most appropriate time as Brazil's DTH industry is on the upswing. Satellite pay television grew 2.2 percent in May, more than double that cable for the month. The country now exceeds 8.2 million subscribers in the market for subscription TV.

Oi, formerly known as Telemar, is the largest telecommunications company in Brazil and the second largest in Latin America. Headquartered in Rio de Janeiro, Oi, was formed as Tele Norte Leste that merged sixteen state-owned incumbent local exchange carriers during the privatization of Brazilian telecommunications system. Currently, Oi has 22.2 million land lines in service, 31.7 million wireless customers, four million ADSL subscribers and about 44,000 employees.

According to figures revealed by the regulatory authority Agencia Nacional de Telecomunicacoes (Anatel), Brazil had 177,349 new subscribers in May, reaching 8,209,163 homes with Pay TV. The growth noted represents an increase of 2.2 percent based on the subscriber base of the previous month. For the year, the sector posted

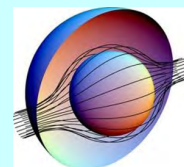
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Brazilians celebrating their winning the bid to host the Olympics in 2016. High-profile global sports events such as the Football World Cup next year and the Olympics in 2016 will put the spotlight on the Latin American market.

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A Tale of Two Regions



NSR's latest Broadband Satellite Markets (11th edition) report forecasts that the Asian and Latin American markets will see some of the fastest rates of growth in enterprise VSAT services and will begin to equal or exceed in terms of installed base of VSAT sites in more mature markets like North America.

The report goes on to observe that both regions are experiencing similar demand trends with government social inclusion and school network projects as well as classic enterprise segments like banking & finance, oil & gas, retail and corporate.

Both regions are also experiencing phenomenal growth in Pay-TV services. The Asian market is now the largest Pay-TV market with over half the total subscribers worldwide. According to Dataxis, the Pay-TV market of the seven biggest markets of Latin America will total 98.32 million subscribers in 2018. This figure will equal to a penetration of 68.1% over the total of homes with TV; almost 3.6 times what was in 2008.

There are many other parameters of growth that we can draw between the two regions. Both were relative unaffected by the global downturn of 2007-09 and both have a rising middle class and fast growing economies. There are also many differences. But both are definitely hot markets and we will be covering both regions extensively.

See us at Globecom Tech Forum in Hauppauge, New York from August 4-6 and in Broadcast and Cable 2013 in Sao Paulo, Brazil from August 20-22. It should be an exciting summer.

Virgil Labrador
Editor-in-Chief



EDITORIAL

Virgil Labrador
Editor-in-Chief
virgil@satellitemarkets.com

Elisabeth Tweedie
Associate Editor
elisabeth@satellitemarkets.com

Contributing Editors:

North America: Robert Bell,
Bruce Elbert, Dan Freyer,
Lou Zacharilla

Latin America: B. H. Schneiderman

Europe: Martin Jarrold, *London*
Jan Grøndrup-Vivanco, *Paris*
Roxana Dunnette, *Geneva*

Asia-Pacific: Peter Galace, *Manila*
Tom van der Heyden, *Hong Kong*
Chris Frith, *Singapore*, Riaz Lamak,
India

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For Advertising enquiries send an e-mail to:

sales@satellitemarkets.com

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SYNTHESIS PUBLICATIONS LLC
1418 South Azusa Ave. # 4174
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Fax +1-425-969-2654
E-mail: info@satellitemarkets.com

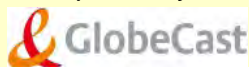
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Director-Sales, **Work Microwave**

Drew Brandy, VP-Industry and **Stefano Poli**, Dir. Commercial Development,
Global Express Program, **Inmarsat**

Latin American Satellite Market ...From page 1

10 percent growth. Considering the average number of people per address released by the Instituto Brasileiro de Geografia e Estatística (IBGE), Pay TV services are currently distributed to more than 27 million Brazilians.

In May, Anatel said DTH grew 4.3 percent, a clear evolution from the 3.6 percent in April. The amount of cable subscribers grew by 0.9 percent in the month, being below the industry average of 2.2 percent. The MMDS providers lost market share again, this time 0.4 percent of the customer base in the same month.

As a result of growth, in recent months, Brazil's DTH market now comprises 40.6 percent of the Pay TV industry, closing in on cable, which has 55.3 percent, and moving further ahead of the MMDS, which only has 4.1 percent share of the market.

Global sports events are also coming to Brazil: the Football World Cup finals in 2014 and the Olympic Games in 2016—the first one to be held in South America. No doubt these global events will stimulate interest in the region and demand for satellite services during the games. The hope is that the momentum from these high profile events will carry forward after the games.

Brazil's Multi-purpose Broadband Satellite

Brazil is in the process of bidding out its Geostationary Defense and Strategic Communications Satellite or SGDC to serve the country's nearly 200 million population. This project covers the design of a satellite for communication and military use and is scheduled for launch in 2015. The SGDC will have capacity in the Ka- and X-band, with an overall communications capacity of 100 Gbps. The satellite will provide the communication needs of the Brazilian Federal Government, including the National Broadband Program for the Ministry of Education's Internet access to schools and remote regions of the country. The five X-band transponders to be placed on the first SGDC satellite will



cover all of South America and the surrounding maritime routes will serve a wide range of strategic defense transmissions.

When launched, the SGDC satellite is expected to weigh no more than 6,000 kilograms and to operate at 75 degrees west in geostationary orbit. It will be operated by Brazil's Telebras national telecommunications company, with the system managed by Visiona Tecnológica Espacial SA, a joint venture created to manage the project.

Brazilian aircraft manufacturer Embraer S.A. owns 51 percent of the Visiona joint venture, with Telebras holding the remaining 49 percent. Brazilian authorities have assigned Embraer the task of becoming a major satellite prime contractor capable of handling future satellite projects, thanks to a large technology-transfer package the Brazilian government has inserted into the SGDC bid request.

A second SGDC satellite will be part of Brazil's national space program, which

is coordinated by the Brazilian Space Agency, AEB.

During the Latin America Aero and Defense aerospace show held April 9-12 in Rio de Janeiro, several satellite manufacturers came to present their bids to Brazilian authorities. Visiona reportedly has narrowed down the choice to three finalists: Mitsubishi Electric (MELCO); Space Systems Loral and Thales Alenia Space.

The Brazilian Ministry of Defense currently leases X-band capacity on the commercial Star One C1 and C2 operated by Embratel. Brazil's Ministry of Communications leases seven Ku-band transponders on Star One satellites.

The SGDC project if it gets off the ground will clearly result in some overlapping of satellite capacity over Brazil. But Star One has said it hopes SGDC might stimulate the overall market in Brazil and not undermine the company's business. The bottom line is that there remains a shortage of satellite

capacity for the country, even when planned satellite come online.

Broadband is the Key Driver

As in other emerging markets, broadband access is the key application driving demand in the region. Almost all countries in South America have adopted national broadband plans which aims to improve access to the internet to its population. Cisco estimates that internet traffic will grow at a compounded annual growth rate (CAGR) of 17% in South America through the end of this decade. Of the increase in internet traffic, video will play a very important role with the increasing diffusion of HD and Ultra HD in the region in the coming years.

As South America is a vast continent with the population spread out in many remote areas, there is also huge potential in VSAT services for cellular backhaul, oil and gas and e-government and e-learning applications.

Satellite operators are well aware to the vast potential in the region and are

ramping up new satellites to meet the increasing demand.

All the major global operators have a strong presence in the region. There are also very competitive regional operators from Mexico, Brazil and Argentina. In addition, countries like Venezuela and Boliva, with some Chinese help, are planning to launch their own domestic satellites.

Will there be enough demand to

justify the influx of investment in the region?

So far, the prospects look very good, indeed.

View video interviews with Lat Am Executives



Dolores Martos, VP Latin America, SES
www.satellitemarkets.com/ses-satellite2013



Jordi Bosom, Dir. Strategy & Bus. Dev., Hispasat
www.satellitemarkets.com/jordi-bosom



Virgil Labrador is the Editor-in-Chief of *Satellite Market and Research* based in Los Angeles, California. He is the author of two books on the satellite industry and has been covering the industry for various publications since 1998. Before that he worked in various capacities in the industry, including a stint as marketing director for the Asia Broadcast Center, a full-service teleport based in

Singapore. He can be reached at virgil@satellitemarkets.com

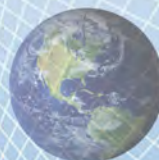
Senior Satellite Markets and Research Contributing Editor Peter Galace provide research and editorial support for this article.

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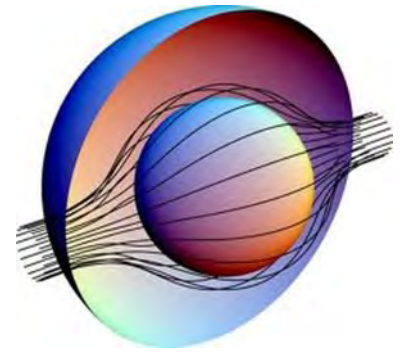
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Application Technology Strategy, L.L.C.
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Georgetown, TX 78633 USA



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The 'Invisibility Cloak' Antenna Set to Alter the Satellite Market Reality



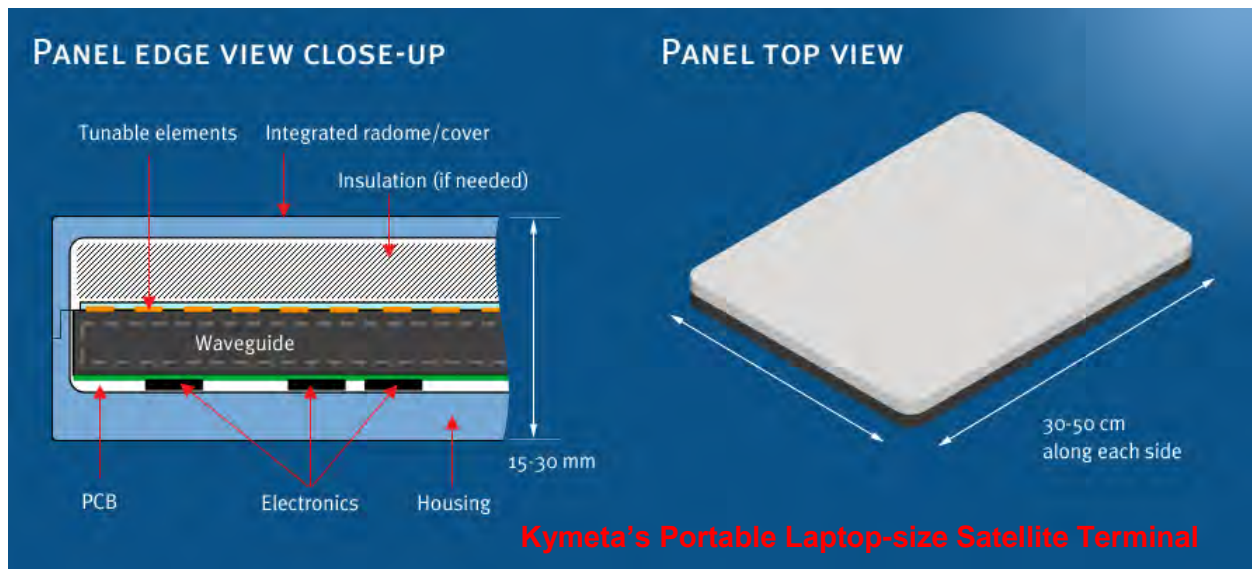
by Rajiv Hazaray

“Metamaterials is a vast subject. Kymeta is focused on the application of these new and exotic materials to make satellite antennas small, mobile, and more affordable,” says Vern Fotheringham, Kymeta’s Chairman, President and CEO.

A simple Google search on metamaterials leads you to many stories that border on science fiction. Stanford Report in an article dated May 6, 2013 describes metamaterials as engineered (read: manmade) materials that exhibit properties not found in the natural world. For example, some metamaterials exhibit a negative index of refraction and

ference. Such installation requires a costly truck-roll. The more remote the user is, the greater is the cost of these truck-rolls. Thus, it seriously blunts the competitive advantage of a satellite as a broadcast medium. This handicap gets even worse if the user is mobile! Of course, mechanical steerable satellite antennas exist, but they are bulky, expensive, and difficult to install.

In terms of business economics, heavy investment in acquiring and installing antennas directly affects the customer acquisition cost for the satellite operator. That, in turn, negatively impacts operators’ ability to recover vast amount



skew the light to the left. Technology that manipulates light in such unnatural ways could potentially lead to invisibility cloaks! Properties of these metamaterials to modify the behavior of light and radio waves is now being used by Kymeta to create a new generation of satellite antennas that can disrupt not only the satellite industry but the entire telecom industry.

Satellite has some inherent strengths and weaknesses. While it is the most economical broadcast medium, it is constrained by the fact that users need to “look at the bird” with great accuracy to receive service. Satellite antennas are required to be professionally installed since regulatory agencies require strict alignment of them to prevent inter-

ference. Such installation requires a costly truck-roll. The more remote the user is, the greater is the cost of these truck-rolls. Thus, it seriously blunts the competitive advantage of a satellite as a broadcast medium. This handicap gets even worse if the user is mobile! Of course, mechanical steerable satellite antennas exist, but they are bulky, expensive, and difficult to install.

The Kymeta Solution

Kymeta has obtained an exclusive, fully paid, perpetual global license from Intellectual Ventures for all satellite and related applications of its Metamaterials Surface Antenna Technology (MSA-T). It spun off from Intellectual Ventures in August 2012 with backing from marquee investors including Bill Gates, Lux Capital and Liberty Global.

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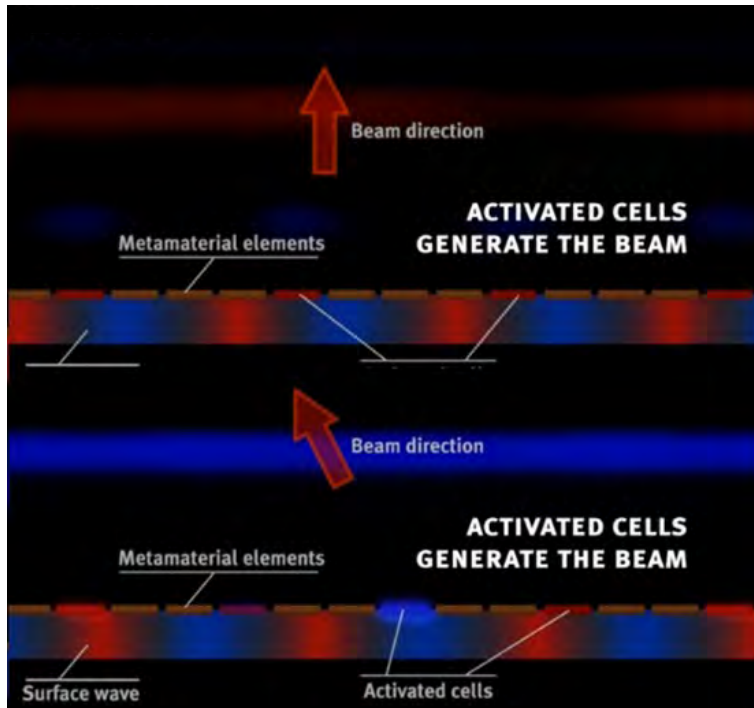
Kymeta’s CTO, Dr. Nathan Kundtz, is a renowned expert in the field of metamaterials, and has published several papers on the use of advanced structured materials in beam forming applications. Under Dr. Kundtz’s technical leadership, Kymeta plans to rollout a wide array of antenna products including Portable Satellite Terminal (PST), mTenna Core Module (CM), Aeronautical Terminal, and Fixed Satellite Terminal. In January of this year, it launched a development program for Inmarsat, the global mobile satellite services provider, with a goal to deliver an aeronautical antenna module to provide connectivity for commercial aircraft using Inmarsat’s GlobalXpress Ka-band mobile communications system. In April 2013, it achieved another first by establishing the first metamaterials based antenna connection with a Ka-band satellite.

A satellite antenna made from metamaterials has several unique advantages over the “legacy” products. Here are the main ones:

- Kymeta’s antennas are the first electronically steered beam-forming antennas that replace mechanical motors with tunable dielectric metamaterials. It generates a satellite beam by activating thousands of cells on the panel and changes the direction of the beams by altering the patterns of these activated cells. This alters the ‘size-weight-power’ equation spectacularly. Not only is the Kymeta antenna smaller and lighter but it requires only a few hundred milliwatts of power to scan the antenna compared to tens of kilowatts of power required by phased array antennas.
- Kymeta’s antennas are ‘software-driven’ and thus, highly configurable. These antennas could scan in a continuous tracking mode or an instantaneous switching mode, or in a beam lock mode – guided by an underlying satellite tracking algorithm.

Technological Breakthrough: Only a Beginning of the Disruption

Not all technological innovations result in ‘blockbuster’ products. A blockbuster product is the one that combines the technological innovation with the market innovation. Indeed, that is Kymeta’s disruptive potential. Figuratively speaking, the sky is the only limit!



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Of course, a lot will depend on the business decisions that would follow the completion of technology development. That is why the company has enlisted one of the most innovative business minds to lead the team as its CEO & President, Vern Fotheringham. Vern is a serial entrepreneur in the broadband wireless and satellite communications industry for over 25 years. He is an inventor and creator of innovative new products and services that are now adopted as global standards. He was the President and CEO of ADAPTIX, Inc., a world leader in the development of the OFDMA technology that is now the core of the Mobile WiMAX and LTE broadband radio systems.

As is the case with any technological breakthrough, the biggest challenge Kymeta faces is to

“imagine” a new marketplace for the satellite services that is not limited by the typical constraints imposed by the legacy antennas. It will then need to identify and lock-in a range of strategic alliances with other stakeholders up and down the value-chain to accelerate its market penetration.

The Tech market metrics in the table (next page) illustrates how far-reaching an impact Kymeta may have on different parts of its ecosystem. Of course, it will have to pick and choose its battles and decide on the beachheads that it needs to conquer first. “Currently, we are focused towards the high bandwidth mobile markets that are served by the next-gen satellites since these are the markets that would appreciate the value proposition of Kymeta’s solutions most,” says Vern. As mentioned earlier, Vern’s company is inching

closer to delivering the first Aero Antenna to Inmarsat by early 2015. Kymeta Aero Antenna will enable commercial aircraft and business jets of any size to access high-speed broadband connectivity globally through Inmarsat's Global Xpress (GX) service. With the launch of Aero antenna, Kymeta will tap into the rapidly expanding business aviation market, delivering business travelers broadband speeds similar to what they receive at their home or in their office. It also plans to release its commercially available laptop-sized portable satellite transceiver in the first quarter of 2015.

TECH MARKET METRICS <small>© Business Analytix, Inc.</small>	Value-chain Layer	Agility & Mobility	Software-driven Beam-forming	High Bandwidth
Agility & Mobility <small>(form factor, power requirement, and ease of installation)</small>	INFRASTRUCTURE	Legacy & Next-Gen Satellites	Legacy Satellites, Inclined-orbit Satellites	High Throughput Satellites
	APPLICATIONS	Low-Cost, Quick-Install	Auto- Tracking	Low-Cost, Quick-Install Fixed Communication
	MARKET	Oil & Gas	Low-Cost Remote Connectivity	Defense, Healthcare
Software-driven Beam-forming <small>(ability to track satellite orbit dynamically)</small>	INFRASTRUCTURE	Legacy & Next-Gen Satellites	Legacy & Next-Gen Satellites	High Throughput Satellites
	APPLICATIONS	Comm-On-The-Move	Mass Re-Pointing	Mobile High-Speed Internet
	MARKET	Defense	Multi-Location Network, Logistics	Defense, Maritime, Civil Aviation
High Bandwidth <small>(high throughput with favorable size-weight-power parameters)</small>	INFRASTRUCTURE	Legacy & Next-Gen Satellites	Legacy Satellites	High Throughput Satellites
	APPLICATIONS	Mobile Communication	Capacity Aggregation For Mission Critical Communication	Fixed High-Speed Internet
	MARKET	Satellite News Gathering	Defense	Rural & Remote Consumer And Enterprise Market

However, Kymeta has not been ignoring other opportunities. It has been working with the start-up fleet operator O3b, which will launch the first eight satellites of an initial 12-satellite constellation this year. O3b's Medium Earth orbit satellite constellation is designed for Ka-band broadband applications in the oil and gas exploration, cellular backhaul, maritime, military and cruise ship markets. O3b can greatly benefit from Kymeta's auto-pointing antenna solution giving them a cost-effective alternative to mechanically steered infrastructure. Kymeta is also in discussion with various satellite system operators, to position itself as a means to extend the useful life of satellites nearing the end of their original design time, when the gradual loss of onboard station keeping propellant leaves it circling in an inclined orbit.

An antenna is the bridge that connects space and ground segments of the industry. Full exploitation of the value of these metamaterial antennas (and consequently, faster proliferation) will require broader integration with the satellite hubs/modems on the ground. "We are already in discussions with all major satellite hub/modem manufacturers," said Vern. Of course, hub/modem manufacturers have as much or more to

gain from this innovation as does Kymeta.

Why will Kymeta Succeed?

Kymeta, as any other start-up, faces many demons on its way to seize the secret treasure. However, no one can deny the fact that it possesses the ring with the magical powers that can help it traverse through the difficult terrain ... the unique sustainable customer value proposition!



Rajiv Hazaray is a strategic analyst; assisting companies – large and small – develop and execute business plans internationally, through the entire life cycle of the venture. Rajiv has assisted Lockheed Martin, EchoStar, Sinclair Broadcasting Group, ViaSat, and others in market study, pricing, forecasting, valuation, and economic evaluation of technologies. He can be reached at:

rajiv.h@business-analytix.com

Interview with Kymeta CEO Vern Fotheringham

Kymeta utilizes cutting edge technology in the realm of metamaterials. How do you manage the age-old innovator's dilemma of synchronizing between an insatiable urge to perfect the technology and to be early-to-market with a product that satisfactorily meets a customer need?

Vern Fotheringham (VF): Anyone productizing a new technology, however groundbreaking it might be, faces the same classic dilemma of choosing between 'good enough' [for the market] and the 'extraordinary'. At Kymeta, we face many development tradeoffs as we race towards market. Ex. Should we circumvent significant regulatory delays and be early-to-market with our Receive-only (RO) fixed antenna solution or should we, even at the cost of delaying rollout in certain markets, wait to launch a full-featured two-way antenna that maximizes the value offered by our metamaterial antenna? Some of these tradeoffs would have to be resolved opportunistically. Key to do so successfully lies in the continuous engagement with the end-user community. We always have our ears to the ground, listening carefully to what the end-consumers' vital pain-points are and where our antenna solution can provide most value. This attention to the market vibes guides our go-to-market strategy at every node in our product development decision-tree.

Often, a forerunner has a handicap of having no precedents. In the tech world, a disruptive technology suffers due to lack of existing ecosystem. What is the burden on your shoulders as a pioneer?

VF: Not only do we lack an existing ecosystem as you suggest but also, we threaten the legacy ecosystem for the managed service providers and yes, it has its own challenges! We are forcing our industry to imagine a world without any truck-rolls that has become part of the industry fabric for so long. One also needs to revisit all those battlefields that satellite has ceded to terrestrial wireless thus far and explore whether we can 'go

back to the future'! Qualcomm, the pioneer in CDMA technology, originally began as a satellite locating and messaging service – OmniTRACS, the first mobile information system for transportation and logistics. Now, with Kymeta technology combined with the high throughput satellites, satellite can once again become a communication mode of choice for many mobile applications. Of course, such disruption always comes with a burden of meeting the required quality standards. In case of mobile communication, we need build robust situation awareness in our products to meet the 'good neighbor' requirements of avoiding interference with adjacent satellites.

Kymeta does not have a competitor, though there are substitutes. In this context, what market challenges do you foresee?

VF: Having no competitors is not always a boon for a start-up like ours. Since there is not enough volume generated in the ecosystem, we lack economies of scale. Producing low-cost high-volume platform products becomes a challenge and that, in turn, keeps us away from tapping into mass market opportunities as soon as we would like. Of course, we do offer high value-add to various niche verticals such as civil aviation. but our final goal is the mass market. Another challenge lies in finding the right channel partners to reach out to the huge market potential that we offer. An innovative product that may have numerous hitherto untried applications also needs an innovative marketing approach and development of new sales channels.

How do you view Kymeta's impact on the overall satellite capacity inventory?

VF: Kymeta's metamaterial antenna virtually wipes out the distinction between a mobile and fixed satellite. It can also be used to put back in service all that "lost" capacity from the satellites in the inclined orbit. So, without a doubt, we will add significantly to the

overall satellite capacity. On the other hand, we will also help the satellite operators to monetize much

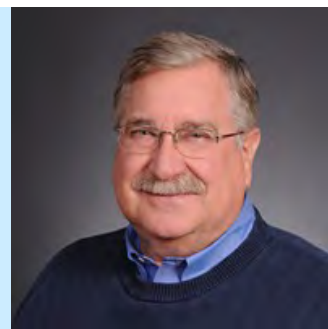
more of their capacity by enabling many applications for which satellites were considered to be inappropriate. Take example of broadcast overlay applications. Today, as you are well aware, we are using Internet traffic extremely inefficiently with all the one-to-many bytes transported in the one-to-one unicast mode. The only way we can manage this burgeoning internet traffic, especially in the mobile space, is by creating a broadcast overlay system. High throughput satellites with the help of Kymeta's antennas can offer such a service and it will help satellite operators in-fill their under-utilized beams. Thus, we will impact both sides of the satellite economics – demand and supply.

Today, Kymeta has an exclusive, fully paid, perpetual global license from Intellectual Ventures for all satellite and related applications. Do you anticipate, even if at a distant future, to tap into markets other than satellites?

VF: The short answer is "no", not in the foreseeable future. However, we will definitely gain some unique insights in how to commercialize this revolutionary technology solution.

How will you define Kymeta's success?

VF: Isn't defining the success always the most difficult problem for an entrepreneur to address? I have a very simple answer for you – I will consider Kymeta a success when it becomes a household name!



Vern Fotheringham

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More Than Just ‘Another Launch’

by Virgil Labrador

Every satellite launch is an anxiously anticipated event. A communications satellite requires massive investment of time and resources to plan, build and finally bring to the launch pad. But perhaps no satellite launch has been as anticipated and as widely followed as the launch of the first four satellites in the O3b Networks constellation last month.

O3b’s first four satellites were successfully launched aboard an Arianespace Soyuz launch vehicle on June 25th, seven years after the company whose name stands for the “other 3 billion” was founded by an innovative entrepreneur, Greg Wyler in 2007. Wyler came up with the idea of O3b while working in Africa where he couldn’t get reliable internet connections. His vision was to deliver affordable, high speed connectivity to the ‘other 3 billion’ of the earth’s population who have little or no access to reliable connections. The O3b satellite constellation was conceived to operate in medium earth orbit, which reduces network latency--a key disadvantage of satellites in geostationary orbit. By reducing latency, O3b’s satellites can operate with fiber-like speeds and be competitive with terrestrial networks.

The promise of high speed connections in hitherto unreachable and underserved areas was enthusiastically received in most parts of the developing world. In the years leading up to the launch of their first four satellites, O3b was able to get the necessary funding for their innovative Ka-band constellation and attracting investors including SES, Google, Liberty Global, HSBC Principal Investments, Northbridge Venture Partners, and Allen & Company, among others.

When the first four satellites finally reached orbit last month, Ruy Sarmiento, O3b’s Director of Managed Network Operations in Latin America said in a blog post: “for those of us fortunate to be part of the O3b family, it was more than ‘another launch’...it was the realization of a visionary idea.”

John W Dick, O3b Chairman, said a life-changing journey has begun for many of the remaining unconnected and underserved regions of the world.

“In only a few years, we have designed and launched a revolutionary system; one that will transform the way communications are handled in many of the world’s underserved mar-

kets. Working with our customers, O3b will open up a new and exciting world to billions of people who, up to now, have not experienced the benefits of fast Internet connectivity and who, as a result, are not on a level playing field,” Dick said.

A second group of four O3b satellites will be launched in September and another four satellites in 2014, for a total of 12 satellites. The O3b system is scalable, designed to allow additional satellites to be launched and slotted into the system, increasing capacity elegantly and simply as demand grows.

O3b’s next-generation satellite network will have telecommunications operators, Internet service providers, enterprise and government as customers. Its system will provide billions of consumers and businesses in nearly 180 countries with low-cost, high-speed, low latency Internet and mobile connectivity.

NSR’s just released [Wireless Backhaul via Satellite, 7th Edition](#) report finds the industry at the cusp of an evolutionary step. The launch of O3b and global High Throughput Satellite (HTS) program deployments are leading the industry to dramatic and long term change with a strong potential for

industry revenue to hit US\$ 2.9 billion by 2022, growing more than three-fold from today’s US\$ 830+ million revenue base. The long awaited launch of O3b will have an immediate and substantial impact on the industry, according to NSR. Rural and underserved areas have dealt with the limited options of 2G or 2.5G services for basic voice, SMS and Internet access services for years. And not surprisingly, low mobile penetration levels go along with the delayed technological growth. “With O3b, rural markets will now enjoy 3G and eventually 4G services that curb the widening Digital Divide,” according to report author and NSR Senior Analyst, Jose Del Rosario.

Service Offerings

O3b’s key product offerings are targeting ISPs, telcos and vertical markets such as maritime, government and oil & gas. Its *O3bTrunk* service is a breakthrough in IP trunking solutions connecting customers’ carrier networks to the internet, allowing customers to transmit and receive data at unparalleled speed, quality and low cost.

Its mobile backhaul product *O3bCell* allows mobile operators to reach more subscribers economically, significantly improving voice quality while supporting data rates unachievable using conventional satellite solutions. *O3bCell* is the response to the technical and financial challenges O3b sees for rural expansion in today’s emerging market network operators.

For the maritime market, *O3bMaritime* delivers communications at sea, equal to the ‘at home’ experience. For the first time, passengers on ocean going vessels will have affordable high quality voice calls and high speed internet connectivity. Royal Caribbean was the first to enlist O3b’s new maritime offering aboard *Allure of the Seas* and *Oasis of the Seas* vessels.

The O3b system is also highly suited to Governments, militaries and nongovernmental organizations, like the United Nations, who have worldwide operations, often in remote and isolated locations that do not have access to reliable high speed communications.

And for the oil & gas market, *O3bEnergy*’s low latency allows simple remote thin clients to be used for immediate rollout of centralized IT applications leading to synergies in cost and operations. Real-time applications such as remote platform monitoring, control, management, remote database synchronization will be fully enabled. O3b’s round trip delay times are four times faster than any existing geostationary satellite.

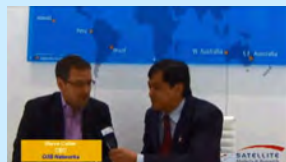
With the successful launch of its first four satellites, O3b is certainly off to a great start.

With the successful launch of its first four satellites, O3b is certainly off to a great start.



O3b’s service coverage area at 45° latitude north and south of the equator. Connectivity to the fiber infrastructure can be made through Gateway locations at key cities worldwide. (image courtesy of O3b Networks)

View video interviews with O3B executives



Steve Collar, CEO
www.satellitemarkets.com/marketcast-satellite2013



Omar Trujillo, VP-Latin America & Africa
www.satellitemarkets.com/marketcast-satcomafrika2013

The Satellite Image in a Breached World

by Lou Zacharilla

The “digital revolution” has brought home a reminder that what defends can also attack. Recently we have become aware of the importance of cyber defense, big data mining and their overall impact on privacy and the evolution (or not) of a free society. Increasingly, many of us feel vulnerable and exposed. The first reaction has been rage and concern. The Prism revelations in the USA and cyber kinetic attacks, most notably on Iran’s nuclear weapons program, have given societies served by satellite a sharp pause. Strategies for managing threats have been altered to accommodate the new reality of virtual battlefields. The impact of drone strikes, as well as the ongoing threat that a rogue nation or group of malicious hackers can effectively bring to freeze” the economy of a free society, or worse, is the real “new normal.”

Satellites, as you would expect, are running in the background for all of this, but perhaps less quietly than ever before. During the week O3b was preparing its historic launch, and our understanding of Earth’s future climate were advanced as the biomass of the northern hemisphere’s forests was mapped with greater precision than ever before by satellites, I was caught off guard by a reporter’s response to the word “satellite.” While in Canada giving a speech, I mentioned to a group of reporters that I believe satellites will contribute more to the future of the world’s economy, its cities, towns and industries, than any other technology over the next 20 years. I got a reply from a reporter that I had never before encountered. To put it in a few words he said, “Satellites? You mean satellites that listen to our phone calls and blow people up?”

I spent the next 15 minutes going over the virtue of satellites. But there it was—a misperception based on a lack of understanding of the complete picture. But perception is reality and it is up to us in the industry to be the ambassadors for the technology we love. It also helps if we tell it like it is about the dangers in the world, and how thin the line can be between our comfortable lives, and legitimate threats to it.

To help me, I reached out to people in our industry to get their take on this issue. Not surprisingly few were willing to go on record because the issue is so new and sensitive. However two people, **Globecomm’s CEO David Hershberg** and former **Navy SEALS Team Six commander and founder Richard Marcinko**, were willing to discuss the issue openly.

Hershberg is an inductee in the Satellite Industry Hall of Fame and Marcinko a best-selling author. One is an innovator who has launched a new service to provide cyber protection and the other a controversial observer of the shadow worlds of government. Excerpts of our ‘Back and Forth’ exchange follows:

Lou Zacharilla (LZ): *We have all become aware of the importance of cyber defense and its impact on national security. Cyber kinetics blew-up Iranian progress on its nuclear program and we have seen sabotage impact the economies of Korea and others. We’re all new to this game. What is your reaction to these episodes, as well as PRISM and the reports cyber corporate espionage from places like China?*

Richard Marcinko: My reaction is that, in the case of the West and free nations, we are certainly behind the power curve on cyber warfare, especially involving our global strategic relationship with the Chinese government.

LZ: *Yes. The meeting between the leaders of America and China two weeks ago to discuss cyber issues was made very prominent by the media. It seemed like a big deal.*

Marcinko: For good reason. They (China) have military

units working against the interests of western culture. This includes their academic and “private” sector, or industry. It is government-controlled. The sheer numbers are mind boggling. Our industries and response are fragmented and we are late to the party. It is essential that we cultivate our future leaders, in the satellite industry and other parts of society, to understand this.

LZ: *David, as an entrepreneur, what can we do as an interim step to understand the issue better and to even turn it into an opportunity?*

David Hershberg: The first step is to ensure network security. You have to go on the defensive before you can prepare your counterattack right now. Even in business. As we have seen, and as Commander Marcinko said, there will be more coordinated attacks on the one area where the most damage can be done: the innovative economies of the world. So we

“...in the case of the West and free nations, we are certainly behind the power curve on cyber warfare, especially involving our global strategic relationship with the Chinese government...”



-Richard Marcinko

went to skunk works mode and developed a new brand called Cytelics. Simply stated we need a comprehensive security approach and ways to coordinate programs and technologies that can be applied in all areas that are vulnerable. Cyber attack is costly. The only sure way of providing security is to supply a network that is independent of the public network.

LZ: Can satellites play a role here?

Hershberg: Sure. Satellite communications can be the solution. By providing a completely private network to provide critical infrastructure and process controls, we can be more certain of the security of the systems. Networks using encrypted VSATs that are deployed in the spot Ka-band beams of the Jupiter and ViaSat satellites offer a quick and economic solution. There are also practical issues we need to beef-up. For example, facilities must be physically and electronically secured, and only cleared personnel must be allowed to operate and maintain the networks. Free people are often not as good in the first phase of a change, or an aggressive attack, in this area. But we need to respond and we think we have a new and innovative solution with Cytelics. It is a start.

LZ: Do we get behind because freedom is not based on paranoia?

Hershberg: Pretty much, yes. But we are vulnerable and need to accept that. It's a pretty fine line.

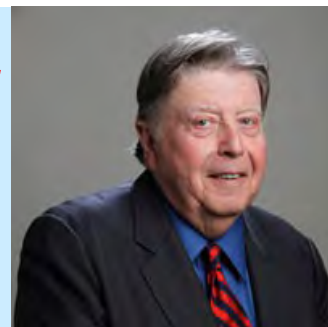
Marcinko: The public needs do be more engaged here to see what is really going on. Right now it has its head in the sand and, as we see with the Snowden case, does not want to have the hard discussion yet. We also need to understand what satellites can do here. The industry is limited only by its own imagination. It has served the common interest well and has even greater potential. I think with a military mentality and so I would offer that transmission of "misinformation" can be utilized better. The role in creating the "Arab Spring" needs to be magnified, for example. Let's think of ways to design options of fragmentation once in orbit; reconstituting automatically once defeated. R&D

needs to applied to further investigation into applications that would be feasible with new technologies and designed into the systems at the design phase, rather than at the adaptive phase.

LZ: I hear you both saying, however, that it can be done by ensuring a commercial approach for industry and bringing to bear more upfront planning, innovation and academic research.


Hershberg: Yes. Also we need to consider better ways to protect industrial automation networks that rely increasingly on the cloud and collaboration. We have a service for this now. You have to understand that even in the commercial area, our strengths become weaknesses to our enemies. That is how conflict and war work.

“... The first step is to ensure network security. You have to go on the defensive before you can prepare your counterattack right now. Even in business. ..”



-David Hershberg

Marcinko: Right. If I can jump in here, I want to say that it is not in anyone's best interest at this time to harness the technological advancements of what is yet to come for the purpose of some type of Cyber Geneva Convention. Not yet. That means we need to be careful about how we negotiate a "cyber peace." I honestly would not trust any signatories to fully honor any agreement. I'm certain there would be legal and moral loopholes that would be ignored. We are way early in the game.

Hershberg: Services like the one described are the first step in working toward that. When everyone agrees because they all understand that they cannot win without agreement, you will see a treaty or whatever comes next. The field is open for innovation and the stakes for our industry are high. 



Lou Zacharilla is the Director of Development of the Society of Satellite Professionals International (SSPI). He can be reached at: LZacharilla@sspi.org

China's Space Program Shifts to High Gear

by Peter Galace

As part of its comprehensive national development strategy, China in 2003 outlined its ten-year space goals. Some of its more important space goals include—an Earth observation system, an independently operated satellite broadcasting and telecommunications system, upgraded overall capacity of launch vehicles, a manned spaceflight, and a complete R&D and test system for manned space projects.

Before the decade was completed, most of these goals have been achieved. Thus in 2010, the China National Space Administration, which directs China's space program, shifted into high gear. It wanted to build a manned space station by 2020 and send a spacecraft to the Moon and Mars.

Last month, ten years after it first announced its lofty goals, China showed what it is now capable of. It successfully launched a manned space mission from June 11–26, continuing its goal of building its own space station. *Shenzhou-10* spacecraft lofted from a launch center in the Gobi desert, and three Chinese astronauts, two men and one woman, returned safely to Earth after completing their country's longest manned space voyage.

During its journey, *Shenzhou-10*, or "Divine Vessel" in Chinese, twice docked with the orbiting space station *Tiangong-1* ("Heavenly Palace"), once manually and once through an automated operation. The crew spent 12

days aboard the space station, conducting technical tests and medical experiments, while one of the astronauts delivered a physics lesson in zero-gravity via video link to more than 60 million Chinese middle school students.

Tiangong-1 was launched in September 2011 with a two-year operational lifespan. The *Shenzhou-10's* mission was the second and final manned voyage to the space station, following China's first manned docking mission a year ago. The mission made China the only third

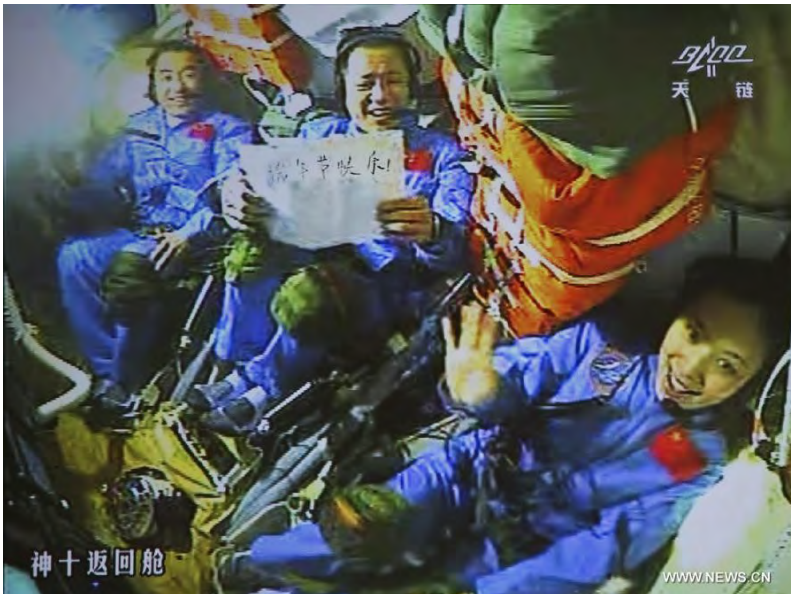
dream is part of the dream to make China stronger. With the development of space programs, the Chinese people will take bigger strides to explore further in space," he said.

The *Shenzhou-10* mission is but a part of Beijing's ambitious multi-billion dollar program to establish a manned space station by 2020 and continue developing its own space industry. After it sent its first astronaut into space in 2003, it has no doubt made rapid advances in the intervening decade. China does not expect to put a man on the moon until after 2020, but plans to send a more advanced space lab, *Tiangong-2*, into orbit in 2015.

Rapid Progress in a Decade

China's space industry was developed despite weak infrastructure industries and a relatively backward scientific and technological level. More significantly, it was able to carry out space activities almost independently, scoring a series of important achievements within a relatively short span of time. And at a time when China is making these strides, the U.S., Europe and Japan are so absorbed with their economic problems that they can only brood quietly.

Today, China ranks among the most advanced countries in the world in many important technological fields, such as satellite recovery, single-rocket multi-satellite launch, cryogenic-fuelled rockets, strap-on rockets, geo-stationary satellite launch, and Telemetry, Tracking and Control (TT&C). China also gained significant achievements in the



Commander Nie Haisheng and Flight Engineers Zhang Xiaoguang and Wang Yaping at the Tiangong-1 space module during the latest Chinese space mission.
(image courtesy of www.news.cn)

country, after U.S. and Russia, that is able to send its own astronauts independently in space.

The mission was broadly hailed by Chinese leaders and citizens alike as a prestige-building demonstration of China's growing technological expertise. After all, the mission was China's fifth manned mission to space in a decade. It was the first during the presidency of Xi Jinping, who took office in March this year. Xi proclaimed that "the space

development and application of remote-sensing satellites and telecommunications satellites, and in manned spacecraft testing and space micro-gravity experiments.

The whole world has started noticing China's space achievements. In 2009, the U.S. Space Foundation awarded China with its annual Space Achievement Award for significant contributions in advancing the exploration, development, or utilization of space.

China earned the award after it launched on Sept. 25, 2008, *Shenzhou-7*, China's third manned space mission and first three-man mission. Astronaut, or Taikonaut Zhai performed a 20-minute spacewalk, making China the world's third nation to independently carry out a spacewalk.

The crew also conducted a number of experiments, including releasing a miniaturized satellite that took photos and videos near the spacecraft, maneuvered to about 120 miles away and then returned to orbit the spacecraft after the return module had separated and reentered the atmosphere.

Morris Jones, an Australian space analyst, told the *Voice of America News* recently that China's expanding space program is part of an effort to show the Chinese people, and the world, the country's rising power. "If it wants to be a super power class nation, developing a very strong space program is one way it can project that image both internally and externally to the outside world," he said.

Still Behind U.S., Russia

But despite its numerous successes, China's space program has yet to achieve capabilities reached by the U.S. and the Soviet Union decades ago. But China's achievements could not also be downplayed so easily.

Space observers note that China's recent flight is not to some sprawling orbiting laboratory like the International Space Station that Americans built but rather to a tiny, humble one-module

space station that is a little over one-tenth of the size of the U.S. Skylab and Russian Salyut stations of decades past.

China's space lab, *Tiangong-1*, also has a temporary lifespan. It is merely a training module designed to help the Chinese learn the techniques needed to run a space station. It has received three manned missions and will eventually be decommissioned. But in its place will rise *Tiangong-2* in 2015 or 2016, with a fully-fledged Chinese space station due for completion by 2020.

But while China's space achievements may still be decades behind U.S. and Russia, it is making headway, nonetheless, and could, in the future take away much of the business related to the space industry away from the West.

In satellite launches, for example, China is beginning to master its rocketry technology. In April this year, China's Long March rocket successfully launched four satellites – a high-resolution imaging payload, Ecuador's first satellite, and two CubeSats, one built by students in Turkey, and a technology demonstration platform from Argentina.

China's Long March in Rocketry

China's *Long March* rockets experienced two major launch disasters in 1995 and 1996, casting a shadow over the Chinese space program. The first occurred when a Long March 2E rocket, carrying the Apstar 2 telecom satellite, blew up shortly after launch from the Xichang space centre where six people are believed to have died. The second, in February 1996, was far more deadly. A Long March 3B rocket, carrying Intelsat 708 exploded 22 seconds into the flight and crashed into a nearby village. Chinese newspapers reported less than 100 casualties.

But China's rocket technology has since recovered. For 13 years, between August 1996 and August 2009, Long March is reported to have 75 consecutive successful launches. Today, China claims a record of more than 100 successful launches.

Next year, China will push through with the maiden voyage of its *Long March-5* large-thrust carrier rocket after Chinese scientist completed major part of its production. With a maximum low Earth-orbit payload capacity of 25 tons and high Earth-orbit payload capacity of 14 tons, *Long March-5* rockets will be among the world's leader in payload capacity and reliability, Chinese space officials declared. They added that the 25-ton maximum capacity is 2.5 times that of in-service *Long March* rockets.

With more success and increasing reliability, it is likely that China will be able to entice more and more foreign customers to use their more inexpensive rockets for future satellite launches. There is no more doubt China is emerging as a relative competitor in selected areas of space technology.

"In many areas, on launch vehicles [the Chinese are] almost as good as anybody," Richard Holdaway, Director of the Rutherford Appleton Laboratory (RAL) Space division, one of the UK's closest collaborators with the Chinese space program, told wired.co.uk recently.

China is poised to become an international player at least in the launch services market and perhaps as a niche provider of low-cost satellites to other developing countries. The only hindrance to the Chinese getting more launch contracts are the export control restrictions placed by International Traffic on Arms Regulations (ITAR).

Conclusion

As in the U.S. and the former Soviet Union—the race to space development can produce many civilian economic spin-offs for the Chinese space and telecommunications industry. This will make Chinese companies very competitive globally in areas such as satellite launches, satellite equipment and components and even in the near future in satellite manufacturing. We should be able to see the economic dividends very shortly from China's march into being a space power. This time, the West should not be caught off guard.



■ A guide to key products and services to be showcased at Broadcast and Cable 2013 in Sao Paulo, Brazil from August 20-22, 2013.

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Connecting the Unconnected

The fifth World Telecommunications Policy Forum explores how to expand broadband access globally.

by Roxana Dunnette

The ITU's fifth World Telecommunications Policy Forum (WTPF) took place in Geneva from May 14-16, 2013. The WTPF was established by the 1994 Kyoto Plenipotentiary Conference and provides a forum where ITU Member States and Sector Members can discuss and exchange views and information on emerging telecommunications, ICT policy and regulatory matters, global concerns and hot topics affecting the fast-evolving technology sector. The First WTPF was held in 1996 and I had the privilege to report on that event for the Pacific Telecommunications Review.



The fifth forum held in the same time with WSIS, was attended by 900 delegates, representing 126 Member States and 49 Sector Members and five United Nations entities, high level participants were present: 33 Ministers and 8 Deputy Ministers, heads of several regulatory agencies and 3000 remote participants.

Under the outstanding chairmanship of Mr. Ivo Ivanovski, Minister of Information Society and Administration, TFYR Macedonia, delegates engaged in constructive discussions that led to a positive and solid outcome that will promote better understanding of the Internet, related public policy issues and the

global development and distribution of ICTs.

The Forum's only working document—which wasn't too lengthy—was the ITU Secretary's General Report prepared with contributions from ITU Member

States and Sector Members and a group of voluntary 140 experts of the IEG (Internet Expert Group), open to all stakeholders.

The report's conclusions were drafted as "Opinions" concerning various principles and which are "voluntary" since the Forum is not authorized to take decisions.

The more formal expression of those opinions was entered into the Chairman's report.

The event opened with addresses by Dr. Hamadoun Toure, ITU Secretary General; Doris Leuthard, Minister, Depart-

ment of Environment, Transport, Energy and Communications, Switzerland; Fadi Chehade, President and CEO, ICANN; and Robert Khan, Chairman, CEO and President, CNRI and one of the pioneers of the Internet.

The Policy Forum was preceded by a Strategic Dialogue on "Building our broadband future."

The first session explored whether broadband access constitutes a fundamental right: "a

basic commodity of life." Speakers recognized the value of Internet as a global resource and investigated how to connect the two-thirds of the world's population still with no access.

It was reported that total Internet users worldwide numbered some 2.4 billion by the end of 2012, and the total mobile broadband subscriptions was 1.19 billion. Yet there was still a lot to do in terms of achieving global connectivity with 70% of the population with no internet connections.

By the end of 2015 Chinese Internet users will overtake the number of English speaking users. Spanish will be the

third most used language of the Internet.

The second session on “**Broadband driving development**” focused on the power of broadband to drive development, improve people’s lives, support applications and services that touch on all aspects of life - education, health care, and achieve the Millennium Development Goals.

Agenda of the WTPF

The Report as well as the positive outcome of the Strategic dialogue provided all participants with greater understanding and appreciation of the issues associated with the Internet-related public policy matters.

In the run-up of WCIT -12 in Dubai the time was right to work together to achieve digital inclusion and greater access to the Internet.

“It is my pleasure to announce you today...that we are not coming to take over the Internet...we have an opportunity to pose, reflect on Telecom and ICTs issues and how we can connect in a consistent way.....The Internet is doing just fine!” said Dr. Toure, Secretary General of ITU wearing a blue UN peacekeeper helmet at the opening ceremony.

Reinforcing the post-WCIT spirit of collaboration the following well crafted Draft Opinions attached to the Report were submitted to participants:

Opinion 1: Promoting Internet Exchange Points (IXPs) as a long term solution to advance connectivity.

Opinion 2: Fostering an enabling environment for greater growth and development of broadband connectivity.

Opinion 3: Supporting Capacity Building for the deployment of IPv6.

Opinion 4: In support of IPv6 adoption and transition from IPv4.

Opinion 5: Supporting multi-stakeholderism in Internet Governance.

Opinion 6: On supporting operationalizing the enhanced cooperation process.

After two days of debates all six opinions were adopted. Member States and Sector Members were invited to work in a collaborative manner to promote the development and expansion of networks and Internet, to review regulatory frameworks, to work with appropriate and relevant international, regional and national bodies on subjects like broadband connectivity, stimulate investments, assist developing countries in

“...Broadband is the pipeline, internet the content, how can we build the pipeline and reach 100% of the population in remote and rural areas without satellites?...”

adoption of new technologies and improve their participation in initiatives and organizations involved in various aspects of Internet governance, explore ways and means for greater collaboration and coordination among governments on all telecom and ICTs issues.

In a spirit of openness and transparency the delegates promised to keep up the good work as the purpose is common to all, the multi-stakeholder model being recognized as the global model for Internet governance that goes beyond infrastructural points and address legal, economic, developmental and socio-cultural issues.

Several delegations (Mexico was one) made comments about the satellite industry. “Broadband is the pipeline, internet the content, how can we build the pipeline and reach 100% of the population in remote and rural areas without satellites?”

An invitation to participate actively in building broadband networks

Conclusion

The fifth World Telecommunication

Policy Forum was a very short but extremely efficient meeting. In three days it was possible to smooth divisions and establish the grounds for future Internet development. The forum was an important step towards greater liberalization and openness of the digital environment.

It was also an opportunity for the most developed countries and service operators to be made aware of the special interests and needs of the developing countries and allow them to participate actively in all programs. The European Commission delegation stated that it “believes that the better resourced countries should offer some sort of technical assistance vehicle to countries with fewer resources, a mechanism to digest information and make it useable (outcomes of WTPF), the EC is willing to play an active role in achieving this objective.”

The US delegation echoed what many had noted believing “that all participants will leave the forum enriched by the discussions and better equipped to achieved our shared goal of an Internet that flourishes and provides the economic grows and social welfare we all deserved.”

Hopefully the Internet will not only bring about worldwide connectivity but also help solve some our our developmental and humanitarian problems.



Roxana Dunnette is the Executive Director, of R&D MEDIA, based in Geneva, Switzerland. She has had an extensive career in Broadcasting and media including senior management positions at World-

space, CBS and PBS in New York covering primetime sports and news events, and internaat the United Nations in New York and the International Telecommunication Union as US government representative. She can be reached at: roxana.dunnette@ties.itu.int

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CPI Buys MCL

Palo Alto, Calif., June 25, 2013 — CPI International, Inc. and its wholly owned subsidiary Communications & Power Industries LLC (CPI) have acquired MCL, Inc., a manufacturer of power amplifier products and systems for the satellite communications market and a wholly owned subsidiary of MITEQ, Inc.

CPI provides microwave, radio frequency (RF), power and control solutions for critical defense, communications, medical and other applications. MITEQ manufactures high-performance RF microwave components and satellite communications products.

CPI acquired the assets of MCL for an undisclosed amount with cash.

CPI said the acquisition will be integrated into CPI's Satcom Division. CPI will honor MCL's current sales commitments, and will continue to operate

MCL's manufacturing facility in Bolingbrook, Ill until MCL's backlog commitments are fulfilled.

CPI promised to address customers' needs with products from its Satcom Division in Georgetown, Ontario, Canada and Palo Alto, Calif. CPI will also continue to support MCL's installed base of products and customers worldwide.

It also pledged to maintain a service center for MCL products in the Chicago area and expects to retain MCL's existing global network of authorized service providers. Several of MCL's key managers and employees will transition into roles at CPI supporting MCL products.

Joe Caldarelli, chief executive officer of CPI, said CPI will continue to provide MCL's customers with the excellent service and support. "MCL's customers will have full access to, and benefit



from, the global reach of CPI's well-established sales and service network," he said.

Excluding the impact of purchase accounting and non-recurring integration expenses, the acquisition is expected to be accretive for CPI in fiscal year 2014.

Communications & Power Industries LLC, headquartered in Palo Alto, California, is a subsidiary of CPI International Holding Corp. and CPI International, Inc. and a leading provider of microwave, radio frequency, power and control solutions for critical defense, communications, medical, scientific and other applications.



Ericsson Acquires Red Bee Media

Stockholm, Sweden, July 2, 2013— Ericsson announced its intention to acquire Red Bee Media, a leading media services company headquartered in the UK, from an entity controlled by Macquarie Advanced Investment Partners, L.P.

The acquisition, which is subject to regulatory approval, supports Ericsson's strategy to grow in the broadcast services market and takes advantage of its technology and services leadership to help broadcasters and content owners address the convergence of video and mobility. It will bring 1,500 highly-skilled employees, as well as media services and operations facilities in the UK, France, Germany, Spain and Australia.

Although the purchase price was not disclosed, observers say the acquisition will help Ericsson take advantage of increased video consumption via web-

surfing devices. It will also further strengthen Ericsson's broadcast services business, which was started in 2007 and



expanded in 2012 with the acquisition of Technicolor's Broadcast Services Division.

With 1,240 of Red Bee Media employ-

ees being based in the UK, Ericsson's UK business would grow to around 4,000 employees and with more than one-third working in the media services business, the UK will become a global media hub for Ericsson.

Founded in 2005, Red Bee Media has established itself as a strong and diverse business with a growing number of customers around the world. It provides a range of media services; from media asset management to playout and digital video publishing, metadata services, multilingual access services and creative services to major broadcasters and broadband platforms.

Red Bee Media, which is known for its high quality playout services, is also the largest editorial metadata provider in Europe, delivering more than 100,000 hours of subtitling per year for leading broadcasters.



Karim Michel Sabbagh to Succeed Romain Bausch as President and CEO of SES

Luxembourg, June 17, 2013 — SES announced today that the company's President and CEO **Romain Bausch** has informed the Board of Directors that he plans to step down from his position at the next annual general meeting of shareholders in April 2014.

The SES Board appointed **Karim Michel Sabbagh** as the successor to Bausch. Sabbagh will join the company on September 1 as CEO Designate and, following a transition period, will officially take up the position of President and CEO on April 3, 2014.



Karim Michel Sabbagh

Sabbagh, aged 49, has been a member of the Board of Directors of SES as well as of its Audit and Risk Committee since April 2011. Until recently he was a Senior Partner and served as global and regional practice leader for Communications, Media and Technology along with other leadership forums at Booz & Company, which he joined in 1998. Sabbagh was based in Dubai over the past 15 years. He is widely recognized for his vast expertise in the industry and for his focus on the emerging markets.

Bausch, who will turn 60 this month, has been President and CEO of SES since 1995. Before joining the company, Bausch had a distinguished career in the Luxembourg Ministry of Finance and occupied key positions in the banking, media and communications sectors.

Bausch was appointed in April this year to the Board of Directors of SES, where he will continue to serve as a non-executive Director.

Stéphane Israël Named Chairman and CEO of Starsem

Le Burget, June 20, 2013 — The Board of Directors of **Starsem** has named **Stéphane Israël** Chairman and CEO of the company.

After his appointment, Israël said he was very proud to be succeeding Jean-Yves Le Gall and to be entrusted with this position. He confirmed his determination to continue the fruitful partnership between Arianespace, Astrium, Roscosmos and the Samara Space Center TsSKB-Progress, a partnership that has conducted 26 launches from the Baikonur Cosmodrome, all successful.



Stéphane Israël

Israël was named Chairman and CEO of Arianespace on April 22, 2013.

Michel de Rosen Elected as Chairman of ESOA

Brussels, June 25, 2013 — The Board of the **European Satellite Operators Association (ESOA)** has elected **Michel de Rosen**, CEO of Eutelsat, as its new Chairman of the Board. Dave McGlade, CEO of Intelsat, was re-elected first Vice-Chairman and Rupert Pearce, CEO of Inmarsat, was elected second Vice-Chairman.

Michel de Rosen succeeds Cato Halsaa, former CEO of Telenor, as Chairman of ESOA.

Markus Fritz joins Eutelsat as Director of Commercial Development and Marketing

Paris, June 18, 2013 — **Eutelsat Communications** has announced that **Markus Fritz** has joined the company as Director of Commercial Development and Marketing, reporting to Jean-

Francois Leprince-Ringuet, the Group's Chief Commercial Officer.

In this role, Fritz will be responsible for further developing Eutelsat's commercial strategy internationally, including market development and research, business intelligence, product management and pricing as well as marketing communications. He is also responsible for developing strategic marketing partnerships with customers to strengthen Eutelsat's competitive advantage globally. Fritz comes to Eutelsat with over 20 years of international experience in the satellite, ICT and consumer electronics industries, including over ten years at SES Astra. He has also provided strategic and commercial services across EMEA and South-East Asia and held leading roles at ZVEI, the German Electrical and Electronic Manufacturers' Association and Digital Europe, a Brussels-based association representing the digital technology industry.

Markus replaces Marc Welinski who is pursuing a new mission in strategic partnerships at Eutelsat.

Speedcast Names New Board Members, CFO

Hong Kong, June 18, 2013 — **SpeedCast Group** has appointed four new independent Directors – **Peter Jackson**, former Executive Chairman of AsiaSat; **Grant Ferguson**, former Chief Executive Officer of Astro Overseas Ltd; **William “Bill” Barney**, former Chief Executive Officer of Pacific Internet Ltd.; and **John Mackay AM**, former Chairman and Chief Executive Officer of TransACT Communications Pty Ltd.

SpeedCast also announced the appointment of **Mark Ellison** as Chief Financial Officer of the company.

With the new board additions, SpeedCast's board of directors will consist of six members, three of which are independent members. They join the other SpeedCast Board members as follows: Pierre-Jean Beylier, Chief Executive Officer of SpeedCast; Michael Berk, Managing Director at TA Associates;



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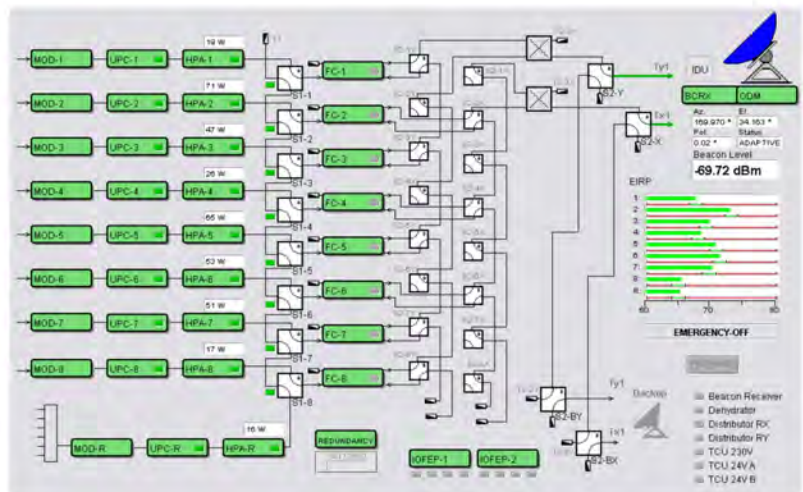


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and Edward Sippel, Managing Principal for TA Associates Asia Pacific Ltd.

Inmarsat Appoints Peled, Bax as Non-Executive Directors

London, June 18, 2013 — Inmarsat plc has appointed **Dr. Abe Peled** and **Simon Bax** as additional non-executive directors to its Board. Dr. Peled will become a member of the Nominations Committee while Bax will become a Remuneration Committee member.

Peled spent from 1995 to 2012 with NDS Group plc, a digital pay-TV company, which was part of the News Corp. group and was most recently bought by Cisco. He was Chairman and CEO of NDS Group plc from 2004 to 2012. Since August 2012, Peled has been Senior Vice President Strategy, Video and Collaboration Group, Cisco.

He has previous senior management experience with IBM and Elron. Peled has a BSc and MSc in Electrical Engineering and a PhD in Digital Signal Processing. In March 2013, Peled was awarded the Lifetime Achievement Award by Digital TV Europe.

Bax was from 2008 to 2013, CEO of Encompass Digital Media Inc., which provides technical services to broadcasters, cable networks and government agencies. Previous senior management experience was with Pixar Animation Studios and Fox Filmed Entertainment. Bax has a degree in History and is a chartered accountant. He is a non-executive director of MobiTV and a trustee and member of a number of other organizations.

Michael Kostelnik Named President of Astrium Americas

Herndon, VA, June 26, 2013 — Astrium Americas has selected retired Air Force **Maj. Gen. Michael Kostelnik** as its President and Vice President of EADS North America's Space line of business effective July 1.

Kostelnik, who served as NASA's Deputy Associate Administrator for the Space Shuttle and International Space

Station from 2002 to 2005, will direct the development, growth, and management of all space-related activities in North America, expanding the company's market position in the sector.

Prior to joining Astrium Americas, he has served in the Senior Executive Service with U.S. Customs and Border Protection since 2005 as Assistant Commissioner over the Office of Air and Marine.

Kostelnik earned a Bachelor of Science degree in mechanical engineering from Texas A&M University and a Master of Science degree in industrial and management engineering from the University of Iowa.

Asia Broadcast Satellite Names Henry Au-Yeung as Chief Network Officer

HONG KONG, June 11, 2013 — Asia Broadcast Satellite (ABS) has announced the appointment of **Henry Au-Yeung** as Chief Network Officer (CNO), a new role for the company. In this new capacity, Au-Yeung will be



Henry Au-Yeung

responsible for network and teleport operations, sale and field engineering as well as value added service operations and R&D.

With over 20 years of experience in the telecom sector, Au-Yeung has held many executive positions at PCCW Global including his last post as Senior VP Engineering & Network Planning in which he managed the global network infrastructure.

He has also held various senior positions related to satellite services and technology disciplines for Hutchison Telecom, Pacific Century Corporate Access, COM DEV and AsiaSat. Au-

Yeung holds a Master of Electrical Engineering from McMaster University of Canada.

Newsat Appoints Sprague as Chief Commercial Officer

SYDNEY, June 11, 2013 — Australia's satellite company **NewSat Limited** has announced the appointment of **Scott Sprague** as Chief Commercial Officer. Sprague has over 30 years senior management experience in the satellite and telecommunications industries, with proven

successful leading global sales, marketing, operations and customer service. The appointment of Sprague as Chief Commercial Officer will further enhance the executive management team, as the company transforms into a global satellite operator.



Scott Sprague

Sprague has held senior positions at KPNQwest, Infonet Service Corporation and AT&T, before moving into the satellite sector as Senior Vice President of Global Sales for SES. At SES, Scott was responsible for leading sales teams and growing global revenues across media, enterprise and government verticals around the world.

Most recently, Sprague was based in Hong Kong as the Chief Operating Officer of Asia Broadcasting Satellite (ABS), where he was responsible for managing the global sales, marketing, technical support and operations of value added services.

Newsat also announced the appointment of **Michael Hewins** as CFO and company Secretary to replace Adam Shapiro who resigned.

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Key industry trends and opportunities.

86% of FSS Operators Grew Revenues in 2012

Paris, France, July 10, 2013-- According to Euroconsult's newly released research report, *Company Profiles: Analysis of FSS Operators*, 86% of all 37 active commercial FSS operators saw revenue growth in 2012, with 13 operators reaching 10% or more. However, approximately half of the operators experienced slower revenue growth than the previous year.

The operator landscape is currently seeing a growing number of active satellite operators and an increased appetite for innovative growth strategies including partnerships between satellite operators, investment in new generation satellite systems such as HTS multi-spot-beam architectures, and new revenue streams including hosted payloads or deals involving aging satellites and orbital slot rights.

"We see a trend where more operators are welcoming HTS capacity as part of their long term agenda and growth strategy," Said Wei Li, Senior Consultant at Euroconsult. "A number of operators have recently announced HTS payloads as part of their future satellites, including Intelsat, SES, Arabsat, Spacecom, Asiasat, and others," he added.

Another trend that has been observed among FSS operators is the increasing amount of innovative partnerships between operators, including bulk satellite procurement partnerships, as seen with ABS and Satmex; satellite and orbital slot sharing agreements, as seen with Measat and Newsat Jabiru, etc.; and other innovative forms of collaboration between operators.

Hosted payloads also remain a prominent topic for operators as a potential source of revenues and a smart way to reduce capital expenditures. The recently announced strategic partnership between AsiaSat and GeoMetWatch to host weather payloads in 2016 is a good example of this trend.

The number of satellite operators is poised to grow in the coming years with multiple emerging operators having announced plans to launch their first satellites. Besides several new commercial operators, such as O3b, there are an increasing number of government-owned national operators in emerging regions. The list includes upcoming national operators in countries such as Sri Lanka, Laos, Bolivia, Ukraine, Angola, etc. New operators are also emerging in countries that have already established commercial FSS operators such as Mexico (MEXSAT), Australia (NBN) or Brazil.

"...We see a trend where more operators are welcoming HTS capacity as part of their long term agenda and growth strategy..."

-Wei Li, Senior Consultant, Euroconsult

[Company Profiles: Analysis of FSS Operators](#) is a unique survey of active and pre-operational FSS operators. The report includes publicly-listed and privately-held companies, global and regional operators. Now in its 6th edition, Company Profiles is the only report and profile series available worldwide providing in-depth profiles of all 39 active or soon-to-launch FSS satellite operators, including summaries on 11 companies that will launch commercial satellites in the near future.

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 **Key industry trends and opportunities.**

DTH Growth Shifting to Developing Countries

Wilmington, Del., July 2, 2013--NSR's 6th installation of *Global Direct-to-Home (DTH) Markets*, analyzes a rapidly changing industry that is diverging from one with growth centered around North America and Western Europe to one where growth will come from the developing parts of the world.

"While revenues will still be concentrated in established economies," said Blaine Curcio, report author and Analyst with NSR, "the major source of new subscriber, and revenue growth, will come from the southern hemisphere - with India, Indonesia, and Sub-Saharan Africa leading the way." With India already at 1 million gross DTH additions per month, and countries like Indonesia and Nigeria growing exponentially faster than the developed world, the greenest pastures are South of the Equator.

However, the DTH industry's growth is not limited to subscribers. DTH channels are expected to increase significantly by 2022, with High-Definition (HD) comprising over 1/3 of all new channels; more than doubling in the process. As HD continues to be the new norm for sports and movies, these channels will exceed the current boundaries of developed economies, and growth will be experienced in every region

in the world. Beyond HD, a battle is brewing between 3D and Ultra HD (UHD or 4K) channels. By 2022, NSR projects that UHD or 4K will comfortably exceed 3D channels, becoming the new standard for the most premium content.

NSR expects the DTH and satellite pay-TV industry to remain healthy – with 313 million subscribers and \$134.4 Billion in subscription revenues by 2022. Emerging economies south of the equator will fuel growth going forward, as the industry continues to move towards more channels, higher resolutions, and increased requirements for satellite capacity.

NSR's *Global Direct-to-Home (DTH) Markets, 6th Edition* provides industry-leading analysis and comprehensive research on all aspects relating to the DTH industry. With country-level data used as the source for 10 regional analyses, the report provides forecasts from 2012-2022, broken down by financial metrics, subscribers, channel numbers, and transponders. Giving insights on major satellite operators and DTH platforms in each region, as well as key macroeconomic trends, the report goes beyond the forecasts to paint the entire DTH landscape.



Global Pay-TV Revenues Hit US\$ 184 Billion

London, UK, July 2, 2013--The number of pay TV households (analog and digital) reached 772 million by 2012, up from 585 million in 2008, according to a new report from Digital TV Research.

Asia Pacific increased by 126 million – or two-thirds of the global additions - during this period to bring its total to 433 million. North America (112 million) was the second largest region, although it only added 4 million.

Pay TV revenues reached \$184 billion in 2012, up by 28.5% from \$143 billion in 2008. Cable (analog and digital combined) generated the highest revenues by platform, with \$87 billion in 2012.

However, cable revenues are flattening and DTH will overtake cable soon.

IPTV revenues reached \$12.0 billion in 2012, up from \$2.8 billion in 2008. North America generates about half the world's total pay TV revenues.

About 404 million digital homes were added around the world between 2008 and 2012. This took the digital TV

household total for the 97 countries covered in the Digital TV World Databook to 786 million.

Digital TV penetration of TV households climbed from 28.6% at end-2008 to 54.7% by end-2012.

However, there were still 652 million analog TV households by end-2012 -although this was down from 956 million at end-2008.

There were still 411 million analog terrestrial homes (down by 56 million year-on-year) and 242 million analog cable ones (down by 33 million) at end-2012.



Entertainment Tech in the Internet Age

by Elisabeth Tweedie

Entertainment Technology in the Internet Age (ETIA) was an interesting conference held last month in Palo Alto, California. The event was organized by the Society of Motion Picture and Television Engineers (SMPTE) and the Stanford Center for Image Systems Engineering with the aim of fostering a dialogue between Hollywood and Silicon Valley. Speakers included representatives from Google, Mozilla, Akamai, Cisco, Sony Pictures, Walt Disney, Dolby Laboratories and Fox Broadcasting to name but a few. Dish Network was the sole representative from the satellite industry.

Perhaps surprisingly there was little heated debate, unsurprisingly two of the key issues that kept surfacing were the move to mobile devices and the need for more and more bandwidth.

Mobile devices were first discussed in the session on gaming with Bill Gardner from Digital Entertainment Insights giving a brief history of the industry from the clunky consoles from Magnavox and Atari in the seventies to the iPhone and tablet today. Although consoles are still around cell phones and tablets are now the device of choice. Alex Caccia from Marmalade pointed out that with an estimated value of US\$9 Billion this year mobile was the only sector of the gaming market that

was growing, with two-thirds of developers targeting mobile as their development platform. The Graphics User Interface (GUI) on phones is now almost on a par with that on gaming consoles. Charles Jablonski from OnLive talked about the importance of both social interaction between gamers and of low latency.

Although everyone is agreed that much of the so-called mobile usage takes

terrestrial and satellite providers?

The increasing importance of mobile devices was also discussed in the session on Internet Media Delivery, with tablets becoming increasingly the device of choice for viewing streamed content, particularly for children's videos. Richard Doherty from Dolby Labs commenting that 84% of consumers were now viewing streamed video at least once a week and the average user

was watching 401 minutes a month. Will Law from Akamai put this into perspective by pointing out that if just 10% of cable's ~80M subscribers switched to Over the Top (OTT) only then the Internet would "fall over". An interesting warning given the continued growth of OTT.

In a session on video quality Scott Daly from Dolby pointed out the improvements that were taking place along different dimensions: Spatial resolution – from SD to 8K, temporal resolution from 24fps to 60 or even 120fps, increasing dynamic range, gamut, depth of field and field of view. All these require more data and therefore more bandwidth. John Apostolopoulos of Cisco added one more dimension when he talked about the future inclusion of haptics for gaming.

The proliferation of versions has been mentioned before but Howard Lukk from



place in the home some of it does not and depends on the cellular networks. As we are all aware cellular backhaul is becoming an increasingly important market for satellite, but the low latency requirements of gaming still pose a problem for much of the industry with the possible exception of O3b. Is this going to become a big issue for that segment of our market? The same issue of course also applies to fixed broadband to the home, given that over 50% of US adults now play online games does this have the potential to become a new discriminator in the battle between

Disney really brought it home when he talked about 35,100 versions of one movie! He arrived at this figure by taking 26 languages, 3 aspect ratios and 3 formats which results in 234 versions and then multiplied this by the 150 different versions that may be produced for different audiences to accommodate cultural sensitivities or viewing locations.

For Dish Network, Vivek Khemka was quick to point out that Dish does not target early adopters but rather looks to see what people are really doing and aims for that market. So for example The Hopper – an advanced DVR which facilitates viewing around the home and on mobile devices - allows users to skip commercials (when viewing the next day or later) on the main networks. Unsurprisingly Dish is being sued by the networks for this. There was some discussion about how to profitably provide a one to five channel package for subscribers but Vivek thought this was at least five to ten years away saying

“...two of the key issues that kept surfacing were the move to mobile devices and the need for more and more bandwidth...”

that with a Subscriber Acquisition Cost (SAC) of US\$ 800 a US\$ 20 a month package just wasn't economically viable. So far Dish has apparently only suffered from a “small amount” of cord cutting, it will be interesting to see how it adapts its business model when that becomes more widespread.

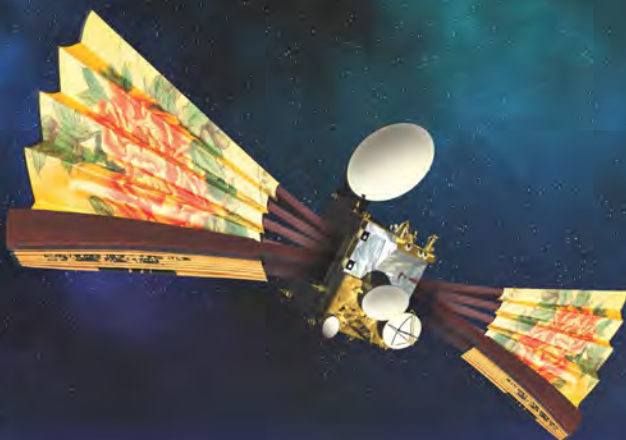
The last word from this conference should go to Erik Moreno from Fox who stated that for the broadcasters “Technology is never the issue”, going on to say that there was always a

way to do what was needed if the business issues could be resolved. Unfortunately some industries—like the satellite industry, are still constrained by the laws of physics.



Elisabeth Tweedie has over 20 years experience at the cutting edge of new communication and entertainment technologies. She is the founder and President of Definitive Direction a consultancy that focuses on researching and evaluating the long term potential for new ventures, initiating their development and identifying and developing appropriate alliances. During her 10 years at Hughes Electronics she worked on every acquisition and new business that the company considered during her time there. www.definitivedirection.com She can be reached at: etweedie@definitivedirection.com

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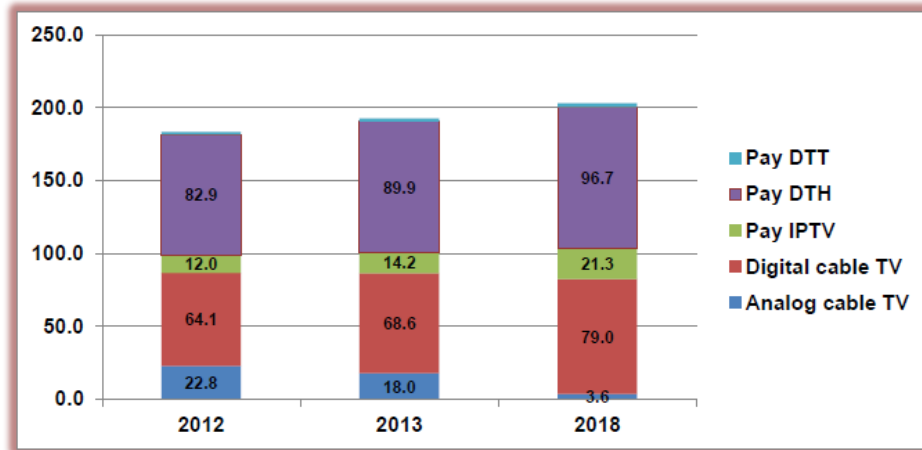
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Global pay TV revenues by platform (\$ billion)



Source: Digital TV Research Ltd

Satellite TV [DTH or DBS] revenues will overtake cable TV revenues in 2013, according to Digital TV Research. This means that satellite TV will account for 45.9% of the total in 2013, rising to 47.6% by 2018. However, cable (both analog and digital) will drop from 45.9% in 2013 to 40.7%. Meanwhile, IPTV – the fastest growing platform – will climb from 7.5% in 2013 to 10.5% by 2018.

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Eutelsat Communications S.A.	ETL.PA	22.43	-4.02%	21.26	28.15	↓ 20.32%
APT Satellite Holdings Ltd.	1045.HK	6.60	13.21%	1.74	6.69	↓ 1.35%
Inmarsat Plc	ISAT.L	672.00	10.25%	467.30	749.00	↓ 10.28%
SES GLOBAL FDR	SES.F	22.33	-3.12%	18.80	25.00	↓ 10.70%
Satellite and Component Manufacturers						
The Boeing Company	BA	104.37	3.60%	69.03	105.10	↓ 0.69%
COMDEV International Ltd.	CDV.TO	4.08	19.30%	2.80	4.09	↓ 0.24%
Lockheed Martin Corporation	LMT	109.17	3.54%	85.65	109.39	↓ 0.21%
Loral Space & Communications, Inc.	LORL	61.38	-1.10%	51.91	85.84	↓ 28.49%
Orbital Sciences Corp.	ORB	18.28	-0.05%	11.90	18.76	↓ 2.56%
Ground Equipment Manufacturers						
C-Com Satellite Systems Inc.	CMLV	1.27	10.43%	0.50	1.34	↓ 5.22%
Comtech Telecommunications Corp.	CMTL	27.47	1.74%	22.33	29.59	↓ 7.16%
Harris Corporation	HRS	49.70	-1.51%	39.02	52.23	↓ 4.84%
Honeywell International Inc.	HON	80.67	2.31%	52.73	81.24	↓ 0.70%
ViaSat Inc.	VSAT	70.08	-1.88%	33.09	73.43	↓ 4.56%
Satellite Service Providers						
Gilat Satellite Networks Ltd.	GILT	5.50	-0.18%	2.31	6.20	↓ 11.29%
Globecom Systems Inc.	GCOM	13.80	5.75%	9.50	13.91	↓ 0.79%
International Datacasting Corporation	IDC.TO	0.21	5.00%	0.16	0.26	↓ 19.23%
ORBCOMM, Inc.	ORBC	4.70	17.21%	2.72	5.40	↓ 12.96%
RRSat Global Communications Network Ltd.	RRST	8.00	-2.68%	4.91	9.35	↓ 14.44%
Consumer Satellite Services						
British Sky Broadcasting Group plc	BSYBY	48.70	2.31%	41.80	54.88	↓ 11.26%
DIRECTV	DTV	63.46	2.92%	46.59	65.81	↓ 3.57%
Dish Network Corp.	DISH	42.81	10.79%	26.12	43.43	↓ 1.43%
Globalstar Inc.	GSAT	0.63	14.55%	0.25	0.69	↓ 8.70%
SIRIUS XM Radio Inc.	SIRI	3.48	0.58%	1.99	3.63	↓ 4.13%

INDEX	Index Value (Jul. 08)	% Change from Last Month	% Change Jan. 03, 2013
Satellite Markets 25 Index™	1,469.12	5.44%	15.20%
S & P 500	1,640.46	0.00%	12.41%

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

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