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SATELLITE
Markets & Research

Industry Trends, News Analysis, Market Intelligence and Opportunities

Big Changes in the Satellite Industry

by Elisabeth Tweedie, Associate Editor

The only thing constant in life is change. Anyone working in any kind of technology industry is well aware of that fact. In the satellite industry we've always had to contend with this, and plan accordingly, even though we're dealing with assets that, in some cases, can last as long as 20 years. The industry has survived, but some of the players have not. And some of the casualties have been companies that have been led by experienced executives, think Protostar for example. Others have been backed by huge companies, with deep pockets; Iridium for example; but end up being sold for cents on the dollar. Right now, the industry is facing an unprecedented amount of change; from internal as well as external sources.

Externally change is coming from a variety of directions. The demand for data anytime, anywhere continues to grow exponentially. According to the latest figures from the Cisco Visual Networking Index, by 2019 global IP traffic will be 168 exabytes per month, up from 60 exabytes in 2014; a CAGR of 23%. Ericsson report that "streaming natives" as they call 16-19 year olds, spend 59% of their total viewing time, watching on mobile screens. Over the Top (OTT) viewing is also growing rapidly, particularly, as would be expected, amongst the

younger generations. Globally 18-24 year olds watch an average of 1.1 hour a day of OTT compared to the 0.43 hours watched by 45 to 54 year olds; according to data from The Global Web Index. However, what is particularly interesting is that in China and Ireland that same young age group watch more OTT than linear TV. The data suggests that, this situation will also occur in Canada in the near future. In February, the BBC, once regarded as the



According to the latest figures from the Cisco Visual Networking Index, by 2019 global IP traffic will be 168 exabytes per month, up from 60 exabytes in 2014—a CAGR of 23%.

bastion of traditional broadcasting, transitioned BBC Three to an online only channel. 4K or UHD is beginning to make its presence felt in the developed world. Strategy Analytics are predicting that 50% of US households will have a 4K TV set by 2020. 5G, with targeted data rates of 10Gbps is waiting in the wings. Can satellite handle the backhaul for that?

The industry once had a few "educated" customers, who understood the technology. Now we have millions of "uneducated" customers, who don't understand the technology at all. And frankly, don't give a damn! As long as they get the connection that they want, be it video or data, they don't care whether it arrives, through a physical wire, WiFi, cellular or satellite. This trend, obviously

Continued on page 4

What's Inside

From the Editor.....3



Rio Olympics
by B. Schneiderman.8

Case Study: Satellites
and the Refugee
Crisis.....15

ExecutiveSpotlight
V. Shakhgildian.....21

Featured Company
Santander Teleport.24

Products and
Services MarketPlace:
Satellite and
Cabsat 2016.....26

M & As.....36

Executive Moves....38

Market Briefs.....42

Cabsat 2016.....47

Stock Index.....49

Vital Statistics.....50

Advertisers' Index..50

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The Middle East Market



This month, the industry's trade show focus is on the Satellite show in Washington, D.C. However for those attending the D.C. event, they will miss out on a major show in an important market—CABSAT in Dubai, UAE. For the second time in three years, the Satellite show and CABSAT are held on the very same days. Two years ago, I managed to attend both shows (one day in Cabsat and two days at Satellite), but as with many companies and individuals with limited resources, I'm just attending this year one show—the Satellite show.

For those of you missing CABSAT this year we will be reporting on that important event. With growing connectivity across the MENA region reshaping consumers' viewing habits, an idle traditional TV advertising market and abundant alternative revenue streams in digital advertising and pay TV services, the CABSAT Content Congress will host 16 sessions featuring more than 40 renowned voices from regional and global media houses.

CABSAT will debate disruptive technologies, the transition to digital broadcasting and monetizing multi-platform services in a MENA media market where entertainment and media spend is expected to reach US\$ 66 billion by 2018 according to forecasts by the global analyst division of Pricewaterhouse Coopers, *Strategy*.

I certainly hope this would be the last year where two important trade shows are held concurrently in different continents. After all, we now live in a highly technologically savvy world—so it shouldn't be too difficult to coordinate schedules.

Virgil Labrador, Editor-in-Chief



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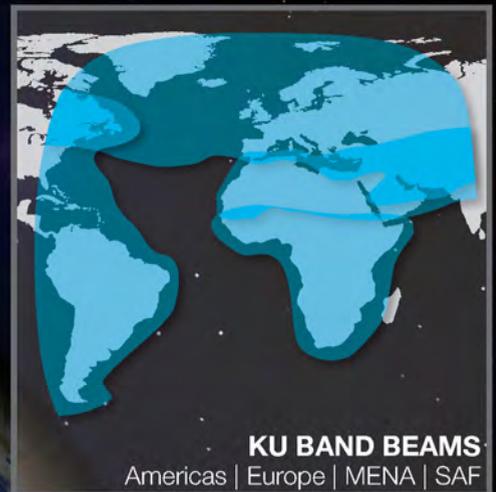
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small screen that could literally be anywhere from the middle of the ocean to seven miles up in the air! Unsurprisingly, in order to keep up with their ever changing markets, they are asking for a new level of flexibility from the manufacturers; so that they don't have to decide three or four years prior to launch exactly what the satellite will be used for. One response to this, has been the Quantum satellite that Airbus are building for Eutelsat. This is a software defined satellite that will be totally reconfigurable in orbit.

At the same time as the industry is dealing with all these changes, new threats are also emerging. Cybersecurity is big business. As was highlighted in a recent report from the World Teleport Authority, our industry is vulnerable. Concerns about electromagnetic radiation are increasing, as is the risk and interest in space debris. The "green" movement is gaining traction and questions are being raised about the environmental impact of products and services.

Let's not forget that while all this is happening, our terrestrial competitors are forging ahead. Fiber continues to be laid and wireless networks expand their reach.

No matter where you are in the value chain, you cannot escape being impacted by some, if not all of these changes. As history has demonstrated, even the most experienced and well-financed players are not immune to failure. So how do you protect yourself from becoming a casualty of the rapid changes we're all facing? How do you turn the threats into opportunities?

The requirements are the same, no matter whether you're a service provider or hardware manufacturer. Keep abreast and ahead of the changes. It's not enough to understand your customer; you have to understand your customer's customer, their needs and

"...The key driver is the amount of capacity coming online from HTS. It is going to drive down prices as the market expands to absorb the capacity. We are going to have to support more customers on less revenue per customer..."

the threats and opportunities they are facing. You need to know what your competitors are doing and how they might react to any changes or strategic moves that you may make. You need to know how you stack up compared to them, and how you are perceived by the marketplace. In such turbulent

strengths and enter a new niche or market.

Even if you have the time and resources to do this type of research and analysis yourself, you're probably better off getting outside objective help. We all have a tendency view the marketplace through the filters of what we know and are familiar with. It's also very easy to get caught up in the industry's and our own hype; believing that although there may be casualties, we couldn't possibly be one of them. Unfortunately that is not true. An independent assessment will be much more objective and therefore much more valuable. There are several reputable research organizations in our industry. Some of them focus on publishing large multi-client research reports, others such as Satellite Markets and Research only do customized research. Whichever route you choose, in these unsettled times, an objective analysis of your situation could make the difference between being a casualty or a success story. It's what you don't know that can really hurt you!



times, good research and analysis is critical. Something as fundamental as a traditional SWOT analysis can enable you to identify your Strengths and Weaknesses and the Opportunities and Threats are facing you. Maybe you need to partner with another company, as Eutelsat did with Facebook in Africa. Maybe you need to capitalize on your



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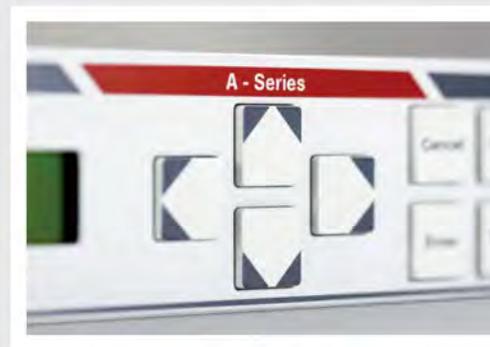


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Satellite Services to Play a Key Role in the 2016 Rio Olympics

by **Bernardo Schneiderman**

An estimated 10,500 athletes from 206 countries in will be participating in 306 medal events during the Olympic Games to be held in Rio de Janeiro, Brazil from August 5-21, 2016.

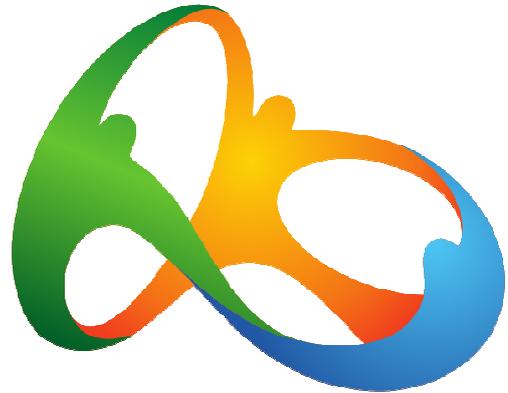
The current number of international broadcasters involved in the event will be more than 206 as example the IOC (International Olympic Committee) reached a deal with the Brazil Broadcaster Grupo Globo (Free to air and Pay TV) that sub-licensed partial free-to-air rights to Rede Record, along with Rede Bandeirantes the other two major broadcaster in Brazil.

The Olympic Broadcast Services (OBS) that manage the IBC (International Broadcasting Center) informed that will uplink from Rio on IS806 (Intelsat Satellite) and will have a total transponder capacity of 3 X 36 MHZ and 4 links of 9 MHZ. In addition the Right Holder Broadcasters will have an expected uplink capacity amounting to 72 MHZ.

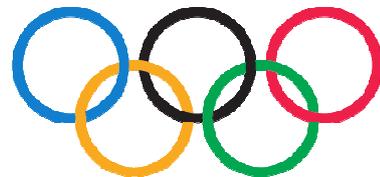
The IBC in Rio de Janeiro, which was funded by a public-private partnership (PPP), will be converted into a commercial workplace after the Games. The city government said the private sector invested R\$300 million (US\$78 million) in the IBC. The IBC comprises two buildings: the main building and the IBC offices, which will house Olympic Broadcasting Services (OBS), the organization responsible for delivering the pictures and sounds of the Olympic Games. Together, the two buildings occupy a total area of nearly 80,000m². The main building features 12 studios, each of approximately 5,000m². The construction process was more complicated than for a standard building because of the inherent requirements of creating a building for major large-scale broadcasting. For example, as well as being strong enough to support all the equipment, it had to be resistant to high temperatures and feature the sound-proofing necessary for high-quality broadcasting.

Rio 2016's deputy CEO Leonardo Gryner said the IBC would be ready for the broadcasters after two more phases of work. "The first, which is our responsibility, is to install infrastructure that will support the lighting, speakers and cabling. We have to provide all the telecommunications routing, air conditioning, electrical supply and fire detection equipment." Gryner said the second phase would involve OBS installing their technical equipment and the construction of the studios for the broadcasters who will work in the IBC. "This building will be ready for the broadcasters to use on July 5th," he said.

The Rio 2016 Organizing Committee took control of the



Rio 2016™



International Broadcast Centre (IBC) that is the building from which images of the Olympic and Paralympic Games will be transmitted to the global audience during last November 2015. In a ceremony at Barra Olympic Park, Rio mayor Eduardo Paes handed over the keys on behalf of the city government, which was responsible for the construction, to Rio 2016 president Carlos Nuzman. Nuzman said from here, nearly 6,000 hours of images will be transmitted across the world and will reach five billion TV viewers."

As with any major sport event, satellite communications will be a key technology to spread the news all over the world about the overall event.

We are covering this article in three areas. One about the IBC (International Broadcast Center) the other is the satellite operators with capacity and right to operate in Brazil and we are planning another article to include the Teleports and Local Facilities to support the event from broadcaster, mediacaster (Streaming & Web sites) and overall the global digital media for the next issue.

Beside the IBC center the global satellite operators are

ready to provide capacity to all International Broadcaster and the competition will be heating among the main major international satellite carriers. Eutelsat, Hispasat, Intelsat, SES, Telesat and the Domestic Regional Operator Star One will be the main provider of capacity during the games.

Table 1 on the next page provides a summary of capacity by each operator that are based and authorized to delivery services from Brazil to the global market.

As we can see from the table all major operators are positioned in Brazil with staff and offices in Rio de Janeiro to provide a great coverage of the Rio Olympics 2016.

Additionally we have feedback from some operators on their planned coverage of the Rio Olympics.

Eutelsat: Eutelsat's communications and public relations executive Christina Darvasi said that Eutelsat will provide a robust offer for the coverage of the upcoming Rio Olympics with satellites combining coverage of Brazil, the Americas, Europe, Africa and Asia-Pacific able to guarantee global distribution of the event through its fleet of 40 satellites.

EUTELSAT 8 West B, EUTELSAT 12 West B and EUTELSAT 65 West A will provide the ideal solution for cross-continental video contribution due to their unique coverages across both sides of the Atlantic.

EUTELSAT 8 West B, launched last August, will provide Ku band coverage within Brazil, as well as from Brazil to South America. The satellite's C-band coverage will facilitate broadcasting from Brazil to Africa and Europe.

EUTELSAT 12 West B will provide an excellent solution for video --- from Brazil to rest of the Americas as well as to Europe.

EUTELSAT 65 West A, which will launch on March 9, will be located at 65°W, a premier video neighbourhood for Brazil. Its robust Ku-band coverage will be ideally suited for broadcasting within Brazil and its C-band coverage will provide a unique solution for transatlantic connectivity.

Eutelsat's global fleet, vast experience of Olympic events, including London in 2012, partnerships with broadcasters across the globe will ensure broadcasters can bring the excitement of the Olympics and the highest signal qual-



An artist rendering of the International Broadcast Center(IBC) in Rio. The IBC will serve as the primary base of operations for OBS and the Rights Holding Broadcasters (RHBs). Located in the Olympic Park in Barra, the facility is located near nine Olympic venues and adjacent to the Main Press Center (MPC). The IBC will consist of approximately 85,500 square meters of functional space housing a variety of technical and administrative facilities for both OBS and the RHBs including edit suites, control rooms, studios and offices.

ity to viewers everywhere in the world.

Additionally Eutelsat is offering special packages to its customers for full time allocation during the Olympic and Paralympic games.

Intelsat: Intelsat Executive Mr. Peter Ostapiuk, Intelsat's Head of Media Product Services provided the following information on their coverage of the Rio Olympics:

Since the London Olympics, media consumption habits have drastically evolved as viewers today require the delivery of more and more content across multiple devices. As a result, there has been an increased need for IP-based solutions.

To meet customers' needs as the media landscape rapidly changes, Intelsat is expanding its media services with IntelsatOne Prism®, a multimedia networking platform and portfolio of managed services that allows customers to easily upgrade a legacy satellite-based network to a next-generation, automated hybrid satellite and terrestrial converged IP network.

IntelsatOne Prism accommodates legacy and digital/multiscreen media, and optimizes network efficiency. It enables programmers to simplify operations with easy management of satellite and fiber capacity.

IntelsatOne Prism is ideal for the coverage of a special

Table 1: Satellite Operators Licensed to provide service to Brazil

event like the Olympics, during which media customers benefit from automated access to voice, video and data links (two-way connectivity) through an integrated platform, enabling multiple delivery systems to provide content to a broad spectrum of user devices.

Intelsat works closely with each individual customer to ensure customized bandwidth assignment for optimized efficiency and performance. We offer flexible Occasional Use short-term leases ranging from traditional short bookings for one hour to leases for several weeks or a month.

Intelsat has also implemented ScheduALL Connector so customers can easily and efficiently secure OU capacity. During major sports events such as the Olympics, customers need to be able efficiently manage fluctuating bandwidth demands while continuing to provide the high-quality, reliable content their viewers demand. The ScheduALL Connector interface allows media customers to easily view Intelsat’s available capacity, quickly match it to their needs and reserve it directly from within their own system.

Regarding Intelsat’s allocation of satellite capacity for the 2016 Olympics, consider the following: The 2012 London Olympics was the most watched event in TV history, reaching 3.6 billion viewers worldwide. The 2016 Summer Olympics in Brazil is expected to exceed that number, with a majority of viewers consuming the Games via traditional linear TV distribution.

As a result, satellite is uniquely positioned to play a critical role in broadcast services as it remains the most reliable and cost-efficient solution for point-to-multipoint content distribution.

During the Summer Games in London, Intelsat met customers’ coverage requirements in Asia, Europe and the Americas with support services on 11 Intelsat satellites in C-band and Ku-band.

Although London is one of the best-connected cities in the world, demand for global distribution resulted in Intelsat utilizing approximately 500 MHz of bandwidth for full-time and occasional-use services. This supported approximately 50 channels with 15,000 to 20,000 hours of coverage over approximately three weeks.

During the upcoming Brazil Olympics, we again expect to support customers’ coverage requirements around the world, utilizing our global fleet featuring premier video neighborhoods and the IntelsatOne® terrestrial network.

Intelsat 29e’s Ku-band spot capacity will be used to support contribution at the Summer Games, enabling custom-

Domestic Satellite Operator	Satellite Name	Band	Orbital Position	Status of operation
Eutelsat do Brasil	EUTELSAT 65W	C (AP 30B), Ka e Ku (AP 30 B)	65,0° W	NO
	EUTELSAT 70W West A	C (AP 30B) e Ku (AP 30 B)	69,45° W	NO
Hispamar	AMAZONAS-2	C, Ku e Ka	61,0° W	OPE
	AMAZONAS-3			
	AMAZONAS-4A	Ku (AP 30/30A)	61,0° W	OPE
Echostar 45	ECHOSTAR-15	Ku (AP 30/30A)	45,0° W	OPE – Temp
	HNS*	Ka	45,0° W	NO
	HNS**	S		
SES DTH Brasil	NSS-806	C, Ku e Ka	48,0° W	OPE – Temp
	SES*	Ku (AP 30/30A)	64,0° W	NO
Star One	BRASILSAT-B2	C	68,0° W	OPE
	BRASILSAT-B3	C	75,0° W	OPE
	BRASILSAT-B4	C	84,0° W	OPE
	STAR ONE-C1	C, X, Ku	65,0° W	OPE
	STAR ONE-C2	C, X, Ku	70° W	OPE
	STAR ONE-C4	Ku (AP 30/30A)	70° W	NO
	STAR ONE -C3	C e Ku	75,0° W	OPE
	STAR ONE -C4	C,L,S	75,0° W	NO
	STAR ONE -C5	C e Ku	92,0° W	NO
	HISPASAT-1C	Ku	84° W	OPE- Temp
	STAR ONE-D1	C, Ku e Ka	84° W	NO
Eutelsat	EUTELSAT 12 WEST A	Ku	12,5° W	OPE
	EUTELSAT5 WEST A	C	5,0° W	OPE
	EUTELSAT8 WEST A	Ku	8,0° W	OPE
	EUTELSAT 3B	C e Ka	3,0° E	OPE
Hispasat	HISPASAT - 1D	Ku	3° E	OPE
	AMAZONAS 2	C e Ku (AP 30B)	61,0° W	OPE
	AMAZONAS 1	Ku	55,5° W	OPE
Intelsat	GALAXY 3C	Ku	95° W	OPE
	G-11	Ku	55,5° W	OPE
	GALAXY 28	C e Ku	89° W	OPE
	IS 1R	C e Ku	50,0° W	OPE
	IS 10-02	C	1,0° W	OPE
	IS-11	C e Ku	43,1° W	OPE
	IS-14	C	45° W	OPE
	IS-21	C e Ku	58,0° W	OPE
	IS-23	C	53,0° W	OPE
	IS 805	C	55,5° W	OPE
	IS 901	C	18,0° W	OPE
	IS 903	C	34,5° W	OPE
	IS 905	C	24,5° W	OPE
IS 907	C	27,5° W	OPE	
IS 34	C e Ku	55,5° W	OPE	
SES/New Skies	NSS-7	C e Ku	20° W	OPE
	SES-4	C e Ku	22° W	OPE
	SES-6	C, Ku & C(AP 0B)	40,5° W	OPE
SES Astra	SES-5	C	5° E	OPE
SES/ Star One	AMC-12	C	37,5° W	OPE
Telesat	TELSTAR 12	Ku	15,0° W	OPE
	ANIK F1	C e Ku	107,3° W	OPE
	ANIK G1	C e Ku	107,3° W	OPE

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ers to gather content from the venues and transport it back to their facilities.

Intelsat has supported the broadcasting of the Olympic Games since 1968, and we continue to innovate with every Olympics to meet our customers' evolving demands as the media landscape continues to shift as viewer consumption habits continue to change.

SES-Jurandir Pitsch, Vice President Commercial, Latin America-South of SES provided the following information on their coverage of the Olympics:

SES' main package for the Olympics is the NSS-806 satellite at the Brazilian position 47.5 West in both C-band and Ku. We have enough capacity in this blocked satellite for the Olympics. as the C-band coverage covers the Americas and Europe, in the same beam, the satellite is ideal for taking the IBC signal and distribute it to several countries. The Ku band is more local and will be used more for SNG, reports in the local events and where the national team will be training in Brazil for the medal events.

SES primarily works with large capacity integrators such as Eurovision and some broadcasters directly. We basically are offering capacity in Brazil. In other countries where we have Teleport, as in the United States, we can receive the signals and redistribute them to other countries or domestically, using satellite or domestic optical fiber. Thus, for example, an IBC signal from Rio could be transmitted to the United States via NSS-806. The customer can receive the signal directly or use one of our Teleports to receive the satellite or receive the signal by fiber.

At this time we do not have an estimate of how much capacity will be used, since many broadcasters decide the last minute. But we have an important capacity on NSS-806, the SES-6 and SES-4 to meet demand.

Telesat: Mauro Wajnberg, Telesat do Brasil General Manager, said that most of the video opportunities Telesat expects to address will be for content delivery from Olympic sites to major broadcasters in North America and Europe – contribution. Packages are now being developed for this opportunity.

Telesat anticipates having C & Ku available from our recent launched satellite Telstar 12 Vantage and from Anik G1.

StarOne: Fabio Alencar, Business Development Director



Over one billion people worldwide are expected to view the Rio Olympics on various devices and platforms.

of StarOne, mentioned that StarOne will have only our capacities allocated to SNG on Star One C1, Star One C3, C band and Ku beyond the star one b4 in C-band.

The event will have coverage for the world press and beside the satellite operators the Teleports and Local Service Provider will be supporting the overall contribution for the linear transmission and via the internet that is the new wave to streaming events will be another key part of the event in Rio de Janeiro. We will be covering this subject in the next edition of the Satellite Executive Briefing on April 2016.



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Satellite Technology Making a Difference in the European Refugee Crisis

by Evert Bopp, Founder, Disaster Tech Lab

Disaster Tech Lab (DTL) is an all-volunteer organization which uses Wi-Fi to reconnect disconnected communities in disaster zones across the globe. Established in 2010 following the Haiti earthquake, it currently has 175 volunteers working across 11 countries with equipment depots in Ireland, Australia, Philippines and two in the US. The organisation has in the past deployed teams to Haiti, the USA, Vanuatu, the Philippines and Nepal. DTL also supports other NGOs by providing IP-based communication services. In between deployments the organisation researches and develops new technologies to improve disaster response work. In recognition of its work after Hurricane Sandy, Disaster Tech Lab founder Evert Bopp was invited to the White House in 2013 where he was presented with a certificate of appreciation by Richard Serrino, Deputy Administrator for FEMA. Now, with the organization facing its biggest challenge yet, Bopp shares his first-hand account of the scene of the refugee crisis on the Greek island of Lesbos, explaining how satellite communications equipment is helping coordination and bringing relief to people in desperate need. Follows is his account on how satellite phones provided by Globalstar is making a difference in the European refugee crisis:

We arrived on the island of Lesbos on the 18th of September. Our initial plan was to provide Internet access and communications to several sites for the refugees as well as for the other NGOs working there. Our first task was to get to the island and to see where the NGOs had set up operations so we could assess just what the communications needs were.

We soon got a call from the UNHCR who asked if we could provide internet connectivity and communication services for two of the main refugee camps. The camp near the capital is where all the Syrian refugees were being held. About 15 miles away is another camp where refugees from other nations are being housed. Between the two camps we were looking at 7,000-9,000 refugees. In addition to this, there are a dozen or so NGOs with camps and operations centres set up, and they all needed connectivity. Furthermore, 60 km north of the main camps, are the beaches where the refugees are landing. In this area, there are a

“...Simply helping people get in touch with loved ones is making a big difference...”

-Evert Bopp



number of smaller, less formal NGOs, and there was little coordination between them.

In the region of the major camps, there is virtually no infrastructure, no electricity, and no telecommunications infrastructure.

There had been no sharing and planning of resources among the aid agencies - and so the satellite phones provided by Globalstar made an immediate impact. The devices were swiftly put to work helping to coordinate resources.

To get the refugees from the beaches to the camps 60 km away, the elderly, women and children and the injured were being transported on buses while the young men walked this long arduous mountain journey.

Disaster Tech Lab's sister organisation Disaster Medics is providing first-line emergency medical care and they coordinate with medical staff based at the camps. The ability to give advance notice via satphone to colleagues at the camp that sick and injured people were on the way proved invaluable.

It is difficult to anticipate the flow of people arriving on the island. On days where weather conditions are poor there can be almost no boats. But then, on one typical occasion for example, on the first morning after a day of bad weather with no arrivals, 1,200 people arrived within one hour.

So now we are facing a cold winter. The NGOs, and local police department - to whom we are also providing support with satellite communications equipment from Globalstar - all agree that the huge day-to-day fluctuations of refugee arrivals will continue.

One of the things that is really making a difference to the refugees is simply enabling them to contact family.

Many of them are carrying smartphones when they arrive, but lack of GSM infrastructure means that they are of little use.

We gave them satellite phones to use so they could notify their families back home that they had arrived safely.

from. The satellite phones are giving our crews unprecedented access to reliable communications, helping all operations run more smoothly.

We have loaned our Globalstar phones to various relief organizations, allowing them to contact each other and to



Syrian refugees using Globalstar satellite phones to keep in touch with their loved ones.

The response we got to this was amazing; some people were in floods of tears at the simple opportunity to make a one minute call. From a humanitarian point of view, this had the biggest impact for these people in such extraordinary circumstances. It was absolutely fantastic to be able to just pull out the satellite phone, hand it to someone and they could just make a call there and then. It has to be said we were grateful for the long battery life of these satellite phones.

The Disaster Tech Lab team also rely on satcoms to communicate with each other. During our ongoing deployment on Lesbos the satellite phones are enabling us to contact our team members whether they were on location in Greece, travelling to and from deployment locations, and even when two team members went on a reconnaissance trip to Turkey to see where the refugees were departing

swiftly direct the required resources and manpower to the right locations at short notice

We are also using Globalstar's SPOT Gen3 trackers to remotely keep track of our own teams. The devices allow us to have an instant overview of the locations of our people and enable improved response times and efficiency.

We'll keep going as long as we are needed. This current crisis has turned out to be our biggest deployment yet - it's quite a challenge, but very satisfying to be able to help people in these extreme circumstances. We will continue to coordinate and collaborate with other NGOs as well as local police and medical staff to try to provide as much relief as possible to these people in this most unimaginable, stressful situation.





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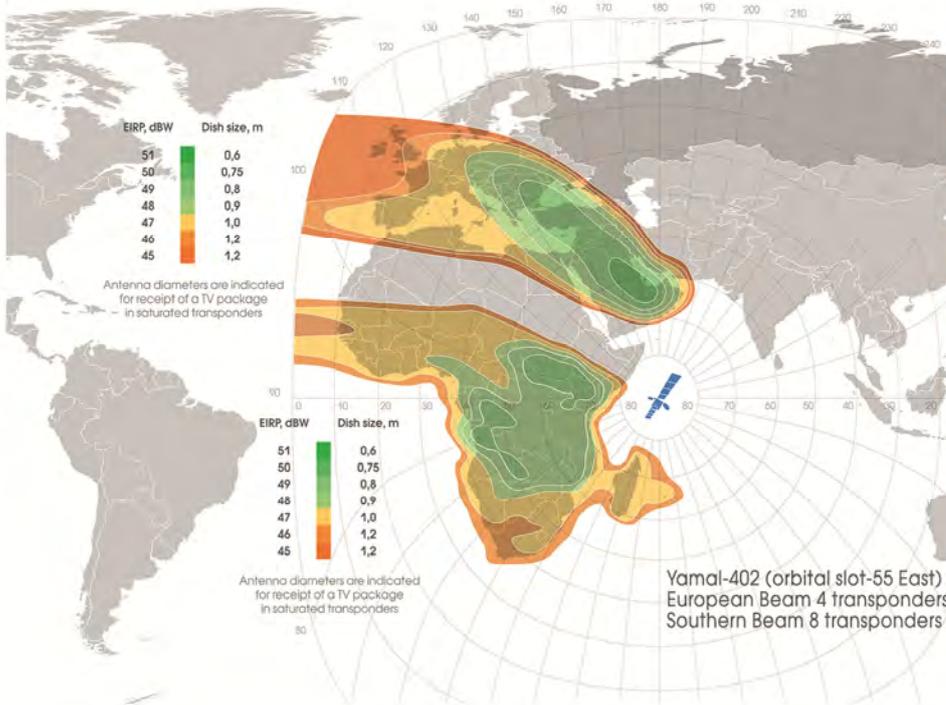
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YAMAL-402

YAMAL-202

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SATELLITE TELECOMMUNICATION SYSTEM



Yamal-402 (orbital slot-55 East) in operation from December 2012
European Beam 4 transponders per 54MHz
Southern Beam 8 transponders per 54MHz

Hurray! The Sky is Falling

by Robert Bell

For observers of the satellite business, this is the most exciting time since the breakdown of domestic and international monopolies transformed an information utility into a real business. A new generation of high-throughput satellites are entering service and filling fast with paying customers. New launch providers are already driving down the cost of putting spacecraft in orbit and promising much deeper price reductions. Spacecraft designs are getting more flexible as platforms multiply, and average time to market begins to seriously shrink.

But if you *work* in the satellite business, you are probably amping up the dosage of your blood-pressure medicine and wondering how you are going to preserve your margins in a world where revenue-per-customer seems to have just one way to go: down.

At the end of last year, I had conversations with senior teleport and satellite executives about how they thought their businesses would evolve in the next five years. I have rarely had such thought-provoking discussions, and they led to publication of a new report, *The Teleport of Tomorrow*, available from www.worldteleport.org.

Surging Capacity, Changing Models

This group of CEOs, CTOs and division Vice Presidents agreed that market trends will create large-scale opportunities for the business-to-business transmission sector (aka, the teleport sector). They also believed, however, that these opportunities will come with enormous challenges.

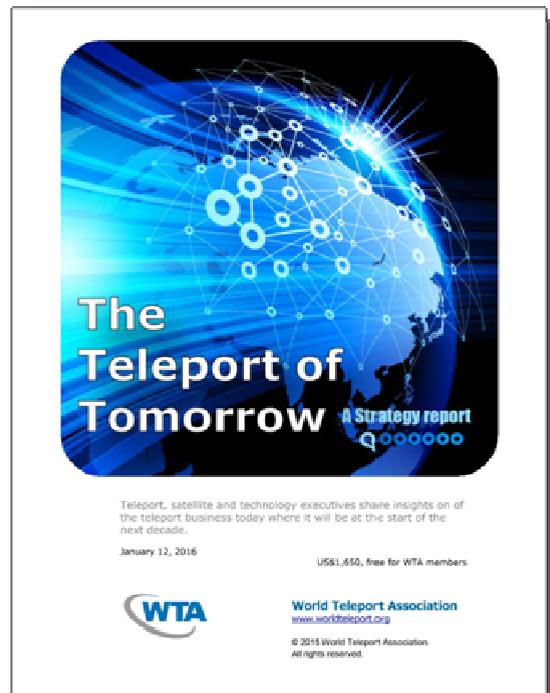
The big driver of change will be high throughput satellite technology. A mix of spot beams and wide beams will require revolutionary change in how service providers operate their net-

works. A complex service in the future may include a third-party gateway on a vertically-integrated system selling Mbps rather than MHz and a growing range of communications carriers, who integrate this service into a more comprehensive offering.

"The new competitive advantage is going to be economies of scale," claimed one satellite operator. "That will tend to give larger operators a natural advantage. The ones who have built a regional or global network from the ground up," he continued, "will leverage that investment very successfully. A single infrastructure has to serve multiple applications and markets. Smaller teleport operators will face challenges in that environment."

How will smaller teleport operators adapt and thrive? By changing their definition of what they do and how they go to market, said one teleport CEO. "To keep our customers, we have had to reinvent services. Five years ago, our networks were 100% satellite. Now, we serve some location by DSL, some by 3G or 4G and some by satellite. We developed a multi-service device with a partner in France to support all of these technologies and got the price point down where we needed it. We are now migrating every site to the new hardware, because it provides the ultimate flexibility, with auto-failover to three backup forms of connectivity."

"Our future is in getting inside the telcos and convincing them that we are part of the solution they offer to customers, so that we enhance their capabilities," said a teleport executive. "Big telcos may have 10,000 salespeople;



we have fifteen. The only way we can win is to use their people."

Essential Partnerships

For the teleport of tomorrow, strategic partnerships will become fundamental to doing business. Such partnerships are already common but the depth, complexity and pervasiveness of partnership, however, will be entirely new, according to respondents.

"There will be cases where we will own and operate our own infrastructure," said the technology leader of a large data services company, "and cases where we will lean on a partner. If we need to light up a new geography where we don't have infrastructure in place, we will evaluate the capex required versus the opex of partnering. We think of that every time we light something up."

"HTS operators tend to see benefit from putting services into operation on their own network, which they control

end-to-end,” a technology CEO noted. “But teleport operators should be talking to HTS operators today about opportunities to put their own services on the HTS networks. Once a partnership develops, there will be opportunities to buy megahertz as well within the same beams.”

A satellite vendor noted that “we once needed 70 people to manage 500 services across a handful of analog antennas. In today’s world, you manage thousands of services across dozens of antennas, and you might have 20-30 people to manage it. The hardware will become less of a differentiator and the software will become increasingly important. It will become very hard to be ‘just a teleport operator’ or ‘just a satellite operator.’ You have to be prepared to deliver a total solution.”

The Winning Strategy

What will distinguish a winning company in the complex business of B2B transmission five years from now? “The winner will be the one who can turn the HTS threat into the HTS opportunity. NSR predicts that only 20% of the HTS capacity will be used for the typical teleport applications for enterprise, government, mobility and so on. But that 20% will generate 80% of the revenue, which means a big opportunity.”

“We think we’re great because we have grown 5-15% per year since the 1960s,” said a technology executive. “But we’re in the telecom business, and if we compare ourselves to Wi-Fi, WiMAX and cellular; they are industries that didn’t exist in the 1990s and are now 10 times our size. That’s growth. We’re in a market that is grow-ing so much faster than we are; the fact that we aren’t seeing that growth says we have been stagnant. It’s going to be painful but in the long run, it’s going to be great for the industry.”



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

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Interview with UHP Networks CEO Vagan Shakhgildian

UHP Networks, formerly known as Romantis Inc, is a manufacturer of high-performance VSAT network equipment. It has 170 networks and 11,000 remote terminals installed, many operating in most demanding applications with Tier 1 enterprise, broadcast and government customers. The company has its headquarters in Montreal, Canada, with manufacturing operations in Germany and sales and support offices worldwide. To shed light on their company and its products, Satellite Markets and Research spoke to its CEO Vagan Shakhgildian. Excerpts of the interview follows:

What are your main product lines and what market segments do you serve?

Our main product line is the VSAT system equipment known as UHP (Universal Hardware Platform). It is a complete system solution for IP networking over satellite, from sophisticated Hubs and Network Management System (NMS) to compact but powerful remote terminals. However, the UHP system offers more than a traditional VSAT. With the help of the UHP technology, it is possible for set up a 250 Mbps satellite trunking link or a classic VSAT star network with thousands of remote terminals or a fully meshed network. That allows us to serve a wide range of market segments: from major broadcast networks and Tier 1 telecommunications operators to enterprises and government agencies operating their own corporate VSAT networks.

The UHP product line is continuously expanding. Last year we released our high performance UHP-200, the fastest VSAT router on the market which can process 450 Mbps and 300,000 IP packets per second. This year we are releasing UHP-HTS, our new solution for High-Throughput Satellite (HTS) networks. UHP-HTS comprises a high-availability Hub with innovative architecture, which can support multiple beams and mobility, and two models of remote routers. UHP-200 with its multiple receivers, mesh support and high processing capability mentioned earlier, is an ideal fit for enterprise networks. Our newly released router UHP-100 is well-suited for large broadband networks owing to its very compact, high-performance (200,000 packets per second) and low-cost design.



Vagan Shakhgildian

What differentiates your company and its products from your competitors?

As a company, we take pride in our technological innovations and in our customer service. We have an outstanding, dynamic and dedicated team, and that together with the cutting-edge technology, drives our success.

It is well-known that Romantis/UHP Networks pioneered software defined radio architecture for VSAT systems. We were the first and the only manufacturer to this date, who is able to pack 60,000 packets per second processing power and support for any network topology (TDMA mesh or star, SCPC DAMA) into a super-compact VSAT router, consuming only 9W. That in itself confirms uniqueness of our product architecture which allows us to exceed performance of the other products on the market by a factor of 5 to 10 using many of the popular metrics such as packets per second, number of compressed VoIP calls and others.

What is not so well-known is that the UHP system architecture allows to scale the network up to a very large size using distributed computing in the Hub, which is capable of supporting multiple Outbounds (one or more per satellite beam) and multiple Inbounds (up to 250 per each Outbound). The Hub includes sophisticated NMS supporting mobility. It also has high-availability design with M: N redundancy of all key elements. Our design approach is always based on end-to-end optimization, with no bottlenecks in processing. When UHP quotes a certain data throughput for a remote VSAT, the customer can be confident that this will be available not just in the modem, but on the LAN port of the router which

also have a suitable packets per second processing capability to support the required traffic.

Our engineers have a tendency to come up with radically innovative solutions to well-known problems. In some cases, our solutions can even change the way, in which the network operators are considering their challenges. One example is Layer 2 processing over satellite which has drawn a lot of attention in the market recently. We had this as a key feature in our product for many years. From the very beginning we supported a mix of bridged VLANs and routed VLANs in the same VSAT remote terminal.

Here is another example. There has been much debate recently on the best choice of technology for IP networking over satellite: TDMA versus SCPC. What was often left out of this debate, is a fact that not all TDMA technologies are the same and not all SCPC technologies are the same either. Some TDMA systems have 20% to 40% overhead due to framing, segmentation and re-assembly, TDMA preambles, which is considered inefficient and thus necessitates in some systems a switch to SCPC technology under certain traffic conditions in order to increase efficiency. Whereas the UHP TDMA has only an average of 4% overhead and uses advanced MODCOD such LDPC FEC, ACM with 8PSK and soon 16APSK, which is all comparable with SCPC systems. So there is no need to switch to SCPC except for the cases, when the data throughput is too high for TDMA. UHP handles those cases with switching to SCPC very well: the switch to SCPC is seamless, based on traffic or on schedule. Also, our SCPC transmission technique is among best in class. The UHP remote router, equipped with appropriate software licenses, is capable of transmitting up to 250 Mbps 32APSK carrier with 5% roll off, ACM and adaptive power control!

Yes another example is our high-speed TDMA Mesh feature. Using the ultra-efficient TDMA protocol, referenced earlier, the Mesh solution is reducing latency for real-time service and saving bandwidth by eliminating double bandwidth allocation in remote to remote links, which is particularly important in bandwidth-hungry applications such as video networks.

Can you give us some examples of companies who are using your products and what benefits/advantages they get from your products?

In the last 5 years we have installed over 120 networks and more than 11,000 of remote terminals, not counting SCPC links. Among our customers, there are leading telecom operators like AT&T, well-known satellite operators like Intelsat and ABS, premier broadcast companies like CBC and NBC Universal and major enterprises like Dow Electrical and Fedex. The benefits offered by our products stem from the innovative features described earlier and ultimately deliver significant CAPEX and OPEX savings, adding value to the customer business.

Media companies benefit from dynamic SCPC scheduling and from the innovative way in which UHP system handles real time traffic, minimizing both latency and jitter in TDMA. Energy companies, including one of the largest mining companies in the world, make use of flexibility in our hybrid SCPC/TDMA solution for trunking networks. Utility companies, such as the utility service provider in the European Union, value high efficiency of UHP solution, when processing SCADA traffic with small data packets.

How do you see your company in the next couple years?

We believe that our revolutionary UHP product architecture provides us with a solid foundation for growth in the coming years. If you look at how the satellite operators and the end users are specifying new services based on High-Throughput Satellites, you will see a lot of requirements, well-matched with the strengths of our product. With the new satellite platforms in Ku and Ka bands, it becomes possible to transmit tens of Megabits of data from a compact VSAT terminal with antenna size under 1 meter. Such terminals are now expected to deliver hundreds of Megabits of traffic to the user LAN. These are exactly the areas where the UHP technology excels, and that is why we look into the future with a lot of confidence. We believe that in the next two years we will establish a much stronger presence in the Asia Pacific region, while continuing our ascendancy in the North American and European markets. We are likely to expand our product lines further. We are also discussing several partnerships with service providers.

Anything else you would like to add?

We are a young and dynamic company with many exciting opportunities for growth. We would like to hear from all potential business partners, customers, suppliers, from all industry professionals, who believe they can participate in building an exciting new future for satellite IP networking.



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- * Multi-Carrier High-Speed TDMA Mesh
- * DVB-S2 Return Carriers up to 210 Mbps
- * Advanced NMS with support for Multiple Beams and VNO
- * API to Integrate with OSS/BSS
- * Layer 2 over Satellite Network
- * Hierarchical QoS
- * Automatic Beam Switching to Support Mobility

VSAT TERMINALS

- * Enterprise UHP-200 Router (300,000 PPS) with TDMA Mesh and 210 Mbps SCPC
- * Broadband UHP-100 Router (200,000 PPS) with Cost Effective Design
- * High-Speed Dual Receiver for Multiple Beams
- * Jumbo Frame support
- * AES 256 Encryption

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NETWORKS

WWW.UHP.NET

Santander Teleport

SANTANDER TELEPORT, a joint venture between ERZIA Technologies S.L. and MTN Satellite Communications (recently acquired by EMC Connected), is a satellite teleport which serves as a centralized gateway for MTN's VSAT communications with coverage over the Americas, Europe, and Asia. The facility is located in Santander, North Spain.

ERZIA Technologies is a Spain-based leading provider of satellite communication systems and space payload electronics and test systems. ERZIA is also a leading engineering firm that provides VSAT ground stations for extreme environments and harsh conditions as such of the Antarctic. ERZIA is currently providing communication services to several branches of the Spanish Government, including the Consejo Superior de Investigaciones Cientificas CSIC, the Spanish Antarctic Base Juan Carlos I and Instituto Español de Oceanografía, IEO, equivalent to the US NOAA. The com-

- Redundant UPS, battery backup, diesel generators and fuel storage in case of failure of commercial power

- Air-conditioning and fire protection systems in all hub and server rooms

- Access controls, movement detection system and video surveillance

- Secure protection fencing surrounding the perimeter
Physically separate cable ducts ensuring dual and diverse connectivity in/out of the building.

Among the services provided by Santander include: C, X, and Ku-Band Uplink and Downlink services; connectivity to global POPs and end customer premises; internet services; monitoring services; satellite backhaul; equipment collocation; broadcast content contribution/distribution; custom-tailored VSAT networks, among others.

"We focus in the maritime market as we have done



pany is currently headquartered in Santander in the northern part of Spain.

"The business case behind the joint-venture was to establish an MTN operation centre in Europe with teleport, NOC and specialised project and field engineering services, while at the same time expand the business through development of new markets as an independent company," said David Andres, Business Development Manager of Santander Teleport.

A state-of-the-art operations infrastructure managed by a fully manned 24/7 network operations center team provides secure, efficient and reliable infrastructure:

- 24/7/365 NOC with English & Spanish speaking operators to deliver quality service to global customers

- Main technical facility with engineering, operations and technical support

- 4,400 m² area with expansion planned to up to 10,025m²

- All systems fully redundant and dimensioned for future growth

since the company was established. Our expertise in this area goes many years back and allows us to provide comprehensive managed services for regional and global fleets. We have the technical and operational know-how to deliver and manage maritime services with our own staff first, and with support from trusted partners when needed," said David Andres.

"During the last two years we opened a government market business which brought several services to the company. While governments are still suffering the last economic recession, they are also starting to become more open about subcontracting certain capacities to commercial teleports. During 2014 and 2015 we have supported several services including the Nepal earthquake relief mission, Ebola crisis, or a scientific exploration mission in the Antarctica, amongst others. There is growing interest in the capacity savings that our 12m X-band antenna and our secure facilities can bring together for our customers," Andres added.

With increasing competition among teleports and other service providers, Santander has made it a point to differ-

Featured Company

entiate themselves from the competition. “There is a combination of things that put Santander Teleport in a good leading position for some customers. First, is our human resources of highly specialized engineers that form our workforce, with over 80% of the staff being telecommunications engineers by degree and have a long experience on RF technologies and VSAT services including teleport operations as well as in-the-field installations and support,” said Andres.

“Secondly, our company’s DNA revolves around its customers. Everything from the quality processes, to the culture embedded in the company, to the decision-making processes, is driven by our customer’s needs. Finally, we are specialised in certain markets and have specific focused resources to support them. For example, our government customers benefit from a combination of permanent and ad hoc services that are landed at our teleport on any of the C, Ku and X frequency bands; and we host the largest X-band antenna on a commercial teleport on our part of the world, with access to both XTAR and Skynet fleet of satellites from our location. Our maritime and enterprise customers feel the confidence transmitted by our commercial and technical teams when we have to dig deep into a maritime VSAT in-

stallation or a discussion about what technology suits best a particular application, or how we can efficiently operate a multiservice network to bring telecommunications costs down.” Andres added.

Looking into the future of the teleport business, Andres says: “I see large service providers taking over some of the smaller companies and growing through acquisition, while at the same time small to medium size teleport operators will become more specialized service providers in specific markets. Also the new breed of HTS satellites will make satellite operators more vertically integrated with a service offering that will favour the wholesale per Mbps and the use of the satellite operator’s own teleports. So the market specialization, competitiveness, customer excellence and bring real value to our customers is what is going to make us succeed in the future, and we are lined-up to do it.”

With its strategic location and focus on key vertical markets, Santander Teleport is well-poised to face the changes and challenges ahead.

For more information go to:
www.santanderteleport.com



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Products and Services MarketPlace

A guide to key products and services to be showcased at CABSAT 2016 in Dubai, UAE and Satellite 2016 in Washington, D.C. from March 8-10.

ABS
CABSAT booth # ZG5-32 Zabeel Hall,
Satellite booth # 334
www.absatellite.com

ABS operates a global fleet of 6 satellites including ABS-3A at 3°West the latest addition to the satellite fleet. Its extensive teleport network provides comprehensive coverage to 80% of the world's population across 5 continents. ABS has strategic alliances and partnerships with state of the art communication hubs, to deliver the best possible satellite solutions.



ABS has enhanced its fleet by procuring two new satellites, ABS-2A with powerful coverage over the Middle-East, Africa, Asia and Russia scheduled to launch in 2016 and ABS-8 for future deployment.

Headquarters in Bermuda, ABS has offices in the United States, United Arab Emirates, South Africa, Germany, Philippines, Indonesia and Hong Kong. ABS is majority owned by the Permira funds which are advised by European Private Equity firm Permira.

Advantech Wireless
CABSAT booth # ZH4-40 Zabeel Hall,
Satellite booth # 717
www.advantechwireless.com

Advantech Wireless supports the critical need for High Throughput Satellite communications in a rapidly expanding digital environment. Our proven low-cost and highly reliable system solutions are meeting the ever-increasing need for high-bandwidth communications essential to military and government requirements, cellular network providers, broadcasters, robust corporate networks, and security. We integrate award-winning research and development engineering into our designs. The result: custom solutions with lowest overall capital and operating costs, together with an unparalleled commitment to lead the industry in materials, design and reliability.



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Frequency Converters, Routers, Satellite Modems and Ruggedized Products.

Amos Spacecom
Satellite booth # 1601
www.amos-spacecom.com

Spacecom, operator of the AMOS satellite constellation, consisting of **AMOS-2** and **AMOS-3** co-located at 4°W, **AMOS-5** at 17°E, and **AMOS-4** at 65°E. The AMOS satellites provide high-quality broadcast and communications services in



Europe, Africa, Russia, Asia, the Middle East, & North America. With the launch of AMOS-6 to 4°W in 2015, enhancing coverage over Europe and the Middle East with its new Pan-European beam, Spacecom will further strengthen its position as a global satellite operator. Spacecom's AMOS-4 satellite provides a full range of services to Southeast Asia, Russia and China. AMOS-6, planned for launch in 2016, will provide steerable Ku-band across Europe and the ME and high-throughput Ka-band coverage in Africa and Europe. Ku-band and Ka-band on AMOS-4 is now available.

ARABSAT
CABSAT booth # ZC5-10 Zabeel Hall,
www.arabsat.com

Founded in 1976, **Arabsat** has been serving the growing needs of the Arab world for over 30 years. Now one of the world's top satellite operators, it carries over 500 TV channels, 160 radio stations, pay-TV networks and wide variety of HD channels reaching tens of millions of homes in more than 80 countries across the Middle East, Africa and Europe—including an audience of over 170 million viewers in the (MENA) tuned into Arabsat's hotspot at 26° E. Operating a growing fleet of owned satellites at the 20° E, 26° E, 30.5° E and 34.5° E, ARABSAT is the only satellite operator in the MENA region offering the full spectrum of Broadcast, Telecommunications and Broadband services, making Arabsat satellites' fleet the youngest in the region.



AvL Technologies
Satellite booth # 1611
www.avltech.com

AvL Technologies' booth at SATELLITE 2016 will con-

tinue our proud tradition of showcasing industry benchmarks of excellence.

AvL TECHNOLOGIES

On display this year will be AvL's O3b-certified MEO tracking Ka-Band antenna systems, both the 85cm and 2.4m full-performance variants. These antennas are transportable, rapidly-deployable, tactical terminals that utilize a unique, high duty-cycle drivetrain for uninterrupted, around-the-clock MEO tracking. The AvL antennas feature a highly integrated design that typically operate in dual-antenna (make-before-break) terminal configurations but can also operate in single-antenna (break-before-make) mode.

We will also feature our latest addition, the 1.3m Model 1390 X/Y MEO-LEO tracking antenna. This uniquely transportable product uses an X-over-Y positioner to eliminate the zenith keyhole, a limitation for traditional Elevation-over-Azimuth positioners for LEO and MEO orbits requiring overhead tracking. The Model 1390 has full horizon to horizon coverage including a single piece (or segmented) axis-symmetric carbon fiber reflector.



Our newest 85cm auto-deploy flyaway system will also be on display - the AvL Model 824i 85cm highly integrated satellite communication system, featuring a mission-configurable weather proof electronics enclosure. The Model 824i represents the latest power efficient technology in a lightweight, airline checkable, 2-case solution. We have engineered the 824i to accommodate the AvL AAQ auto-acquisition antenna controller module as well as an array of customer specified terminal components, including a wide range of modem card options; WIFI networking capability; fiber connectivity; multiple AC and/or DC power options and customer-defined I/O connector options.

C-COM Satellite Systems Inc.
Satellite booth # 731
www.c-comsat.com

C-COM Satellite Systems Inc. is a leader in the development, manufacture and deployment of commercial grade mobile satellite-based technology for the delivery of two-way high-speed Internet, VoIP and Video services into vehicles. C-COM has developed a number of proprietary Mobile auto-deploying (iNetVu[®]) antennas that deliver broadband over satellite into vehicles while stationary virtually anywhere where one can drive. The iNetVu[®] Mobile antennas have also been adapted to be airline checkable and easily transportable. More than 7000 C-COM antennas have been deployed in 103 countries



around the world in vertical markets such as Oil &

Gas Exploration, Military Communications, Disaster Management, SNG, Emergency Communications, Cellular Backhaul, Telemedicine, Mobile Banking, and others. The Company's satellite-based products are known worldwide for their high quality, reliability and cost-effectiveness.

C-COM Satellite Systems Inc. will be showcasing its new **inMotion SOTM antenna** (Satcom-On-The-Move) at Satellite booth 731. Come visit our booth to learn more about our products including our most popular Auto-acquire Ka-band Flyaway antenna, the **iNetVu[®] FLY-75V** and our top-of-the-line Ku-band DriveAway, the **iNetVu[®] 1202**.



COMTECH EF Data
Satellite booth # 1401
www.comtechefdata.com



Comtech EF Data Corp. is the global leader in satellite bandwidth efficiency and link optimization. Our integrated SatCom infrastructure solutions encompass Advanced VSAT Solutions, Satellite Modems, RAN & WAN Optimization, Network & Bandwidth Management and RF Products. The offerings feature groundbreaking efficiency (industry-leading coding, modulation, compression and physical layer operation), robust intelligence (traffic shaping, dynamic bandwidth allocation and integrated network management) and unparalleled horsepower (processing power for your pps and Mbps transmission requirements). Commercial and government users utilize our solution suite to reduce OPEX/CAPEX and to increase throughput for the most demanding fixed and mobile networks.

COMTECH Xicom Technology



CABSAT booth # ZE4-51 Zabeel Hall, Satellite booth # 1401
www.xicomtech.com

Comtech Xicom Technology provides a broad product line of KPAs, TWTAs, SSPAs and BUCs for worldwide satellite uplink covering C-, X-, Ku-, DBS-, Ka-, Q-band, Tri- and Multi-band with power levels from 8 to 3,550 watts and available in rack-mount and antenna-mount ODU packages.

At Satellite and Cabsat, Comtech Xicom Technology will be showcasing its SuperCool™ family of amplifiers which has many practical advantages over traditional air-cooled amplifiers including: ambient noise reduction, ease of service and maintenance, higher reliability, reduced heat load in hubs, flexible and compact installation and gain stability over ambient temperature.

The Comtech Xicom design incorporates integrated cooling channels in the amplifier base-plate, external to the high voltage and RF circuitry and drip-free connections. Liquid cooling is available across the high-power end of the product-line, including: the new SuperPower 2000W, and 1500W products; the 1250W, 750W, 500Ka and 250Ka family of amplifiers. Comtech Xicom engineers are available to help customers understand and specify liquid cooling systems that are right for them.



Gazprom Space Systems
CABSAT booth # ZH6-40 Zabeel Hall
www.gazprom-spacesystems.ru



Gazprom Space Systems (formerly Gascom) is a private commercial, non-governmental satellite operator based in Russia. GSS was established in 1992. Its shareholders are Gazprom - the world biggest gas company, Rocket-Space Corporation Energia - the leading Russian space enterprise, and Gazprombank - the largest Russian non-state bank and Gazprom's authorized bank.

The company operates the Yamal Satellite Communication System, providing the users with:

- satellite capacity worldwide;
- satellite services in Russia ("point-to-point" links, TV distribution, VSAT networks, broadband, mobile backhaul, trunking etc.).

Today the Yamal Satellite Communications System consists of four Satellites (Yamal-202 at 49E, Yamal-300K at 183E, Yama-401 at 90E and Yamal-402 at 55E), state-of-the-art telecommunication center and VSAT networks in the regions of Russia. Total Yamal satellite constellation capacity amounts to 248 equivalent transponders of 36MHz and about a third of it is concentrated in beams pointed over territories outside Russia.

The geography of GSS clients encompasses around 30 countries and services based on Yamal capacity are used in more than one hundred countries. Although on the international market GSS provides pure capacity, the company has a number of partner teleport companies in the Europe, Middle East, Far East, Asia, Africa and America which provide value added services.

The next step of the company constellation enhancement will be Yamal-601 satellite dedicated to replace Yamal

-202 satellite operating at 49E. In total at least five new satellites are planned to be launched by 2025.

Hispasat/Hispar
Satellite booth # 409
www.hispasat.com



The **HISPASAT Group** is composed of companies with a foothold in Spain as well as in Latin America, where its Brazilian affiliate HISPAMAR, sells its services.

The Group is a leading Spanish- and Portuguese-language content broadcaster and distributor, including over important direct-to-home television (DTH) and high-definition television (HDTV) digital platforms. HISPASAT is one of the world's largest satellite companies in terms of revenue in its sector, and the main communications bridge between Europe and the Americas.

Hunter Communications
Satellite booth # 2106
www.huntercomm.net



HUNTER COMMUNICATIONS

Hunter Communications was founded in 2002 as a satellite bandwidth and tele- port provider. We work as an independent agent, working with satellite network service providers, US Government contractors and teleports worldwide, to support them with bandwidth procurement, analysis, and teleport facilities.

Hunter Communications entered the Canadian market in mid-2013 when it repositioned the Satmex 5 satellite in order to serve Canada, where Ku Band capacity has been both scarce and expensive. In October of 2015, a follow-on satellite was placed into service with Hunter's new hosted Ku-beam – this beam provides for excellent coverage with primary focus over all of the Canadian landmass and surrounding waters, including northern Canada and its Arctic waters.

INTEGRASYS
Satellite booth # 118
www.integrasys-sa.com



INTEGRASYS is the technology leader in signal monitoring software systems for satellite, broadband and telecommunications market.

Our software products are the state-of-the-art in Control Systems in terms of speed, flexibility, efficiency and scalability and introduces a new concept in signal monitoring communications

At Satellite 2016, Integrasys will be showcasing its Sat-

motion Pocket is the most innovative technology worldwide for VSAT commissioning and maintenance, minimizing OPEX time and interferences. Satmotion Pocket is the winner of the “Most Innovative Technology of the Year” Award 2014.



ND Satcom
CABSAT booth # ZA5-32 Zabeel Hall,
Satellite booth # 138
www.ndsatcom.com

At CABSAT and Satellite 2016, **ND Satcom** will be showcasing its SKYWAN modem family— a reliable, flexible and versatile satellite communication platform for customer centric networks. It is a bi-directional MF-TDMA plus DVB system that supports voice, video and data applications in the most bandwidth efficient manner.

The new SKYWAN 5G unlocks new business opportunities for service providers. Total cost of ownership is significantly reduced thanks to the fact that only one type of device is needed for all roles in the network. Each SKYWAN 5G has the full functionality on board and specific features are unlocked by a license key. One small hardware for all network roles simplifies logistics and unprecedented scalability enables the growth of your network in a very cost efficient manner. This saves costs in terms of logistics, certifications, network configuration and maintenance. Measuring in at only 1 RU the SKYWAN 5G is the smallest hub device on the market.



SKYWAN 5G enables star, mesh, multi-star or hybrid topologies with Communications-on-the-move (COTM) support. Each unit can act either as a hub or master station, therefore adding agility in terms of its network role. Geographical redundancy of the master station is already built-in. The device is so flexible that the customer can change the topology at a later point, use the unit for other networks or even split or pool networks together.

Newtec
CABSAT booth # ZK6-30 Zabeel Hall,
Satellite booth # 1619
www.newtec.eu

Newtec, a specialist in designing, developing and manufacturing equipment and technologies for satellite communications, will be launching of its most advanced VSAT modem to date – the first on the market to support wideband DVB-S2X , the Newtec MDM5000 Satellite Modem – at SATELLITE 2016 and CABSAT 2016. The MDM5000 is capable of

receiving forward carriers of up to 140 MHz, and processing over 200 Mbps of throughput. On the return channel, it supports SCPC, TDMA and Newtec’s unique Mx-DMA™, up to 75 Mbps.



With forward symbol rates from 1 to 133 Mbaud and coding up to 256APSK, the MDM5000 will boost efficiency and performance on legacy satellites while fully unleashing the potential of next-generation High Throughput Satellites (HTS). As the latest addition to the Newtec Dialog® multiservice platform, the MDM5000 is designed to handle a wide range of IP services, including: Internet and Intranet access, Voice over IP (VoIP), mobile backhauling and trunking, along with video contribution and multicasting.

RF-Design
CABSAT booth # ZG4-30 Zabeel Hall
www.rf-design-online.de



RF-Design specializes in developing, manufacturing and marketing high quality RF distribution solutions for the international Satellite-, Broadcast- and Broadband communications market. Our product range include Switch/Routing Matrices, RF-over-Fiber solutions, Splitters/Combiners, Switches/Redundancy-Switches, Line-Amplifiers, RF/DVB Signal-Quality Analyzers and LNB-supply/control systems...perfectly suited for applications in Teleports, Satellite Earth-Stations as well as Broadcast- and Broadband RF distribution infrastructures.

We also have strong capabilities to design and to manufacture custom-made RF distribution solutions for your individual needs. All our products are developed, manufactured, tested and approved in our own facilities in Lorsch, Germany and characterized by high quality, reliability and superior RF performance. At CABSAT 2016 we



will demonstrate our new unique, innovative and clever Switch Matrix systems “FlexLink-K7-Pro” and “FlexLink S7” as well as our new RF-over-Fiber system “RedLink FLCRplus” allowing N+1 and N+2 redundant optical transmission. We look forward to welcoming you at our stand and to talking about your individual RF distribution requirements.

Santander Teleport
CABSAT booth # ZF4-52 Zabeel Hall,
www.santanderteleport.com

**SANTANDER
TELEPORT**

Santander Teleport is an independent teleport operator offering satellite communication services in C, X, Ku and Ka bands for service providers, enterprise and government organisations in a number of markets including maritime, enterprise, broadcast and defense.

Santander Teleport owns its own satellite teleport facilities in Spain with access to a global terrestrial network and works with partner teleports to provide global reach.

Terrasat Communications, Inc.
CABSAT booth # ZH4-42 Zabeel Hall,
Satellite booth # 1831
www.terrasatinc.com

TERRASAT
Communications, Inc.

Terrasat began in October, 1994, specializing in engineering design and manufacturing of advanced radiofrequency products for satellite and terrestrial microwave communications systems. Today, the company is focused on innovative RF solutions for satellite communications. The ground-breaking IBUC – Intelligent Block Up converter – brings full-featured, carrier-grade performance to commercial and military satellite communications terminals.

The company's new manufacturing facility on the southern edge of Silicon Valley has nearby access to an abundance of high technology supporting infrastructure and a highly skilled labor force.

Terrasat's latest satellite communications products include the second generation IBUC2 – a smaller and lighter weight evolution of the original IBUC. New products employing Gallium Nitride (GaN) amplifier designs have also joined the lineup providing smaller yet powerful BUC solutions for mobile applications and higher power amplifiers that are perfect for teleports and broadcast applications.

UHP Networks
Satellite booth # 1801
www.uhp.net

UHP.
NETWORKS

UHP Networks, formerly known as Romantis Inc, is a leading manufacturer of high-performance VSAT network equipment. Our solutions are field proven with over 170 networks and 11,000 remote terminals installed, many operating in most demanding applications with Tier 1 enterprise, broadcast and government customers. The company has its headquarters in Montreal, Canada, with manufacturing

operations in Germany and sales and support offices worldwide. Our technology is based on the Universal Hardware Platform (UHP). Owing to its unique real-time operating system, one UHP module can combine industry- highest processing power (450 Mbps of aggregate IP traffic, 250,000 packets per second, up to 5 demodulators) with super-compact size, less than 1 lbs weight, 9W power consumption. The UHP module can work as a remote terminal or as a building block of a hub with up to 250 TDMA inroutes, supporting up to 500,000 remotes. With its very advanced TDMA protocol (96% efficiency), sophisticated QoS and 65 Msps, best in class modulation and coding, up to 32APSK with 5% roll off, the UHP technology is the optimum choice for next generation HTS satellite networks.

Walton De-Ice
Satellite booth # 845
www.de-ice.com

**WALTON
DE-ICE**

Walton De-Ice, the world's leading designer and manufacturer of satellite earth station antenna (ESA) weather protection solutions, Walton will showcase its latest Ka-Band satellite ESA weather protection solutions, **Ice Quake**, **Rain Quake**, and **Snow Shield** at Satellite 2016.

Antenna de-icing and weather protection systems from Walton De-Ice can reduce signal loss through Ka-Band dishes, and improve the reliability and quality of content delivery services.

Work Microwave
Satellite booth # 1815
www.work-microwave.com

WORK
MICROWAVE

At SATELLITE 2016, **WORK Microwave** will showcase the latest advancements to its analog and digital satcom solutions, including a new all-IP DVB-S2X product line. Using WORK Microwave's solutions, satellite operators can dramatically increase flexibility, bandwidth, and margins while reducing their operational costs.

WORK Microwave devices have been deployed by operators worldwide to support a range of applications within the satellite broadcast and satellite communications markets, including SNG/contribution, direct-to-home, IP networking, teleport management, governmental and more. WORK Microwave's Satellite Technologies division develops and manufactures high-performance, advanced satellite communications equipment for telecommunications companies, broadcasters, integrators, and government organizations that are operating satellite earth stations, satellite newsgathering vehicles, fly-aways, and other mobile or portable satellite communication solutions.

INTRODUCING THE NEW IBUC 2G

1/4 the size. 1/3 the weight.
All of the IBUC features.



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FLY-AWAY SYSTEMS

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40W Ka-Band (GaN P_{sat}) in the
compact IBUC 2 enclosure.**

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CABSAT STAND #ZH4-42



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**OPERATORS DO NOT WANT TO SEE BLOCK DIAGRAMS...
... BUT ENGINEERS DO !**

Antenna

satellite: **Eutelsat W1 10E** orbit: **-10.0 °W** **TRACSTAR** **JOG**

azimuth: 179.62° elevation: 35.11° pol: 4.56° H **STOP**

az dest: 179.62° el dest: 35.11° pol dest: 4.6° H rx pol: H rx band: 11GHz

positioning: working jog mode Antenna stop
parking: parked antenna up

snr: 194

IRD-1

frequency: **11126.0 MHz** mode: **QPSK** lock video audio: eb / no: **3.60 dB** **IRD-1**

rx pol: H rx band: 11GHz 11GHz

symbol rate: 4.340 Msps fec: 1/2 audio-1: STEREO prog: 1011 level: 17 dBm

data rate: 3.995 Mbps prog: 1 audio-2: STEREO prog: 0 level: 17 dBm

received program: **slate**

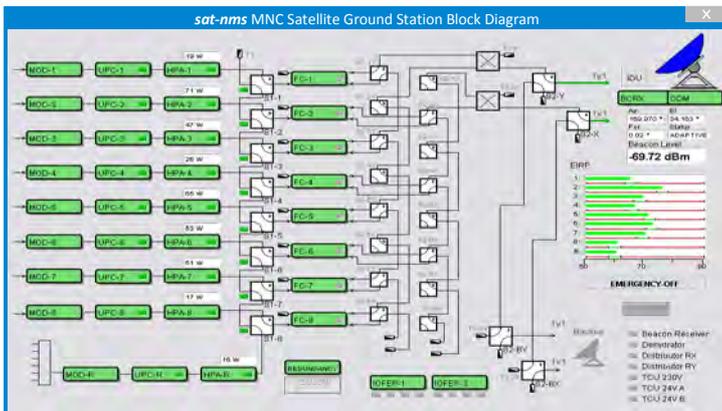
PRESET

TX-1

frequency: **14176.830 MHz** pol: **V** tx on: **OFF** eirp: **54 dBW** measured: **-99.90 dBW**

symbol rate: 6.11130 Msps fec: **QPSK-3/4** standard: **DVB-S** pilot: **OFF** aspect: **16:9** modulation: **ON**

PRESET **RF Off** **DN AIR** **BUZ-1** **ENC-1**



- ✓ easy re-configuration
- ✓ operator friendly GUIs
- ✓ smart work flows
- ✓ vendor independent configuration

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Dubai Calling via Satellite: The GVF Hub Summit @CABSAT 2016

by **Martin Jarrold**

In May 2015, to coincide with the 150th Anniversary of the foundation of the **International Telecommunication Union**, the Doha, Qatar-based broadcast news and current affairs channel, **Al Jazeera**, transmitted a documentary program entitled **'Satellite Jamming'** on its Arabic language channel.

The program content focused not only issues surrounding deliberate satellite interference, but also addressed the causes of unintended interference. In preparing for this program, its producer requested the assistance of GVF, and in gathering content for the broadcast an Al Jazeera production crew filmed the proceedings of the **GVF MENASAT Summit @ CABSAT 2014** which was focused on satellite interference issues. Excerpts from the proceedings of the MENASAT Summit feature in the

lauded for its innovation in content and format.

While this year the satellite industry's attentions will be spread between Washington DC and Dubai, the **GVF Satellite Hub Summit @ CABSAT 2016** will be presented over two days and will take place physically within the satellite area of the CABSAT exhibition using a centrally located and high-profile meetings facility, thereby bringing the **GVF Satellite Hub Summit** closer to the exhibition space and to CABSAT's thousands of visitors. This provides all participating organizations with a high level of visibility for their support for the event program and for the vitally important dialogues and opportunities for networking that the program facilitates and promotes.

Along with over 30 speakers from industry and end-user organizations,

this facility will be available soon. I hope to see you in Dubai!

GVF Satellite Hub Summit @ CABSAT 2016 | Program

**Dubai World Trade Centre Exhibition |
The Satellite Hub | Zabeel Hall 5
9th & 10th March 2016**

Hub Summit Day One | 9th March 2016

1015-1030 | Welcome and Opening Remarks

Martin Jarrold, Chief, International Program Development, GVF and Chairman, Satellite Hub Summit

1035-1135

MENA's Satellite Broadcast & Telecoms: Overview of an Evolving Market Environment

Opening Remarks and Panel Discussion



television program. Subsequently, as chairman of the MENASAT Summit, I was interviewed for the documentary, along with other stakeholder commentators. **The English language version of the documentary is now available on YouTube and may be viewed by clicking on: <https://youtu.be/St9kKCtpGYA>.**

This is just one example of the extent to which **GVF MENASAT Summits @ CABSAT** have been an important added-value feature of the annual CABSAT exhibition for many years. The complementary relationship between exhibition and summit program now continues with the **GVF Satellite Hub Summit @ CABSAT**. The first of these events in 2015 was very successful and much

the **International Telecommunication Union** will be represented by the Head of the Space Systems Coordination Division of the Radiocommunication Bureau Space Service Department, presenting the policy and practice perspectives of the ITU across various elements of the Summit program.

Here's your briefing on the Dubai program. If you cannot make it to Dubai, while you will not be able to be part of the Hub Summit "live" dialog you can, after the event, catch-up on the brief presentations that many of the session panelists will be offering to provide context to their remarks. Post-CABSAT, the GVF website will offer a PDF download facility making available the presentation-based content from the program. More information about

**Tom Loi, Sales Director, AsiaSat
Ghassan Murat, Director, Commercial Development, MENA, Eutelsat
Other panelists to be announced**

1140-1315

Spectrum: Satellite and the Outcomes of the 2015 ITU World Radiocommunication Conference

Opening Remarks and Panel Discussion

Mitsuhiro Sakamoto, Head, Space Systems Coordination Division, Space Services Department, Radiocommunication Bureau, ITU

Laith Hammad, Director, MENA, Access Partnership

Patrick van Niftrik, Vice President, Spectrum Development, EMEA, SES

Zahid Zaheer, Director, GMPCS Affairs,

Thuraya

Guido Baraglia, Director, sIRG
 Jawad J. Abbassi, Head of MENA, Government & Regulatory Affairs, GSMA
 Dr Mohamed Juwad, Regional Director, GVF 5G Initiative, GVF

“...The first GVF Satellite Hub Summit @ CABSAT in 2015 was very successful and much lauded for its innovation in content and format...”

1315-1400 | Lunch

1400-1555

High Throughput Satellites: Leveraging Advancing Technologies for Innovative Services – Mature, Evolving & Emerging Markets
Opening Remarks and Panel Discussion

Jean-Philippe Gillet, Vice President, EMEA Sales, Intelsat

Juriaan Hekking, Senior Sales Engineer, SES

David Murphy, Chief Commercial Officer, YahSat

Steve Gardner, Chief Technology Officer, ViaSat

Imran Malik, Regional Vice President ME & APAC, O3b Networks

Bart Van Poucke, Product Manager, Newtec

Majdi K. Atout, Regional Vice President, Sales, MEA, iDirect

Harry Formosa, Sales Director, EME, Avanti Communications

1600-1715

Constellations for Connectivity: A New Dawn for Low Earth Orbit Solutions?

Opening Remarks and Panel Discussion

Mitsuhiro Sakamoto, Head, Space Systems Coordination Division, Space Services Department, Radiocommunication Bureau, ITU

Diederik Kelder, Senior Vice President, Business Development, LeoSat Enterprises

Tony Azzarrelli, Vice President, International Policy & Regulatory Affairs, OneWeb (TBC)

Other panelists to be announced

1715 | Closing Remarks for Day One

Martin Jarrold, Chief, International Program Development, GVF and Chair-

man, Satellite Hub Summit

1345-1430 | Lunch

Hub Summit Day Two | 10th March 2016

1430-1555

Integrating the Digital World: Satellite, Big Data, the Internet of Things & the Cloud

Opening Remarks and Panel Discussion

Mohammed Al Shawwa, Research Manager, Arab Advisors Group

Bashir Patel, Regional Director, Central Asia, Middle East & Africa (CAMEA),

Legal, Regulatory & Business Development Division, Inmarsat

Jack Buechler, Vice President, Business Development, Talia Group

Andreas Voigt, Director, sIRG

Other panelists to be announced

1015-1030 | Welcome and Opening Remarks

Martin Jarrold, Chief, International Program Development, GVF and Chairman, Satellite Hub Summit

1035-1210

From Niche to Mainstream: New Strategic Markets for VSAT with Communications-on-the-Move

Opening Remarks and Panel Discussion

Patrick Wong, Managing Director, APAC, MEA Sales, Comtech EF Data

Soheil Mehrabanzad, Vice President, Hughes Network Systems International (TBC)

Stephen Conley, Senior Product Manager, Mobility, SES

Olaf Oehrl, New Business & Partner Development, ND SatCom

Hassaan Karim, Technical Director, SkyStream

Name & Job Title to be confirmed, SpeedCast

1215-1345

Ensuring an Interference-Free World of Satellite Services

Opening Remarks and Panel Discussion

Mitsuhiro Sakamoto, Head, Space Systems Coordination Division, Space Services Department, Radiocommunication Bureau, ITU

Mazen Nassar, Managing Director, MenaNets

Erwin Greiling, Product & Sales Manager, Siemens Convergence Creators

Guido Baraglia, Director, Business Development & Sales, Kratos Networks

Andreas Voigt, Director, sIRG

Other panelists to be announced

1600-1700

Policy, Politics and Profit: Satcom for a Dynamic Marketplace

Opening Remarks and Panel Discussion

Alpha Bah, Chief, IT Emergency Preparedness & Response Branch, UN World Food Program

Andreas Voigt, job title to be confirmed, Space Data Association

Other panelists to be announced

1700 | Closing Remarks & End of GVF

Satellite Hub Summit @ CABSAT 2016

Martin Jarrold, Chief, International Program Development, GVF and Chairman, Satellite Hub Summit

[Timings shown here are subject to minor amendment.]



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

RR Media to Merge with SES Platform Services

Luxembourg, February 28, 2016—SES Platform Services (SES PS), a wholly-owned subsidiary of SES, announced an agreement whereby RR Media, a leading provider of global digital media services to the broadcast and media industries, will merge its operations with those of SES PS.

SES will pay a consideration of USD\$ 13.291 per share to acquire a 100% interest in RR Media. The consideration corresponds to an Enterprise Value of US\$242 million, which will be funded from the group's existing financial resources. The acquisition is subject to regulatory approvals, which are expected to be completed in Q2/Q3 2016.

RR Media provides scalable, converged digital media services to more than 1,000 media companies globally. Every day, the company manages and delivers over 24,000 hours of broadcast content, over 4,000 hours of online video and VOD content and over 350 hours of premium sports and live events including major global sporting events such as the Super Bowl and the FIFA World Cup. RR Media provides coverage for over 95% of the world's population, reaching viewers of multiplatform TV operators and populating content to over 100 Video-on-Demand (VoD) platforms, as well as delivering content to online video and Direct-to-Home (DTH) services.

By providing a complete range of digital media services, RR Media enables the richest possible user experi-

ence, expands audience reach and increases monetization capabilities for its customers.

The company's services cover four main areas: global content distribution network with an optimised combination of satellite, fibre and the Internet; content management and playout services; management and delivery of premium sports, news and live events around the world; and other advanced online video services. This state-of-the-art offering

order to maximise audience reach and add monetisation capabilities.

Wilfried Urner, Chief Executive Officer of SES Platform Services, commented: "RR Media has successfully developed the capability to manage and deliver premium content effectively, helping its customers to reach a global audience over multiple satellite, cable TV, IPTV, online and mobile platforms. SES, as the largest global platform for video in terms of reach and channels, adds global scale and consid-

erable insights from the successful development of SES PS in Europe." Ferdinand Kayser, Chairman of SES Platform Services, added: "This is an exciting acquisition



RR Media
Rethink.Reinvent

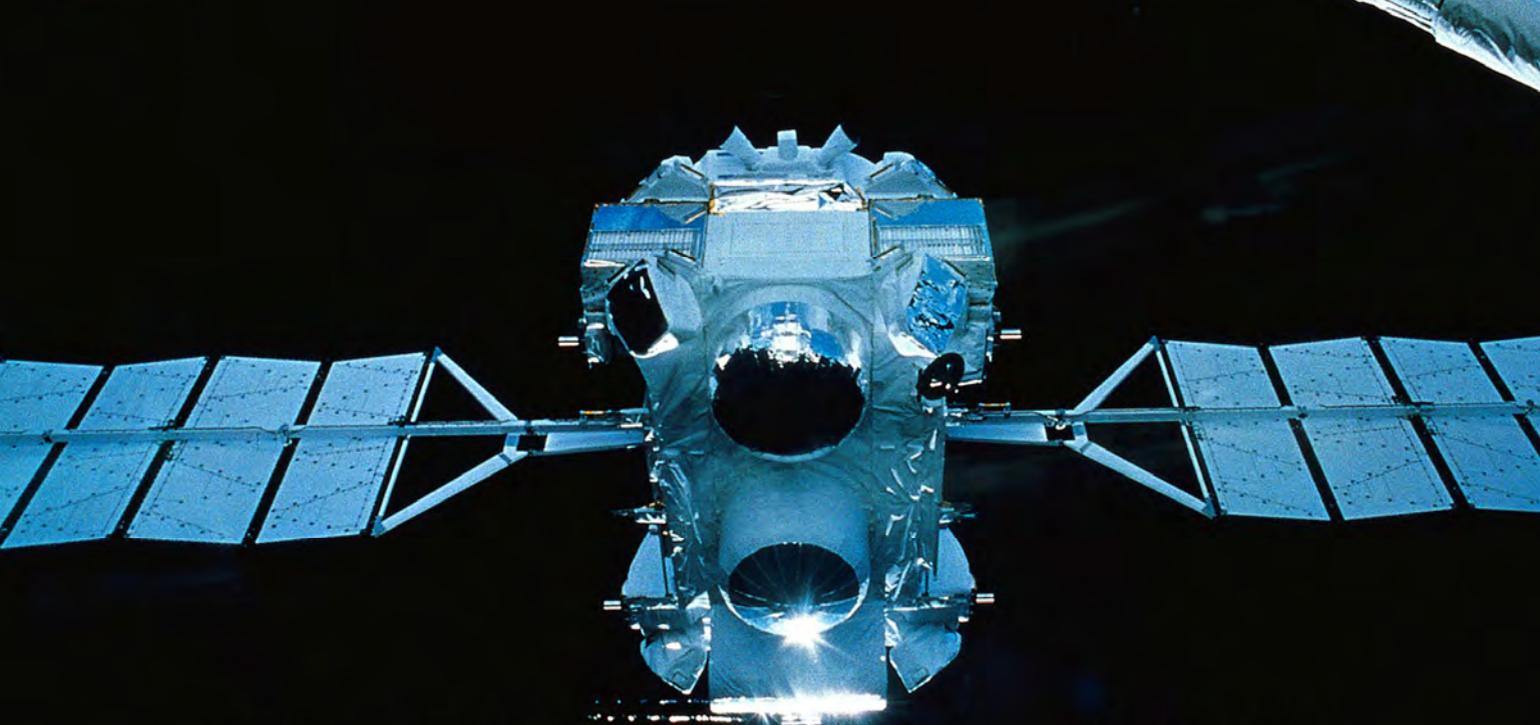
supports the diverse service requirements of some of the world's leading media companies, broadcasters and content rights owners holders including the BBC, Disney, Fox, IMG, ITV, MP Silva, NFL, and Viacom. RR Media operates from four principal media centres (in Bucharest, London, Pennsylvania and Tel Aviv).

On completion of the transaction, RR Media and SES PS will be combined to create a new, stand-alone media services provider, offering full continuity and enhanced service to their existing customers. With a comprehensive range of innovative video and media solutions on a global scale, the new organization will focus on offering its customers highly optimized content management and distribution solutions that utilize the combined network of SES PS and RR Media leveraging their multiple satellite positions as well as a large fiber network and the Internet, in

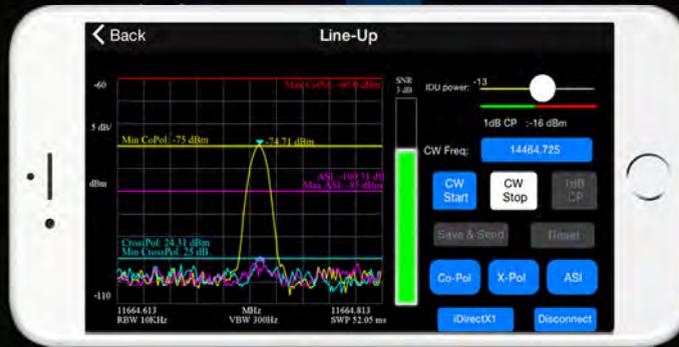
and an important milestone in the execution of SES's differentiated strategy focused on Globalisation, Verticalisation and Dematuring. The addition of RR Media further accelerates the globalisation of SES's services businesses, establishing a world-leading next generation video and media service provider."

Avi Cohen, Chief Executive Officer of RR Media said: "SES Platform Services is an important industry player with the capabilities to service strong upper tier clients. With the combined infrastructure and industry expertise, the integrated company will have the capability to deliver innovative solutions to top tier clients, emerging markets and global customers. RR Media's growth strategy has focused on top tier client and increasing scale. This deal achieves both of these strategic goals."





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Caret Appointed President and CEO of Boeing Defense, Space and Security

Berkeley, Mo., February 24, 2016--The Boeing board of directors has elected **Leanne Caret** president and chief executive officer of the company's Defense, Space & Security business effective March 1. She will succeed Chris Chadwick, who has announced his retirement from the company.



Leanne Caret

Caret, 49, a 28-year company veteran, currently leads that unit's Global Services & Support business, which has approximately 13,000 employees in 295 locations around the world. With \$9 billion in revenues, it is the U.S. Department of Defense's largest performance-based logistics contractor and an industry leader in providing sustainment services for a diverse range of military products and systems.

Chadwick, 55, retires this spring after a 34-year career that included a range of senior executive roles. He has led the \$30-billion Defense, Space & Security unit since December 2013, after previously leading its Military Aircraft business, which is home to the organization's tactical aircraft, rotorcraft, and weapons programs, among others.

Ed Dolanski, 48, will succeed Caret as president of Global Services & Support. Dolanski is currently president and chief executive officer of Boeing subsidiary Aviall, the largest provider of new aviation parts and aftermarket supply-chain management services for the aerospace and defense industries.

In addition to becoming CEO of the Defense, Space & Security organization, Caret also becomes a Boeing executive vice president and joins the company's executive council.

Caret's Boeing career began in 1988. Before leading the services and support organization she was chief financial officer for the defense, space and security unit and, before that, vice

president and general manager of its rotorcraft programs.

She holds a Bachelor of Science degree in Business Administration from Kansas State University and a Master of Business Administration degree from Wichita State University.

SES Appoints New VP for Latin America/North

Mexico City, Mexico, February 16, 2016--SES announced the appointment of a new Vice President, Commercial, for Latin America/North. **Clemente Cabello** will be based in Mexico City and will be responsible for leading SES's commercial activities in Mexico, Central America and the Caribbean.

Cabello comes to SES with more than fifteen years of experience in the satellite industry, during which he has held strategic planning, marketing, sales, and business development roles. Clemente holds a BS in Actuarial Science from ITAM in Mexico, and an MBA from the Wharton School, University of Pennsylvania.



Clemente Cabello

Before joining SES, Clemente was Corporate Director at Grupo Autofin Mexico, a major diversified group with investments in Mexico's automotive, tourism and financial sectors. Prior to that, Clemente held several executive positions with SATMEX (including marketing, sales and business development) and worked as a consultant at McKinsey & Company, Inc.

Anderson Joins STN as GM

Dob, Slovenia, February 2, 2016 – STN has appointed **Anver Anderson** as the new General Manager of the company, with responsibility of implementing ongoing and new initiatives including global sales, marketing outreach and team development.

Anderson has an invaluable profes-

sional history within the industry with decades of experience leading internationally diverse, multi-cultural and multi-disciplined business teams on a global basis. For many



A. Anderson

years, Anderson led a UK-based consultancy specializing in business development, strategic market planning, project management and product evaluation and development.

Anderson will be instrumental in the next phases of STN's development, bringing with him a vast and diverse knowledge of the industry complimented by a keen perspective and progressive zest, according to STN.

Prior to joining STN, Anderson held corporate executive positions, including Chief Sales Officer with a European teleport operator, Vice President for Asian operations for a leading global manufacturer of modems, modulators and hub systems, as well as Business Development and Sales & Marketing director roles with world-leading satellite operators.

SSL Appoints New CTO

Palo Alto, Calif., February 16, 2016—Satellite manufacturer **Space Systems Loral (SSL)** announced that **Dr. Matteo Genna** has assumed the role of Chief Technology Officer. Dr. Genna's strong systems engineering and product development background, along with his visionary perspective, have advanced SSL's capabilities, both in its core communications satellite market and in its growth market, with innovations in robotics, small satellites and advanced systems for space infrastructure and exploration.

Dr. Genna holds a Bachelor of Science degree in Physics from the University of California, San Diego, and a Ph.D. in Physics from the University of California, Berkeley.





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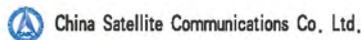
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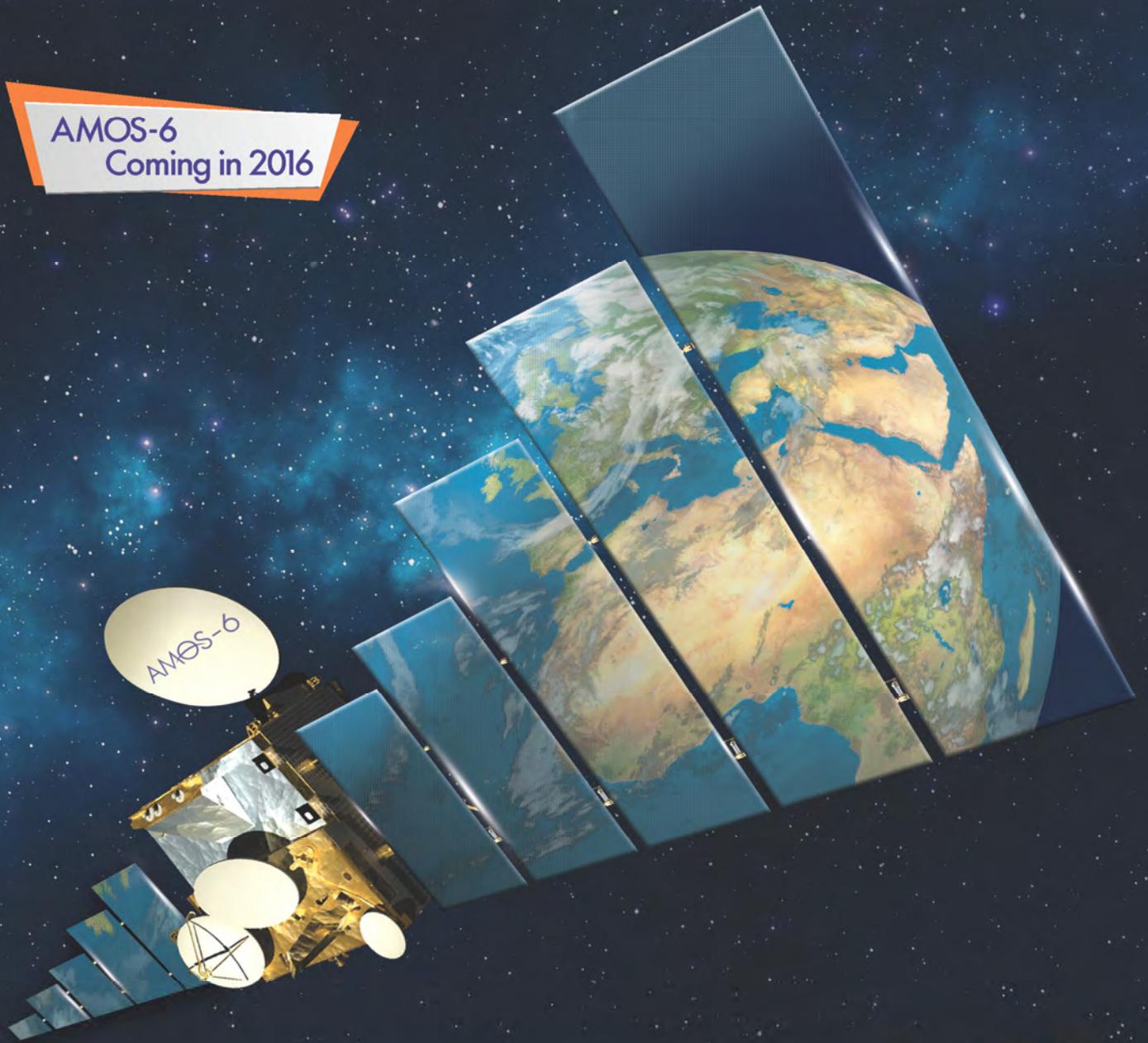


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Inflight Entertainment Revenues to Surpass US\$ 5 Billion

Paris, France, February 4, 2016 - According to Euroconsult's newly released report, [Prospects for In-Flight Entertainment & Connectivity](#), total revenues from passenger connectivity services are expected to grow from \$700 million in 2015 to nearly \$5.4 billion by 2025, a 23% CAGR over the 10-year period. "At the end of 2015, 72 airlines had already installed or announced plans to install passenger connectivity systems on board, and the number of connected commercial aircraft had increased by 21% compared to the end of 2014," said Geoffroy Stern, Senior Consultant at Euroconsult and editor of the report.

"The launch of High Throughput Satellites (HTS) in both Ku-band and Ka-band is expected to be

a game-changer for the in-flight connectivity market," Mr. Stern continued. "Total Ka-band HTS supply will increase threefold to reach 1,500 Gbps by 2018, while Ku-band HTS supply will increase fivefold to reach 285 Gbps in 2018. Beyond 2018, an even larger volume of capacity, targeting the in-flight connectivity market, is expected. HTS systems will not only tremendously increase data speeds to the plane compared to regular satellite systems, but will also significantly lower costs, thereby further driving the adoption of IFC services. With more airlines opting for cabin connectivity, companies that have not yet made a decision will be increasingly pressured to offer such services to match their competitors."

The number of connected commercial aircraft is expected to grow from 5,300 to 23,100 over the 2015-2025 period, accounting for 62% of the global fleet. The significant upward revision compared to our previous forecasts is mostly driven by the expected faster adoption of VSAT-based solutions (for both Ku and Ka-bands). In the business aviation market, the share of VSAT solutions is also seen increasing dramatically, as the largest service providers on the commercial aviation market, such as Panasonic and GEE, announced plans at the end of 2015 to address this market.

Overall, Euroconsult estimates that VSAT bandwidth will grow from 2.0 Gbps in 2015 to 120 Gbps in 2025.

Beyond cabin connectivity, the smart plane concept is taking shape. Thanks to the growing implementation of connectivity on board aircraft and to technological innovations in various aspects of avionics, airlines today have a major opportunity not only to offer new services to passengers but also to optimize flight operations. Connected aircraft or smart planes are a new generation of aircraft that are considered to be nodes in a very wide network of interconnected systems.

While currently in its infancy, the smart plane concept is expected to develop further in the near future, and this should create untapped new opportunities for a wide range of players.

Tremendous changes are expected in the service provider landscape. Six players currently offer cabin connectivity services for commercial airlines, namely Gogo, Panasonic, GEE, Thales, SITA OnAir, and ViaSat. However, competition is set to intensify with some equipment manufacturers and satellite operators moving down the value chain and new entrants set to penetrate the market by 2017. Service providers are currently facing high operational costs and are struggling to be profitable. Connectivity services require significant upfront commitment and investment in satellite capacity and ground infrastructure. Given this operating leverage, an increase in the installed base and a better utilization of satellite capacity commitment are crucial for service providers hoping to increase their gross margins.

In 2015, the average annual revenue per commercial aircraft (ARPA) ranged from \$125,000 to \$135,000 for both Gogo and GEE. Key industry players have already indicated that the ARPA could reach \$250,000 to \$300,000 in the next three to five years, mainly driven by higher take rates and increased bandwidth delivered to planes, enabling passengers to significantly increase their data consumption. When adding the potential stemming from operational services, the ARPA could even surpass \$300,000.



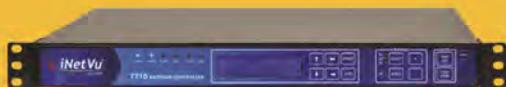
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The IFC hardware market for the commercial aviation segment is primarily driven by the success of individual service providers who generally act as equipment solution integrators and the primary link between end-users such as airlines. While the space segment (capacity) is unquestionably an important facet of IFC services, service providers are increasingly relying upon equipment, notably antenna technology, to differentiate their offerings. From only four players active in 2015 (Panasonic, ViaSat, Aerosat, and Tecom), the antenna manufacturer market is poised for fragmentation as no fewer than a dozen players are seeking to position themselves in the commercial aero segment.

Prospects for In-Flight Entertainment & Connec-

tivity includes sector dynamics, analysis and forecasts addressing the IFEC market for commercial airlines and business aviation. Over 15 interviews have been conducted with stakeholders from around the globe and across the full value chain, including satellite operators, service providers, antenna/modem manufacturers and airlines. An analysis of the various stakeholders of the ecosystem is presented as well as Euroconsult's 10-year forecast for cabin connectivity. The report assesses trends for both content and equipment provision; market forecasts for revenue, installation, and bandwidth by region, by segment and by network technology are provided.



Mobility Applications Driving Flat Panel Satellite Antenna Market

Cambridge, Mass., February 3, 2016 – NSR's **Flat Panel Satellite Antenna Analysis** is the industry's first multi-client report on this emerging technology. Forecasting demand for lighter, low-profile, bandwidth-efficient Flat Panel Antennas (FPAs), NSR's report sees growth reaching over \$710 Million in annual revenues by 2025 from shipped units. Touted as the key element unlocking value across the FSS and HTS value chain, FPAs offer unrivaled opportunities through smaller size, weight, power, and flat form factors.

FPAs are not a new offering to the satellite industry; military customers have tested them for over a decade. However, commercial aeronautical markets are triggering demand for these antennas and expanding use to other vertical segments. NSR's report forecasts the most prominent markets for FPAs across both mobile - aeronautical, maritime, land-mobile - and fixed segments - satellite broadband and DTH - for both government and commercial uses.

"NSR has followed the satellite mo-

bility markets for over a decade, and FPAs have been advertised by many as the 'Holy Grail' for antenna manufacturers for quite some time," stated Claude Rousseau, Research Director at NSR and report co-author. "We're not there yet, but the next generation of these antennas look promising to address the previous shortcomings of VSATs and first-generation FPAs, thus opening up new avenues for both FSS and HTS operators," he added.

"FPAs have the potential to drive solid growth for the satcom industry, while addressing issues that traditional VSATs face in terms of efficiency, ease of use and installation," stated Prateep Basu, Analyst and report co-author. "But as the industry gradually migrates towards HTS-based services, and leverages the massive onslaught of capacity these will bring, FPAs are expected to help customers find the right match between price and performance."

The FPA market is still in its emerging phase with many different tracks under exploration to attain the right form factor and price point for each

vertical. Investments and partnerships in FPAs will help the market spring forward as fleets and constellations of HTS provide more use cases taking full advantage of these new technologies.

As a thought leader, NSR's is the first to assess the business, technical and regulatory issues facing FPAs. The NSR **Flat Panel Satellite Antenna Analysis** report provides a 360-degree overview at the FPA market, forecasts the global industry growth in terms of shipped units, in-service units, and equipment revenues across nine regions and across five different type of services for both FSS and HTS. The market drivers and restraints that NSR believes will lead to market growth in the next ten years are clearly explained to offer a wider outlook as to what the future holds for stakeholders. NSR also profiles all the key companies building such FPAs.

For additional information on this report, including a full table of contents, list of exhibits and executive summary, please visit www.nsr.com or call NSR at +1-617-674-7743.





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CABSAT 2016 to Highlight Opportunities in the Growing MENA Satellite Market

CABSAT 2016
Dubai, UAE March 8-10, 2016

With the exponential growth of and consumer demand for anywhere-anytime content dominating the direction of the region's entertainment landscape, CABSAT 2016 will see the region's leading satellite industry players converge at Dubai World Trade Centre (DWTC) from March 8-10.

As the leading platform for the broadcast, satellite and content sectors across the Middle East, Africa and South Asia (MEASA), CABSAT provides a tailored platform for regional satellite providers such as Yahsat, Eutelsat, Nilesat, Noorsat, Intelsat, Es'hailsat and Arabsat to explore satellite-reliant content delivery mechanisms with local, regional and international content producers.

Courtesy of new compression technologies that optimize bandwidth and increase efficiency, satellites remain the most prominent mobility-enhancing and nomadic communications technology. The strategic deployment of next generation satellite systems by MENA satellite operators and the global spread of their teleport operations will allow regional broadcasters to maximise the availability of services to consumers via satellite dishes or satellite broadband. These services include heightened Internet connectivity, access to multimedia services to cater for the insatiable demand for increasingly video-based enterprise and social media applications, Video-On-Demand (VOD) and High Definition (HD) television, and IPTV platforms.

With the regional television market gearing up for the launch of Ultra High Definition - or 4k - television broadcasts within the next two years, monetization opportunities or broadcasters are inherently linked to the capacity of satellite providers to beam content into viewers' homes and on to connect devices.

"There are great opportunities for commercial satellite providers that can assemble and deliver an adaptable combination of a secure regional communications network supported by products, services and applications that enable and enhance the flow of information for regional entertainment providers and public and private sector entities," said Trixie LohMirmand, Senior Vice President, Exhibitions & Events Management, DWTC.

"Satellite providers are not simply focusing on broadcasting, they are offering services like broadband, government applications and expansive connectivity – the next generation of satellites will dramatically increase bandwidth and hasten the prospect of universal connectivity across the Middle East and Africa."

With commercial satellite companies facing growing demand for satellite broadband from an ever-growing collection of sources – from niche sectors such as luxury yacht owners to the lucrative military communications market – regional governments are increasing capacity dilemmas as they seek to align connectivity with sustainable growth.

In less densely populated MENA areas that constitute unserved and underserved broadband territories, satellite technology continues to provide the most cost-effective broadband solution for rural and remote communities. Indeed, broadband via satellite – with its higher speeds – is improving access to the 1,200 Arabic and international channels available across the MENA region, as well as civil aspects relating to health care, social services and education. In Saudi Arabia, thousands of schools are already connected through satellite technology and students are provided access to reaching resources and Internet access previously only available in large cities such as Riyadh.

It is in these areas where satellite service providers and telcos collectively offer powerful solutions that cope with consumer and enterprise demand for speed. This speed is only possible by increased capacity and CABSAT 2016 will showcase new technologies and standards including HEVC compression and DVB-S2X that optimize satellite bandwidth and increase efficiency. One of the largest areas of the global satellite industry – the new Low Earth Orbit (LEO) constellations – will also come under the microscope.

In addition, all professional attendees to this year's CABSAT will have exclusive access to a 2016 MENA state-of-the-industry report worth US\$5,000 presented by the event's official knowledge partner 'Frost & Sullivan'. Key findings will cover industry trends in media, evolving business models, viewership habits and a detailed country index of key MENA markets for growth and investment.

CABSAT is the leading professional content entertainment event in the Middle East, Africa and South Asia (MEASA). An exciting, interactive event featuring all the major global technology and content service providers for this growing industry.

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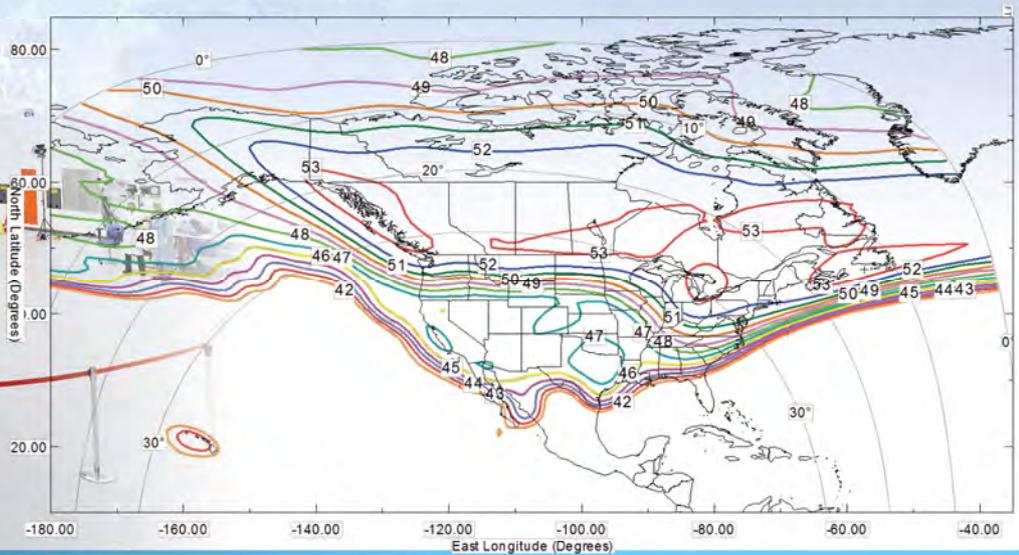


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The Satellite Markets 25 Index™

Company Name	Symbol	Price (Mar 01)	52-wk Range	
Satellite Operators				
Asia Satellite Telecommunications Holdings Limited	1135.HK	11.08	9.22	33.50
Eutelsat Communications S.A.	ETL.PA	28.60	25.34	32.71
APT Satellite Holdings Ltd.	1045.HK	6.04	5.03	9.83
Inmarsat Plc	ISAT.L	989.00	855.00	1,153.00
SES GLOBAL FDR	SES.F	24.77	22.02	34.90
Satellite and Component Manufacturers				
The Boeing Company	BA	120.71	102.10	156.91
COM DEV International Ltd.	CDV.TO	5.86	3.68	6.29
Macdonald Dettwiler & Associates Ltd.	MDA.TO	86.97	70.55	100.88
Lockheed Martin Corporation	LMT	217.47	181.91	227.91
Orbital ATK, Inc.	OA	78.00	56.06	94.92
Ground Equipment Manufacturers				
C-Com Satellite Systems Inc.	CMLV	0.95	0.85	1.20
Comtech Telecommunications Corp.	CMTL	21.35	17.27	35.79
Harris Corporation	HRS	79.60	69.84	89.78
Honeywell International Inc.	HON	105.13	87.00	111.86
ViaSat Inc.	VSAT	73.01	56.02	74.40
Satellite Service Providers				
Gilat Satellite Networks Ltd.	GILT	3.88	3.11	7.07
Iridium Communications Inc.	IRDM	6.88	5.85	11.36
ORBCOMM, Inc.	ORBC	8.72	5.27	8.84
TeleCommunication Systems Inc.	TSYS	4.99	3.03	5.06
RRSat Global Communications Network Ltd	RRST	7.23	6.06	9.60
Consumer Satellite Services				
DIRECTV	DTV	93.55	82.04	95.51
DISH Network Corp.	DISH	48.31	38.85	76.52
Globalstar Inc.	GSAT	1.50	0.97	3.58
Sirius XM Holdings Inc.	SIRI	3.76	3.29	4.20
BSKYB	SKY.L	1,056.00	953.50	1,180.00

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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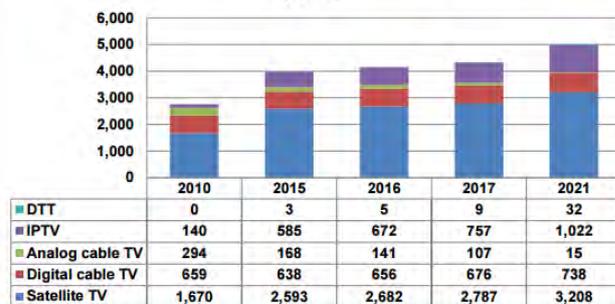


Vital Statistics

Satellite TV will continue to dominate Pay TV revenues in the Middle East/North Africa market taking nearly two-thirds of the 2021 total (similar to the 2015 proportion). Satellite TV revenues will be \$3.21 billion in 2021, up by \$0.62 billion on 2015 and up by \$1.54 billion on the 2010 total. Greater competition is forcing down satellite TV ARPU's.

MENA Pay TV Market

Middle East & North Africa pay TV revenues by platform (\$ mil.)



Source: Digital TV Research Ltd

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