Satellite Executive BRIEFING

Vol. 9 No. 9 November -December 2016

SATELLITE Markets & Research

Industry Trends, News Analysis, Market Intelligence and Opportunities

The Changing Broadcast Market

by Elisabeth Tweedie, Associate Editor

Last year both IBC and World Satellite Business Week (WSBW) had a common theme: that of the changing viewing habits of consumers and the potential impact of 4K or UHD. This year, the two conferences were more diverse in their focus. For IBC, the main themes can be summed up in one word: disruption. More specifically the topics covered included Over the Top viewing (OTT), 4K, the move to the Cloud and the ever-increasing pace of change.

Years ago the telephone took 75 years to reach 50 million users; Facebook took three and a half years and Pokemon Go, just 19 days, to reach the same number of users. As Ulf Ewaldsson, CTO of Ericsson said, "we should enjoy this moment, it's the slowest we'll see in years going forward." At WSBW, with one notable exception, the majority of the presenters seemed more focused on changes happening within the industry, as opposed to changes coming from customers. The exception was the aeronautical market, which as well as having a conference devoted entirely to the subject for the first time, cropped up as a topic for discussion or comment in many of the sessions in the main financial conference.

But back to Amsterdam and IBC Even though, as clearly demonstrated in previous articles, linear viewing still has the lion's share of viewing hours, four and a quarter hours per day, compared to one and a quarter hours per day in the US; it was, quite rightly, a major topic for broadcasters. Better to recognize the change, well in advance and plan accordingly, than become complacent. The shift to non-linear viewing, coupled with the rise in the demand for content to be available on multiple devices is helping drive the transition to an IP network and the cloud, so that content can be "grabbed" when needed and delivered to a consumers' device. With that, at least in theory, delivery costs fall, as the broadcast industry benefits from off-the-shelf IT devices and software as opposed to industry specific equipment. Guy Bisson from Ampere Analysis gave some interesting data at the opening session of IBC. Across a select group of western European and US homes, the average number of Subscription Video on Demand (SVOD) only homes is around 7%, compared to 5% in 2015. However in the Netherlands, Spain and Italy, from a low starting point of 2% or less, the number of homes has more than doubled in that same period to 5% or more. This may, in part at least, be driven by the fact that

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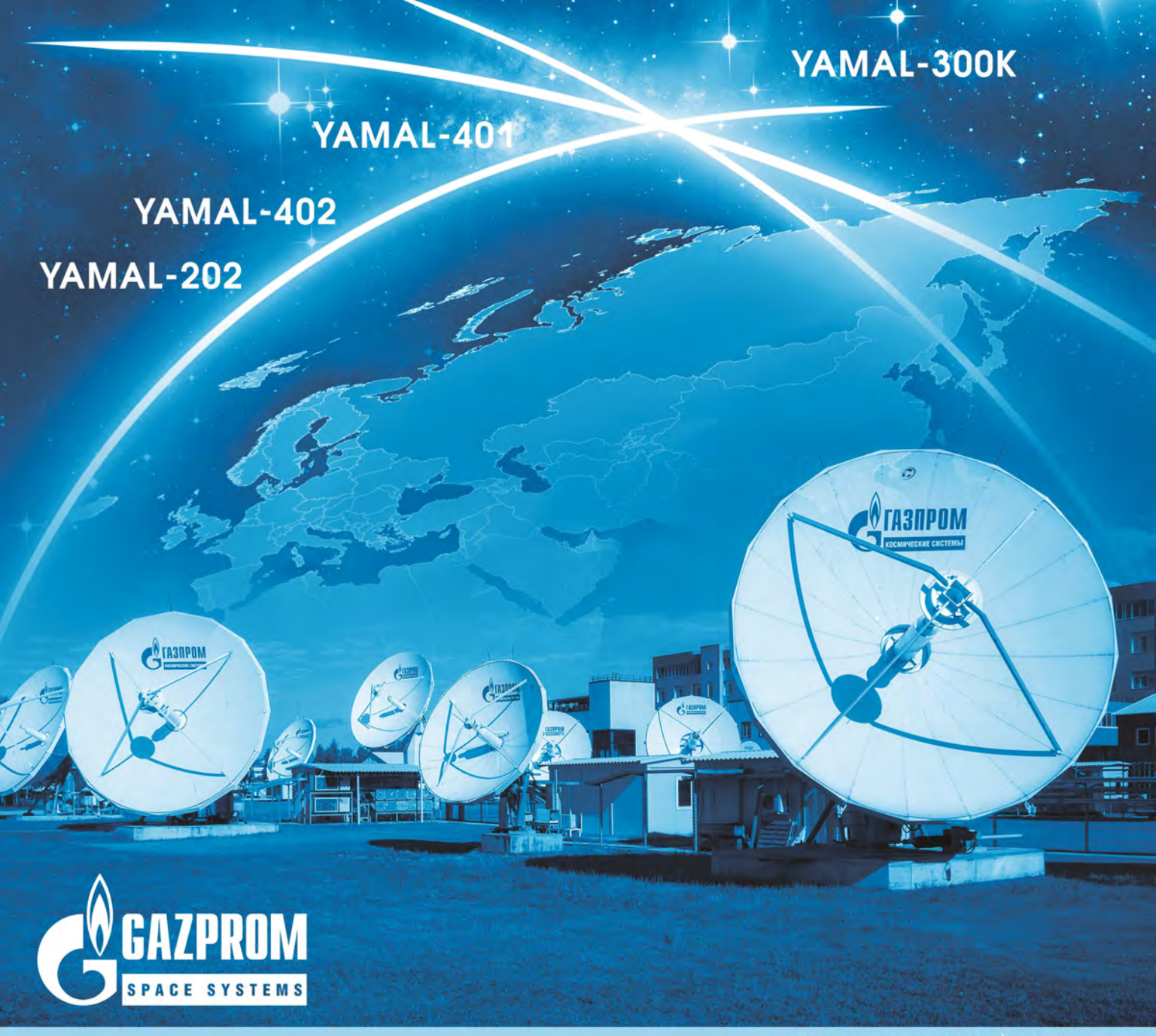

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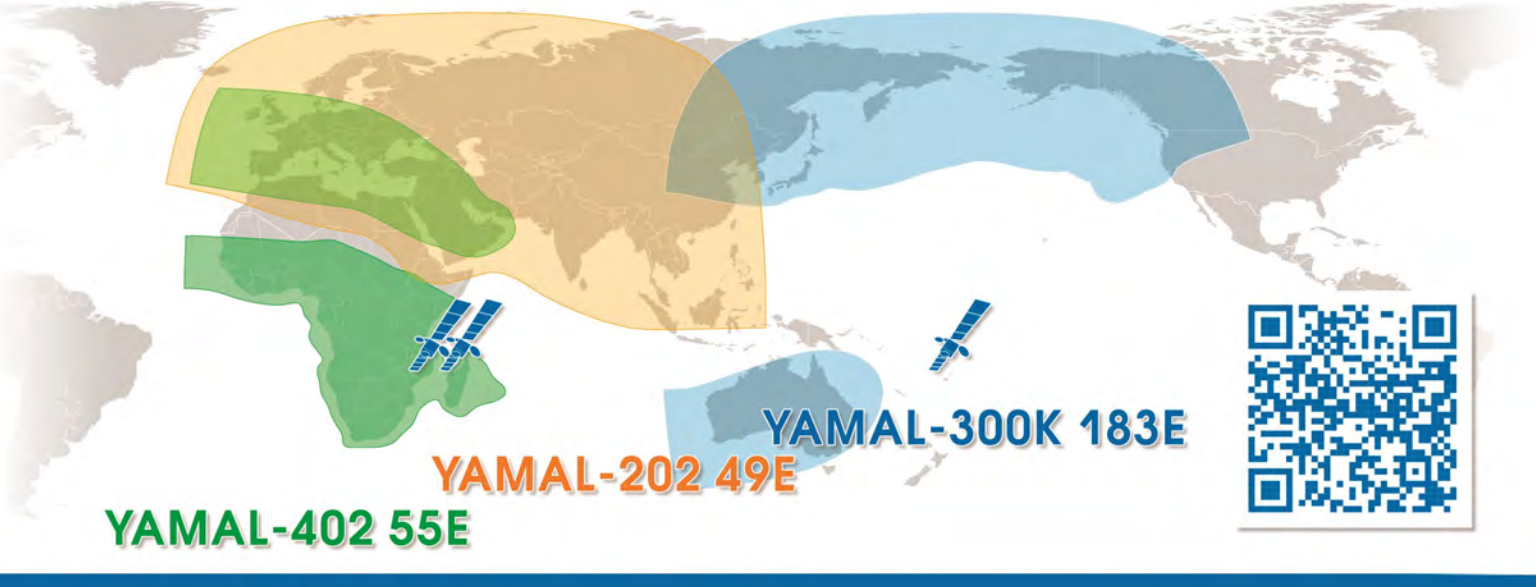


From the Editor

The African Market

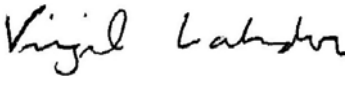
As we wound down the year, we head to NAB New York and Africacom in Cape Town this month. Africacom is our last trade show of the year and completes our round the world coverage in every continent of al the major satellite-related shows and conferences.

Africa is a very important market for the satellite industry. Last-mile connectivity remains a challenge in Africa. Most African countries simply still lack the fiber to distribute bandwidth more locally, and satellites are being tapped to do the task more quickly. Thus the growing reliance on wireless communications infrastructure, especially for cellular backhaul over satellite. Wireless operators in Africa are increasingly turning to satellite to help them offer services outside of key urban centers.

VSATs are making progress in a number of new enterprise hot spot markets particularly in East and West Africa, in addition to the historically strong VSAT markets like South Africa, Nigeria, Angola, Kenya and Tanzania. This should contribute to overall market growth across Sub-Saharan Africa.

Broadband access for consumers and enterprises offers new opportunities on the back of new HTS capacities, such as those coming from SES and Intelsat. The usage of HTS capacity for trunking is also expected to increase for land-locked countries like DR Congo and South Sudan as fiber availability remains limited and unreliable.

See you at the NAB New York from November 9-10 and Africacom in Cape Town, South Africa from November 15-17.



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Satellite Executive Briefing
is published monthly by
Synthesis Publications LLC
and is available for free at
www.satellitemarkets.com

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The Changing Broadcast Market...From page 1

Netflix is now spending like a premium channel, with 60% of revenue devoted to content generation.

4KTV

4K may be making an impact, both in terms of numbers consumers with UHD TVs, and the number of channels being broadcast in 4K, but the definition of "4K" is still evolving. Both the Digital Video Broadcasting (DVB) Association and SES put on sessions at IBC to discuss this. The DVB is a consortium of digital TV and technology companies committed to developing open technical standards.

UHD-1 Phase 1, the current standard, includes 4K resolution; Wide Color Gamut (WCG) is optional. From 2017 broadcasters will be able to implement UHD-1 Phase 2a, this includes WCG and high dynamic range (HDR). From 2019 UHD-1 Phase 2b will be available. This includes WCG, HDR and high frame rate (HFR). HDR is a much-anticipated and much-debated topic. For many HDR is what will put the "wow" factor into 4K, particularly when implemented in conjunction with WCG. Colors will be much more realistic, far brighter and the contrast ratio will be much greater. To put this into perspective, Phase 1 only covers brightness ranges up to 100 nits, the newest TV sets can now handle up to 1000 nits. As Thomas Wrede, VP Reception Systems, SES put it: "There are too many" approaches to HDR. Some are backward compatible, some are not, some are proprietary, some have been adopted by the standards bodies. However these include: Society of Motion Picture and Television Engineers (SMPTE), ITU-R and the Association of Radio Industries and Businesses. No one standard has been adopted by all three. The DVB is examining five approaches and intends to issue a specification by the end of this year. SES, which is currently broadcasting 26 of the 57 available UHD channels has a fully HD ready production workflow system in place and was running several UHD demonstrations during IBC, including one showcasing HDR. For this demonstration SES was using the Philips/Technicolor backwards-compatible version of HDR. In conjunction with Newtec, SES was also demonstrating DVB-S2X during the show.

CEOs of the Big five satellite operators assess the state of the industry in a panel during the World Satellite Business Week conference in Paris organized by Euroconsult. From left Pacome Revillon, CEO-Euroconsult; Karim Michel Sabbagh CEO-SES; Rodolphe Belmer, CEO-Eutelsat; Stephen Spengler, CEO-Intelsat and Daniel Goldberg, CEO-Telesat.

Virtual Reality

Virtual reality (VR) and augmented reality (AR) were also discussed. The DVB has a study group looking into VR. However many expressed concerns that VR, with some of the same issues associated with 3D (special glasses, motion sickness etc.) would go the way of 3D, whereas AR seemed more likely to be successful – as clearly demonstrated by Pokemon Go. But Avatar 3D was also a huge success, so it may be too soon to jump to conclusions.

Industry Trends

I wouldn't go as far as to say the mood in Paris was downbeat, but apart from the In Flight Connectivity (IFC) market (of which more shortly) the discussions focused on excess capacity, falling prices, the need to reinvent ourselves and the chances – not high – that all the planned LEO constellations will be launched.

Pacome Revillon, CEO of Euroconsult opened the conference with a slide entitled "Growth, where have you gone?" indicating that the revenues of the FSS satellite operators fell 7% in 2015 to approximately US$11B, and are not expected to improve in the short term. This was expanded upon by Brent Prokosh, a Consultant at Euroconsult, who opened the Symposium on Satcoms Markets, usage is up, but

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due to falling prices, largely driven by HTS, revenue is down. This situation is expected to get worse as supply increases to around 11Tbps by 2025 while demand tops out at just under 4Tbps. Just over half of this supply is expected to come from non-GEO operators, meaning primarily the planned LEO constellations, although it is fully expected that not all of these will succeed. Most of the demand is expected to come from two sectors: emerging markets and mobility. As we all know the price per Mbps is significantly lower with HTS than with regular FSS capacity sold by the MHz. This was demonstrated very clearly in a slide from Euroconsult that indicated that altough 74% of the demand comes from HTS, this only accounts for 37% of revenues. The lower price of HTS is opening up newer price sensitive markets: Internet of Things (IoT) for example, but the possibility of some of the more price-sensitive traditional applications moving to HTS, and therefore depleting revenues even further, cannot be ruled out.

In order to respond and combat this downward pressure on revenues, satellite operators are reinventing themselves, moving down the value chain through managed network services to end-to-end supply. However at the same time as this is happening, the connectivity service providers are also moving up (and down) the value chain, and the broadcast service providers moving down into Value Added Services. In other words the whole landscape is in a state of transition as operators and service providers try to find a niche for themselves in the "new reality" of satcoms. Steve Spengler, CEO of Intelsat, pointed out that vertical integration was more subtle than it sounded. Intelsat's objective is always to make it easier for customers to use its services, therefore working with strong partners is the key to success.

In Amsterdam, SES used its press conference, to essentially relaunch itself as a company. In previous years this evening has been devoted to the different regional and to a lesser extent vertical satellite markets. This year Ferdinand Kayser, Chief Commercial Officer, opened by talking aobut the four key market verticals that SES had reorganized itself around, namely: video, enterprise, mobility and government. The majority of the evening was devoted to MX1 – the number 1 Media eXperience. MX1 is the new name for the combined SES-PS and RR Media. MX1 provides a global end-to-end network of satellite, fiber and internet delivery for media organizations. It distributes over 2,500 TV channels, and manages the playout of over 500 of them. It also delivers over 8,000 hours of streaming video and syndicates content to 120 Video on Demand (VOD) platforms. DTH and OTT capabilities have been combined to offer turnkey broadcast and broadband end-to-end solutions.

"…In order to respond and combat this downward pressure on revenues, satellite operators are reinventing themselves, moving down the value chain through managed network services to end-to-end supply…"

Steve Spengler, CEO Intelsat was very optimistic about the future, saying: "The key is diversity, stability will come in the long term. We've never seen more opportunities." The first Epic satellite came online in March of this year, customers are apparently seeing 150% improvement in throughput. However given the lower prices for HTS, I very much doubt if Intelsat are seeing a 150% increase in revenue. Rodolphe Belmer, CEO of Eutelsat described the last 12 months as "acceptable" saying that broadband was "coming to life and gaining traction."

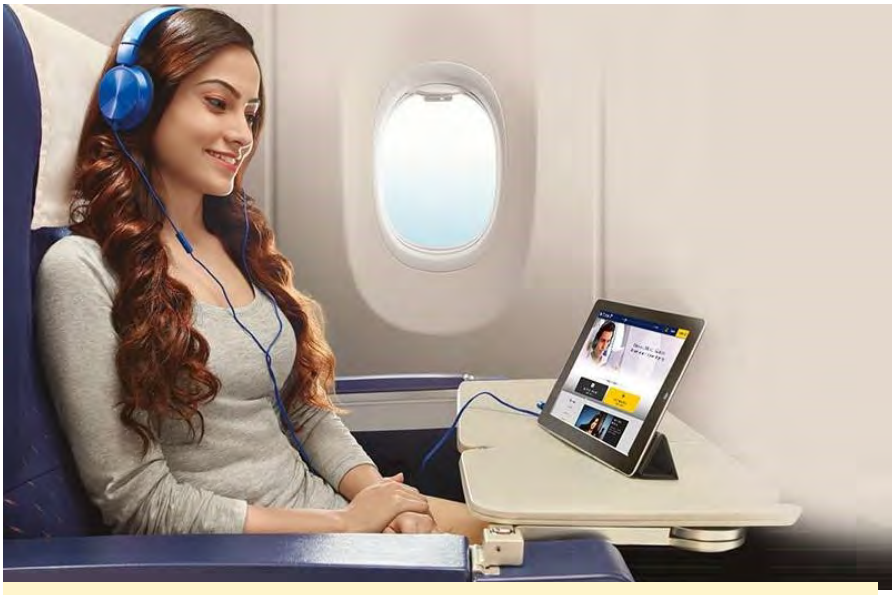
New LEO Constellations

As would be expected there was also a lot of talk about and by the proposed LEO constellations, although it was interesting to note that there were no speakers from OneWeb, and the CEO Eric Béranger was the only listed delegate from the company. Without providing many specifics, Mark Rigolle, CEO of LeoSat said that the company had signed its first customer who had provided a letter of credit and he was expecting more in the upcoming months. Scott Sobhani, CEO of Cloud Constellation pointed out that SpaceBelt, as the system is known, at US$ 350 million, is an order of magnitude cheaper than LeoSat or the other LEO constellations. SpaceBelt has signed SolarCoin as its first customer. At a roundtable during VSAT Global in London, the discussion centered around the proposed LEO constellations, including OneWeb, LeoSat, the 4,000 satellite venture from SpaceX and SpaceBelt. The consensus was that of all of them, OneWeb was the most likely to succeed. It will be interesting to see if that proves to be true.

Dan Goldberg, gave a few more details about Telesat's proposed LEO constellation that was announced in April of this year. Apparently latency has always been a concern for Telesat, and the move into LEOs is "less about boosting efficiency and more about how to position ourselves for the long-term." The constellation of around 150 satellites (72 in a polar orbit, the remainder in an equatorial orbit) will provide a global IP network. Target markets are primarily enterprise and mobility; consumer will come later when a suitable, small, easy to install, affordable antenna is available. The two prototype Ka-Band satellites are being built by Space Systems Loral (SS/L) who are also building six LEOs for an

unnamed customer and "an innovative" LEO for another unnamed customer.

No discussion of LEO systems would be complete, without mentioning Tom Choi's (CEO of ABS) almost pathological hatred of all things LEO. He pointed out, quite correctly, that LEO satellites costing US$400K are not manufactured to the same standards as GEO satellites which can cost up to an order of magnitude more. His argument, which he says he is taking to the ITU and regional licensing authorities, is that if LEOs are to co-exist with GEOs they should be held to the same high standards. Referencing in particular the progressive pitch on OneWeb satellites which is responsible for them switching off when the pass into the footprint of a Ku-band GEO.



One of the bright spots for the industry is the In-Flight Connectivity market. By 2025 Euroconsult is projecting an 8x growth in the number of aero IFC VSATS to reach a total of just over 20,000 by 2025, of which over 12,000 will be installed on commercial planes.

In-Flight Connectivity

As mentioned in the introduction, IFC is the one area that is capturing everyone's attention. This is interesting, as it is not per se a huge market. It is however growing more rapidly than maritime, the other mobility segment. By 2025 Euroconsult is projecting an 8x growth in the number of aero IFC VSATS to reach a total of just over 20,000 by 2025, of which over 12,000 will be installed on commercial planes. Maritime, is growing more slowly – but then it has been developing for the last several years – Euroconsult is projecting a 4x growth rate to 2025, but that means that there will be nearly 70,000 maritime VSAT terminals, i.e. three times the number of aeronautical terminals.

Geoffroy Stern, Senior Consultant, Euroconsult kicked off the inaugural Smart Plane summit, by highlighting the regional diversity in flight connectivity. Currently, at 3,940 connected commercial planes, North America has three times the number of connected commercial planes as the rest of the world combined. Unsurprisingly given this fact, growth rates to 2025 vary considerably. The greatest growth coming from Asia-Pacific with a CAGR of 33% compared to only 7% for North America. Currently the majority of IFC is provided by air-to-ground (ATG) services, but this technology is expected to account for only 25% by 2025 and VSAT bandwidth for IFC is expected to increase to more than 100Gbps by 2025 from a base of less than 1Gbps now. Much of this will come from HTS.

As Romeo Reyes, Managing Director, Americas Head of Communications, Cable & Satellite Investment Banking, at Jefferies said in the opening session of the Finance conference, "retrofitting a few thousand planes, will cost billions of dollars." How the airlines are going to recoup that investment, is up for debate. Some are charging for access to WiFi and entertainment, others have decided it's not worth the effort. It would appear that the demand is highly elastic, at a price of around US$7 only 20% of passengers make use of the connectivity, as the price approaches zero, usage rapidly increases to 100%. Given that the satellite industry is looking at excess capacity, we can only hope that the airlines will foot the bill for IFC and pay us to use more of that capacity!

Elisabeth Tweedie is the Associate Editor of the *Satellite Executive Briefing*. She has over 20 years experience at the cutting edge of new communication and entertainment technologies. She is the founder and President of Definitive Direction a consultancy that focuses on researching and evaluating the long term potential for new ventures, initiating their development and identifying and developing appropriate alliances. During her 10 years at Hughes Electronics she worked on every acquisition and new business that the company considered during her time there. www.definitivedirection.com
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Mind the Technology Gap: Internet and the Maritime Industry

by Adonis Violaris

Using the Internet ashore with broadband connectivity is considered to be a daily habit, and in many cases a must. We use it with our smartphones, tablets, in the office, even at home with Smart TVs, this has a great impact on our lives. Until the beginning of this century, we were still using Telex and Fax for the transfer of data to and from the vessel. The presence of a personal computer onboard to compose fax messages and prepare letters was novel. The network system onboard was so very simple, in fact, it did not even exist. Only during the last ten years has internet onboard the vessels emerged, and by internet we mean only email.

When the internet was introduced on the vessels, the people involved with communications in the shipping industry were satisfied and impressed with this technological miracle, mainly because the differences in technology were not as obvious as they are these days.

Recent technological advances have put broadband-at-sea within reach of even the smallest vessels. The existing systems that we have now onboard our vessels can provide internet access for all the facilities that we use ashore like instant messaging, social media (Facebook), status update (Twitter), Video sharing (YouTube), web surfing, e-mail etc., but the speed provided through these satellite systems have nothing in common with what we have ashore and are between 128Kbps and 430Kbps. For a vessel to have unlimited data and a decent connection of let's say 2Mbit, the shipowner needs to pay something between €2000-2500 per month, while ashore with ten or twenty times faster connections and unlimited data, we only pay some tens of euros.

This technology gap between sea and shore satellite communications will increase year by year especially in an industry with more than 60.000 vessels transferring 90% safely of goods from one country to the other by sea to their destination with low cost, strengthening the world trade and furthermore the growth of the world economy.

Although nowadays the network structure is very similar to what we have in a small office ashore, shipping is still years behind the rest of the world with regards to technology, whether this is Communications or Software, and this gap cannot be easily bridged. The problem has been that software developers are blaming the communication providers for not being ready to support the software they already provided ashore and have thus forced them to create different applications to suit the ships communications low transmission speeds.

The demand of transferring high amounts of data to and from the vessels is growing day by day. The increasing pressure on ship operators to provide a better overview about the vessel's operation: cargo status and containers temperature, fleet tracking and reporting with real time updates, bunker fuel consumption, paperless vessel, etc. is another reason to opt for volume of data or even for unlimited data. Safety, and other regulatory requirements, and new enterprise applications that require higher bandwidth, ECDIS, e-Navigation, VPN, Intranet, SharePoint, etc. are increasing the need for connectivity at sea with average data consumption growing rapidly. Crew Welfare is pushing the need to have internet Cafés onboard with Maritime Labour Convention (MLC) 2006 - regulatory focus on crew welfare and training.

Maritime Satellite Systems

Currently there are different satellite systems that someone can use to connect to the internet while onboard a vessel, but with exception of one or two, the rest cannot provide the speeds that we enjoy ashore. Inmarsat has

signed an agreement with Boeing for the delivery of three Ka-band VSAT satellites which, through a new network, will deliver speeds of up to 50 Mbps to our vessels. With operations expected to start in 2017, the Inmarsat-5s will support a next generation global service named Global Xpress, but for a speed of 256kbps/s and unlimited volume of data, the price is estimated to be around €2200 per month.

The Iridium Next which is scheduled to be launched in 2017 will utilise 66 new satellites that will replace the current systems, and will be able to provide 1.5Mbps connection through L-Band to our vessels. Iridium has also applied for GMDSS certification through IMO, and it is expected that they will achieve this in 2017. Although 1.5Mbps will not be as fast as VSAT or Inmarsat GX, Iridium is expecting to see a large number of vessels transferred away from Inmarsat and utilise Iridium Next.

Unlike Inmarsat, which owns its own satellite network, VSAT relies on satellites operated by others. VSAT offers a number of advantages at a fixed monthly rate, but unfortunately so far for the Ku-Band antennas these only work within limited coverage areas especially like the southern Atlantic and southern Pacific. So far, only if you installed a C-Band 2.4m antenna like the ones that are used on the passenger vessels you will be able to have an Inmarsat like global coverage.

Ku-VSAT satellites, which until now are most interesting to our community, cover most well-travelled areas of the globe, but there are regions where service is unavailable. Inmarsat has better coverage, but also does not cover the poles. Iridium Satellite, with its 66 satellites provides pole-to-pole coverage, but does not yet provide the high bandwidth available from KU or Inmarsat's L-band systems.

Connecting the Crew

Most of the companies are looking into different solutions for internet onboard, but why is internet so important? Communications should not be a luxury on the vessels. We all know that crew should be entitled to access the internet onboard the vessels, and without browsing, chatting, email with attachments etc. they feel disconnected from shore life. Now we see the next generation of seafarers (generation X – Millennials) born with a smartphone or a tablet in their hands, they are experts when it comes to new technology, and when they go on a ship that is equipped with narrow band technology terminals they see access to the internet is of course impossible. This technological evolution, alongside the transformation of business ashore, is forcing change onboard.

In addition, as crew do not go ashore for long periods anymore and as the current communications that exist onboard are still far behind what we have at our homes for more than 10 years now, seafarers now look for employment with operators who provide internet café facilities, or are looking into the possibilities to have such systems onboard their vessels. For them communications are very important and it is essential that operators do their utmost to enhance crew morale and welfare onboard by providing this service. Recruitment challenges will once again become a hot-topic as crew move on to more 'connected' vessels, impacting crew retention and costs for the operator. By deploying the organisation's intranet and messaging onboard the vessels, the crew will better communicate and collaborate with the shore staff resulting in improved performance for the benefit of their organisation.

The most recent estimations about the number of crew using internet says that 68% of Ratings and 28% of Officers have no access to email onboard. 97% of Ratings and 86% of Officers onboard have no access to the internet for social media, email, web surfing, etc. While on leave and at home 39% of Ratings and 82% of Officers have daily access to the internet.

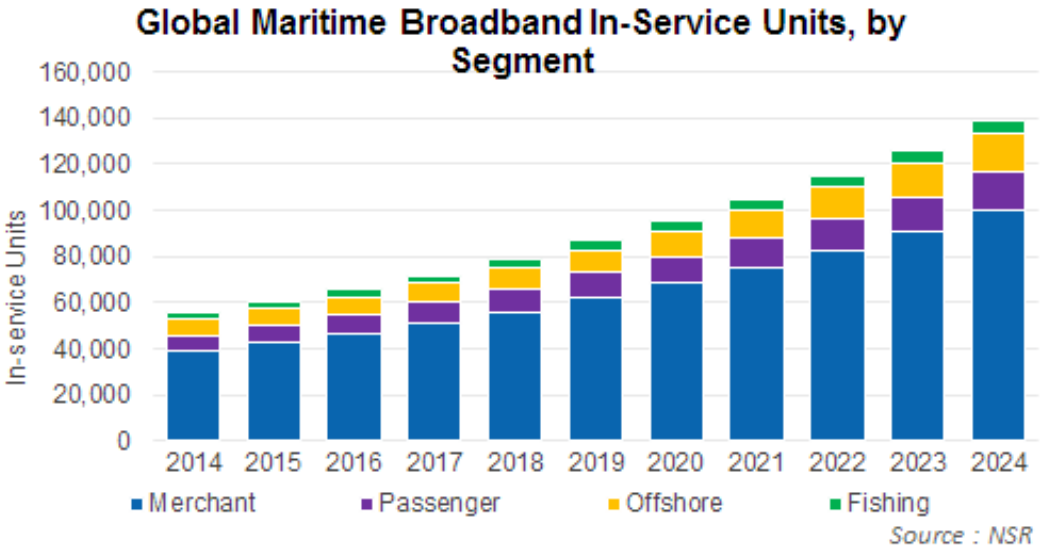
In a recent Cisco survey that nearly 3,000 students and young professionals' ages 21-29 from 14 countries have participated, showed that one out of three college students and young professionals see online connectivity as a fundamental need. Over half of survey participants quote the Internet as an "integral part of their lives". 64% of respondents would choose connectivity over owning a car. 40% think having Web connectivity is more important than dating, music or going out with friends. Half would rather lose their wallet or purse than their Web-ready smartphone, 20% had not bought a printed book in two years and just only 10% thought TV was important in their lives.

Offering crew members on board Internet access will boost morale and facilitate a better connectivity between the seafarers on board and their families at home. Managing internet access at office or onboard a vessel has become one of the most essential challenges for many companies and ship owners around the world. Now crew members tend to spend more amount of time from their free hours on several personal and non-work related things such as banking, playing games, chatting on social networking, online shopping, watching cricket, listening music, watching YouTube videos and many more.

VSAT Systems

The last two years there was a lot of movement in the satellite communications industry, especially in the VSAT market. There is increasing pressure on ship operators to set themselves apart from the competition by providing a better overview about the vessel's operation including: cargo status and containers temperature, fleet tracking and reporting with real time updates, bunker fuel consumption, and crew welfare issues. These requirements are pushing

operators to bring the vessel closer to the office, with the need to manage, monitor, control, and improve processes such as on-line planned maintenance, compliance reports, e-purchasing, e-learning, entertaining, port documentation, as well as dealing with the various regulations and conformances. This is made possible through broadband connectivity. With the availability of different VSAT and LBand systems with 'always-on' internet connectivity, it is a great challenge for the ship operators to decide which service to choose, taking into consideration the best return on investment without compromising the facilities. All commercial systems need to be functioning 100% and at the same time provide the crew the bandwidth and data to run a proper internet café onboard the vessel.



Source : NSR

This clearly shows that the maritime industry and especially the shipowners and ship managers are changing to cope with the demand of transferring high amounts of data to and from the vessels, for constant, uninterrupted connections with reasonably flat monthly rates that can accommodate both the needs of commercial traffic and the private needs of the crew, but also to be ahead of the continuous competition.

From store and forward email we went to instant email and jumped into instant messaging. From bridge controlled phone calls to home, crew dived into social media from the privacy of their cabins. Master had to learn how to ping and trace route, and a lot of times it was not easy.

Although nowadays the network structure is very similar to what we have at a small office ashore, shipping still I would say, is years behind the rest of the world with regards to technology whether this is Communications or Software and this gap cannot be easily bridged. The problem has been that software developers are blaming the communication providers for not being ready to support the software they already provided ashore and have thus forced them to create different applications to suit the ships communications low transmission speeds.

When deploying internet Café onboard, the requirements and demands from the stakeholders are very different. Owners' concerns are influenced by enterprise policy, while crew concerns are totally personal. The enterprise IT department will dictate the security policies, procedures, and priorities, while the cost of the project is looked at in value for dollars spent. Crew welfare from the enterprise point of view will swing with market conditions and freight rates. On the other hand, the crew expectations are high for services with bent up demand. Even though it has been only a few years that we have been talking about crew privacy in making phone calls at the bridge, today the crew, would prefer a faster internet connection and access to social media at the work place from making additional money while deprived from friend status updates.

It is very well known from our experience ashore, that the quick transfer of information leads to quick decisions to be taken and furthermore to maximisation of positive results. We cannot rely anymore on email communication that contain data that need to be manually entered in a database and then these data to be further analysed. On vessels where the internet is well established, data can be sent automatically from the main engine room to a data analysis program ashore, which can access the trading area of the vessel in real time form in order to achieve better results and significant reduction in fuel consumption.

Connecting a vessel with the company's network ashore, this immediately implies that the IT Department of the ship owner's/manager's office needs to maintain a team to support the vessel like any other branch office they provide support to. The vessel is an important investment and needs to be upgraded both on manpower as well as on technological equipment. Adding today 10 vessels to the company's network it's like you add another 10 branch offices with 220 users and if you have a fleet with 120 vessels it's like you support a whole village. The problem that emerges out of this is the technology gap that we have mentioned before. You cannot use for example fibre optical technology at the headquarters and the branch offices and you expect your vessels to operate in the same way as your other offices when these have a poor internet connection of

256kbps – 432kbps.

With a so low bandwidth it is very difficult to maintain and control remotely the network of the vessels, to support the new internet users at different levels and to provide the necessary security from the various hackers and in addition to control the usage of the crew. All this need to be addressed correctly and decisions to be taken for the proper development of the internet on board the vessels, so that the vessels can be properly connected to the internet and access be given to the crew. Only in this way they can remain competitive and capable to survive the challenges in the years to come.

The shipping industry now has the chance to extend to vessels the use of similar advanced communications technology as used ashore by using either VSAT or LBand, or complementary systems. We hope that the quality of services will be of an equally high standard to what we use in our daily lives, at work and at home, in a way that will allow the industry to conduct its operations more efficiently and cost effectively.

Conclusion

In order for a quick, cheap and worldwide range internet it should not only rely on the shipowners and shipmanagers to invest independently each on their vessels, but to make a collective effort so that the internet to be available on all the merchant vessels. This will request from all the governments, departments of merchant shipping, telecommunication authorities, unions of seafarers and satellite internet service providers to help in the development of a cheaper connectivity of the vessels with the internet, so that the usage of internet oboard the vessel can become affordable, as it is so important for the merchant shipping and furthermore for the world economy.

Adonis Violaris is the Chairman, Cyprus Shipping Chamber ICT Sub-Committee and Marketing Director of Interorient Shipmanagement.
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Putting the Customer's Needs First

The road towards Customer Excellence requires focus, continuous monitoring and improvement, visualizing yourself in your customer´ shoes… It's not just about a picking up the phone and selling off-the-shelf products. It is about listening and dedicating enough time to know the company and people who are to become your most precious asset: a loyal customer. Sharing goals, pains and successes, being there the whole journey rather than moving on after the sale is done.

About a year ago, Santander Teleport received a call from a European company who are very involved in the research and development of applied technologies for the EGNSS (European Global Navigation Satellite Systems) program. They were developing a prototype that had to be tested and fine-tuned over a satellite network and were struggling to find a teleport operator that would spend the time and effort to understand their objectives and challenges.

The particularities of this project includes:

- a customer that excelled at their core business and had developed an innovative technology, however lacked familiarity with satellite communication links and terminals required to provide a suitable platform for a successful proof of concept;
- a prototype unit that lacked some of the standard features required to interface with the rest of the RF chain of VSAT terminal and teleport antennas;
- a series of testing phases each having different requirements that would consolidate in a final proof of concept
- a project plan with challenging timescales and dynamic milestones with moving target dates;
- an outstanding level of stability and availability during the final test phase, critical to the acquisition of uninterrupted data collected over several months.

Santander Teleport's state-of-the-art facilities in Santander, Spain.

The final service provided consisted of a multi-site mesh satellite network; a number of European teleports including Santander Teleport and consolidated partners in Germany and Spain, as well as a smaller VSAT terminals in remote locations in Spain and Italy; customized assemblies – which included RF splitters, power supplies, 10 MHz and DC injectors, and frequency mixers - to adapt the customer´s equipment prototype to the antennas. Link budgets where produced using non-standard modulation techniques and a 24/7 remote carrier monitoring system was set-up to ensure high availability service.

Far from being a standard service, it was clear from the beginning that our customer needed a more complex bespoke solution to help them succeed in front of their investors. First of all, a high level of consultancy which can only be achieved by a lot of listening time, exchanges of ideas and teamwork with the customer. Secondly, a high level of technical excellence to provide a customized service to their needs, going well beyond the standard commercial solutions. Thirdly, a great level of adaptability to changes in the different testing phases of their program. And finally, commitment at all levels: commercial, technical and operational.

After the initial testing phase the customer was determined to work with us to continue the rest of the project, which lasted one year and was completed throughout with tremendous success. Success is measured not only when you deliver on your promises but when you feel that you have been taking part in the customer´s own successes as it was the case here. The results of the proof of concept have now been acknowledged by the customer´s stakeholders and will now pave the way for the development of new EGNSS time services and products in the future.

In conclusion, customer loyalty can only achieved by customer excellence spanning through the presales, delivery, service management and post -sales support cycles. Listening and engaging is key at early stages, especially when dealing with complex solutions; adapting to customer´s needs and establishing excellent project management and quality assurance practices. And finally, we must build a team that embraces the customer, enjoys the ride and feels proud of our achievements and those of our customers.

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You Own this Court

by Lou Zacharilla

Datapath CEO David Myers was announced as the satellite industry's Mentor of the Year by a committee selected by the Society of Satellite Professionals in October. Dave led a renewed, privately-owned company that had emerged from Rockwell Collins to a revitalization worthy to be compared to the comeback of a great sports team. DataPath has developed new offerings that fit the needs of an industry in transition, including satellite antenna systems, remote management software, connectivity services, and cyber security solutions. The investments have fueled an overall strategy to provide end-to-end communications solutions for the aerospace, broadcast, defense, and infrastructure markets. The "comeback" he led is roaring. The reinvestment in DataPath has resulted in over US$400M in new contract awards.

But the SSPI award is for mentorship. The success above and the award are intimately linked.

In a management meeting upon taking over as CEO, Dave shared his philosophy. "Rapidly growing organizations have to be dynamic. But you don't necessarily need to have all the right players in all the right positions. At least not right away. Making a team successful is about recruiting great all-around athletes and then ***helping them find something to own***. Places where they can apply their talents and passion to drive the company's performance."

In other words, if you own it you will perform as if it really does belong to you, no matter what it is.

Dave's award, which he will receive in New York at the Future Leaders Dinner on November 9th, immediately triggered for me the image of man – long ago - who also believed that you win not with the best, but with a team that feels loose, and owns the court on which it plays.

Dave Myers: meet my JV coach, John DiSanto (or "Fat Man Johnny D" as we used to call him – behind his back!) I can still see the image of my mentor and one moment in our lives. Our team was 17-0 and destined to win the league basketball championship. We had steamrolled over every team and, now, in our final season game, we were expected to roll again. And were ahead.

But it was not working out that way. With one minute left in regulation we were behind by two points. The other team had roared back furiously to reduce our lead. Coach D got up from the bench and calmly looked out at me, the point guard and "floor general," and put his hands into a "T." Timeout to regroup. We walked to sideline heads down and shaken. He looked at us.

I will never forget what he did and said next.

Instead of giving us a play, a dressing down or even a plan, he asked us to look up at the crowd.

"Isn't this fun? Look. Look up. Saturday night. People up in the stands cheering and having a good time. Your parents and girlfriends, the people you love, are here. You guys are young and winning. I want to tell you something, this is the best time of your life. Enjoy it. No matter what happens tonight, I love you. Now get back out there and play. You own this court."

David Myers

We were stunned. No one had ever spoken like that and sure as hell not in the middle of a game. We went out and promptly lost the game. The next Monday, at our team meeting, he chewed us out and made us work ten times harder. No love was there in that practice session!

But that moment during the game I have kept in my mind and heart all of my life. When he passed away a few years ago, I cried like a baby. Coach D was a mentor to me and a great one. He was the one who taught me to enjoy my success and work hard after a loss. That is the only way to be. You compete from a place a joy. It has taken me a lifetime to learn it fully.

Every member of Coach D's team went on to be a success in life and develop their promise. Not unlike every team member under Dave Myers' coaching at DataPath.

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

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SatKomHan: Providing Service to a Diverse Region

With over 17,000 islands, a population of 260 million and some 120-distinct language and cultural groups, Indonesia is an ideal benefactor of satellite based telecommunications. Add to that, the fact that terrestrial communications are not well developed and never will be able to cost effectively serve a country which spans an area 20% greater than the continental US, and one can understand why satellites are key tools for the government. To that end, after over five years of work behind closed doors, Indonesia ordered an L-Band Mobile Satellite Service (MSS) satellite system, turnkey, from Airbus Defense and Space in December last year. The satellite system (satellite, gateways and user terminals) is called SatKomHan, and will be capable of creating 700 independently adjustable beams serving Indonesia and the region. SatKomHan will be capable of delivering up to 75,000 simultaneous voice calls or an incredibly powerful mixture of voice, data and video services.

Key figures in SatKom Han include from left to right: Surya Witoelar-SatKomHan Program Advisor; Tom van der Heyden– SatKomHan Architect and Senior Program Advisor; General Pujo Wahyono-SatKomHan Program Manager, Ministry of Defense and Colonel Anom Permadi – SatKomHan Program Representative, Ministry of Defense (who passed away recently).

Tom van der Heyden, who has a long history of developing satellite ventures – and secure satellite communications in particular – in the region, is one of the driving forces behind SatKomHan. Van der Heyeden was principally responsible for building the Indonesian Direct Broadcast Satellite television IndoVision with its satellite named Cakrawarta in the 1990s, co-founding the Orbital Sciences GEO division at the same time. The procurement process for the SatKomHan system was somewhat unusual – in that it was accomplished in accordance with the Indonesia's Ministry of Defense rigorous procurement rules and regulations – in a very short time frame. Seven manufacturers participated in the procurement from around the world. Proposals were opened and reviewed with all submitting manufacturers on hand to confirm that details of the criteria met, were shared with all the bidders – insuring an open and transparent process. The program was awarded to by Airbus Space and Defense for delivery-in-orbit (DIO).

According to van der Heyden, it took the Indonesian Ministry of Defense to "make this happen.". It was the MoD that stepped up to protect in accordance with ITU regulations and use the orbital slot for the benefit of the nation. The SatKomHan system will provide secure mobile communications for Homeland Security, emergency communications for search and rescue – an in times of disaster, maritime communication, and connectivity for remote areas of the country. While the system is not designed with a focus on video, it is capable of streaming video when needed for natural disasters and other emergency services.

SatKomHan, being designed with both Cyber Security and Communication Security at its foundation, will be dedicated closed network of the highest level of security.

Security and independence are major drivers behind this satellite. Peer to peer hardware encryption will be used in all communications. All SatKomHan user terminals (air, land and sea) will be secure communication terminals supplied by Navayo, a Hungarian company and manufactured locally in a joint venture with PT. LEN, an Indonesian State-Owned-Enterprise. Some terminals, will be procured from known terminal manufacturers including Hughes Network Systems, who is the major subcontractor to Airbus for the Gateway terminals. User terminals will be capable of data and voice simultaneously, at maximum data rates in excess of 500 Kbps, and, as already mentioned, will be capable of delivering video when necessary.

The team brought on by the Indonesian government to deliver this program is the same team that were instrumental in developing and successfully delivering the MexSat Mobile Satellite System (MSS) last year; namely Hogan Lovells, Détente, Telesat, and DCmobility. The launch is scheduled for 2019.

Something Old, Something New

by Robert Bell

The Internet of Things (IoT), also known as machine-to-machine or M2M, is hardly a new market for the satellite industry. It's been around for years in the form of SCADA or Supervisory Control and Data Acquisition, an industrial control system for remote monitoring and control that dates back to the age of the mini-computer. Its protocol is designed to be very compact, and data rates are low, which have long made it cost-effective over satellite.

Where IoT differs is in volume. A typical SCADA system might involve a few hundred sensors across a pipeline network. Today's IoT systems are scaled for thousands of endpoints, and are designed for flexibility in terms of bandwidth. An industrial IoT system may transmit low-resolution video but automatically switch to high-resolution video on a single camera when triggered by a motion sensor.

Growth in IoT is projected to be astronomical: anything from 25 billion to 70 billion connected devices by 2020, depending on which survey you read, far exceeding the number of broadband connections between human beings. Ericsson recently forecast that the number of connected IoT devices will overtake the number of mobile phones by 2018. The vast majority of these devices will connect over terrestrial networks, but a meaningful percentage will do it over satellite. The research firm NSR estimates a global market of 5.3 million units by 2024, which will bring in revenues of US$2.3bn for the satellite industry.

The Reality of IoT for Teleport Operators

The World Teleport Association recently asked its members what they were doing today in IoT and what they expected it to contribute in the future. Revenue from IoT applications makes up only a small proportion of revenue for them right now, but they expect it to become a bigger piece of the business mix. One teleport operators expected its IoT business to grow by a factor of 10 over the next few years.

The oil and gas business has been a major market segment for SCADA, so it is no surprise that it is one of the first industrial segments to adopt IoT via satellite. Despite the current slump in oil prices, interest from this sector remains strong, according to our respondents. Companies are looking for the increased efficiencies, reduced costs and the improved safety that can be derived from strategically located sensors.

Other IoT growth sectors for the satellite industry include utilities, maritime, aeronautical, mining and land transportation: essentially anything that is beyond the reach of good terrestrial coverage. This points toward markets in the developing world, but operators also have networks in the rural regions of the developed world, from environmental monitoring to digital signage at bus stops indicating when the next bus will arrive.

Terminals

Finding suitable antennas for all the different IoT applications is a major issue. A 60cm C-Band antenna may work just fine on a remote pipeline, but can be totally unsuitable for things in motion. There was a strong consensus among respondents that smaller, steerable antennas and the new breed of flat panel antennas are key to expanding the IoT market-place for satellites. What is needed most, said one teleport operator, is a technology enhance-ment to waveforms that would make a Ku or Ka antenna act more like an omnidi-rectional S or L-Band antenna.

The Internet of Things Ecosystem

There is one other major difference between traditional satellite M2M

Continued on page 23....


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Products and Services MarketPlace

A guide to key products and services to be showcased at the NAB New York 2016 from November 9-10, 2016.

ABS
booth # 808
www.absatellite.com

ABS operates a global fleet of 7 satellites including the recently launched ABS-2A satellite at 75°East. Its extensive teleport network provides comprehensive coverage to 93% of the world's population. ABS has strategic alliances and partnerships with state of the art communication hubs, to deliver the best satellite solutions.

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Advantech Wireless
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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 broadcasters, cellular network providers, military and government requirements, 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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AvL Technologies
booth # 803
www.avltech.com

AvL Technologies' booth at NAB New York will feature a selection of new and cutting-edge antennas - an 85cm O3b MEO tracking Ka-Band antenna which offers the power of O3b's high throughput, low latency connectivity. This tactical terminal is easily transportable, rapidly deployable and operates in tandem pairs (same size) with make-before-break communications and can be set-up and on-the-air within two hours.

AvL 85 cm Flyaway antenna

On display will be our newest 85cm auto-deploy fully-integrated flyaway system which features a mission-configurable weatherproof electronics enclosure and represents the latest power efficient technology in a lightweight, airline checkable, 2-case solution. This unit is loaded with features including multiple modem choices and offers options such as on-board WiFi, fiber connectivity and AC/DC prime power.

In addition, in our booth we will have our 1.2M Premium SNG motorized vehicle-mount Ka-band antenna with a single piece carbon fiber reflector. The Premium SNG antennas are precise, robust, ideal for high data rates using high power amplifiers (HPAs), and can be mounted on vehicles ranging from a medium SUV to a large news truck.

C-COM Satellite Systems Inc.
booth # 715
www.c-comsat.com

C-COM Satellite Systems Inc. is a leader in the design, development and manufacture of commercial grade mobile SOTP antennas. iNetVu® systems are available in Vehicle Mount, Flyaway, Airline Checkable and Fixed Motorized platforms.

More than 7000 C-COM antennas have been deployed in 103 countries around the world in a variety of vertical markets

including SNG/Broadcasting, Emergency Response, Oil & Gas, and many more. Currently under development is a new generation of Ka and Ku-band SOTM (Satcom-On-The-Move) antennas.
Be sure to stop by C-COM's booth 715 at NAB New York and catch a glimpse of the 75cm Flyaway Ka-band antenna, the iNetVu® FLY-75V and the iNetVu® 981 Drive-Away companies in terms of revenue in its sector, and the main communications bridge between Europe and the Americas.

Hunter Communications
booth # 923
www.huntercomm.net

Hunter Communications was founded in 2002 as a satellite bandwidth and teleport 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.

Newtec
booth # 718
www.newtec.eu

Newtec, a specialist in designing, developing and manufacturing equipment and technologies for satellite communications, will be showcasing at the IBC its most advanced VSAT modem to date – the first on the market to support wideband DVB-S2X , the Newtec MDM5000 Satellite Modem. The MDM5000 is capable of receiving forward carriers of up to 140 MHz, and processing over 200 Mbps of through put. On the return channel, it supports SCPC, TDMA and Newtec's unique Mx-DMA™, up to 75 Mbps.

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RF-Design specializes in developing, manufacturing and marketing high quality RF equipment and RF distribution solutions for the international Satellite-, Broadcast- and Broadband communications industry. Our product range includes stand alone and scalable **Switch Matrix systems, 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 equipment and 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.

Oliver Vogel (Director Sales & Marketing at RF-Design) will visit the NAB Show New York and would be pleased to meet with you and to talk about your individual RF equipment and RF distribution requirements. Please send your meeting request via e-mail to **o.vogel@rf-design-online.de** or call **+49 (0) 6251 80 384-22**.

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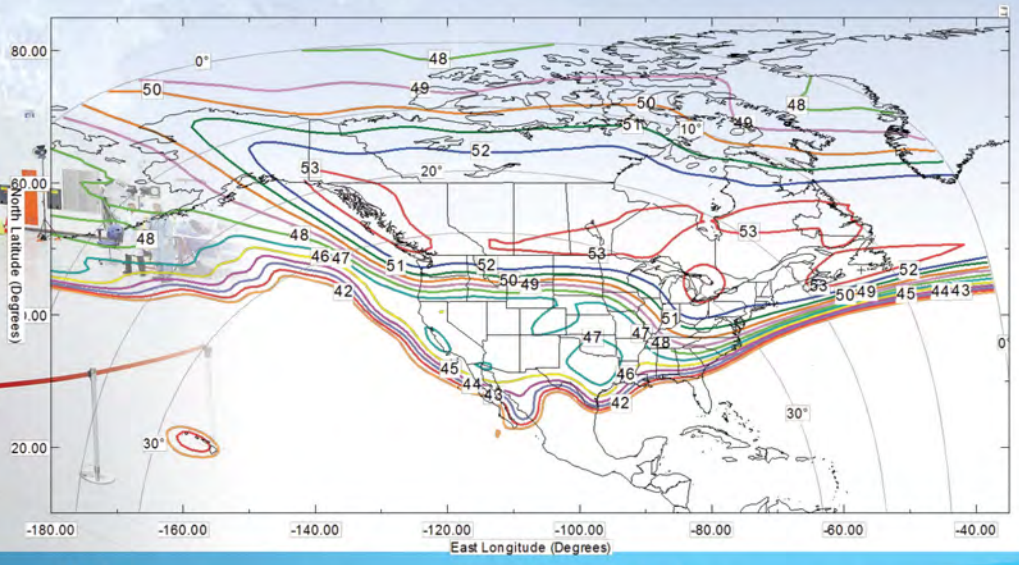

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and the Internet of Things. A SCADA system is a closed network for a single application. IoT involves an ecosystem of sensors or actuators, communication carriers, applications, analytics, security, data storage and systems integrators. No teleport operator, satellite operator or technol-ogy provider has the capability to deliver all of this.

Some operators are better placed than others, by virtue of natural affiliations (ownership or a common parent company) with telcos and other companies operating in IoT. For those teleport and satellite operators without a telco parent, most see a need for alliances and partner-ships. The more aggres-sive operators are actively seeking out new projects and then taking the lead in assembling terrestrial carriers, mobile technology firms and systems integra-tors to pursue the business.

Delivering Value

It is accepted wisdom that managed services are the route to profitability. What customers want from IoT is information on performance, trends and correla-tions. They are looking for historical and predictive data. The teleport operator has the opportunity to take on that task, rather than simply pass the traffic stream on to the user. This is new territory for most teleport and satellite operators, and technology companies are eager to support their transformation.

One tech executive noted that "Cisco has a patent on a sensor that can be *sprayed* into fields to monitor moisture, sunlight and other factors. That's the kind of application that would be ideal for satellite."

Another technologist attributed the increase in applications to the increase in bandwidth: "Data analytics, machine learning – they will just become a standard part of the business, an expected capability. This will open up new opportunities for us all."

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

SSPI Names Future Leaders of the Industry and Honors Mentorship with the 2016 Promise and Mentor Awards

Recipients to be honored at 11th Future Leaders Dinner on November 9 in New York City

The Society of Satellite Professionals International (SSPI) today announced that it would present its 2016 Promise Awards to **Dr. Jennifer Dawson** of Space Systems Loral (SSL), **Pascale Dumit** of SES and **Erin Feller** of Boeing Network & Space Systems. The Promise Awards honor three satellite executives age 35 and under for outstanding achievement in the early stages of their career. The three recipients will be honored on November 9 in New York City at SSPI's 11th Annual Future Leaders Dinner. On that night, SSPI will also honor its 2016 Mentor of the Year, **David Myers** of DataPath, for the encouragement, support, and inspiration he has provided to young professionals throughout his career.

"We received a large number of nominations from the US and Europe this year," said SSPI executive director Robert Bell, "and the choice was particularly difficult. The three winners represent the most outstanding of an extraordinary group. whom we will be honoring through the rest of the year and into 2017. And there's something just as extraordinary about them in this male-dominated industry: on average, three-quarters of winners over the past four years have been women, compared with only one-quarter in the prior four years."

Dr. Jennifer Dawson

The 2016 Future Leaders Dinner (www.satfuture.com) takes place at The Penn Club in Manhattan on Wednesday, November 9, on the first night of the 2016 NAB New York Show. The proceeds of the dinner go to fund SSPI's educational, professional development and industry growth initiatives.

During the 2016 NAB New York Show, the three Promise Award winners will participate in the November 10 keynote panel, "Pathways to the Future - A Dialogue Between Today's Industry Leaders and the Promise of the Future," featuring Mark Spiwak, the President of Boeing Satellite Systems International. The panel takes place at 11:30am.

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Africa Satellite Summit Defines a New Change and Opportunity Agenda

by Martin Jarrold

My previous column here, entitled *Satellite for Africa: Progress, Business, Development, People,* previewed the **FutureSat Africa Summit 2016** (http://extensia-events.com/events/future-sat-africa-2016-summit-4th-to-6th-october-2016/) which was held in Addis Ababa, 4th to 6th October 2016. This month I'd like to relate some of what happened in Ethiopia.

GVF was Endorsing Association and Knowledge Partner for the Summit which, when it drew to a close, was lauded as a very valuable three days of powerfully constructive dialogue which had engaged the active participation of policy-makers, private and public sector end-users of satellite communications, civil society organizations, and satellite technology and solutions providers.

I was privileged to be part of the GVF team that contributed to the Summit program, which was not only strongly supported by the Ethiopian Ministry of Communications & Information Technology (MCIT) as official Summit Partner, but also by a strong senior level representation from 17 African nations as well as a further 11 countries from around the globe. The high-level and widely encompassing audience of more than 270 people represented 124 organizations including ministerial-level policy makers, public and private sector C-level executives from solutions provider and end-user communities.

The outcomes of this event provided a further index that satellite offers a vitally central and core element of the communications connectivity solution which the nations of Africa need to meet the applications needs of such essential segments of society and economy as banking, broadcasting, education, government communications, health care, weather forecasting, maritime communications, humanitarian aid, air navigation, and the backhauling of mobile networks data traffic.

Julián Seseña, GVF's Correspondent for Europe, another of the GVF team in Addis Ababa, in his post Summit analysis, said "The intention of the Ethiopian Government to promote their own planned satellite system was very evident at the Summit as was the clear advocacy of many different stake-

holders – current users of satcoms and potential future users – of the need to establish new innovative business and value propositions between satcoms providers and the users. It was equally evident that access to space services is considered by African administrations as a strategic asset which has to be carefully managed by those who are already using the limited spectrum resources."

Dr Seseña represented GVF as a panel moderator in two of the Summit sessions which addressed issues related to *Partnerships & Alliances* and *National Agendas & Country Objectives.* He reflected that the future successful developments of satellite value propositions will undoubtedly require the establishment of sustainable alliances both in the vertical and horizontal business value chains. The satcom industry has to cooperate with their future users to ensure close and mutual trust in highly evolving scenarios due to technology trends and new business routes.

It was also clear, he added, that "African countries have developed their national plans towards enhancing the penetration of the telecommunication services, broadcast and broadband. In their efforts, the satcom industry should contribute to ensure that the value of the satellite component is fully appreciated when designing and implementing the national plans. Satcom-based solutions should not be bound to last mile or rural environments, but they should be part of the overall landscape of the telecommunications offering for all type of users and all locations. Particular note was taken during the event dialogue of the significant reduction of costs of the satellite terminals during past years."

Also part of the GVF team was Geoff Daniell, GVF's Correspondent for sub-Saharan Africa who, as well as moderating the Summit's session on *Affordable Mobility*, presented GVF's perspectives on *Digital Horizons.* In his post-event commentary Mr Daniell said that, "For many countries the big challenges lay with policies and regulations which do not adapt and evolve as fast as the technology they relate to. GVF is ready willing and able to assist national administrations with this. Also, it's important to stress that Africa's communications networks need to make use of all available technologies, fully integrated and operating seamlessly."

On the issue of affordability, Mr Daniell noted that it is equally applicable to all parts of the satellite technology and services value chain. VSAT licensing and the fees associated with VSAT services in a number of African countries are a stumbling block with respect to the delivery of affordable VSAT and other satellite services.

The Summit opening ceremony featured remarks from the Chief Executive of the Summit organizing company, Extensia, Tariq Malik, and an official address by His Excellency Dr Debretsion G/ Michael, in the Rank of Deputy Prime Minister, Economic Cluster Coordinator, Minister MCIT, and from the MCIT State Minister Getachew Negash Tekla, as well as from Dr Elham M. A. Ibrahim, Commissioner for Infrastructure & Energy with the African Union Commission, and me representing GVF.

In a session on *Connected Africa* I gave a 'Satellite Spectrum Update' during which – before an audience comprising delegates from Angola, Belgium, China, Egypt, Ethiopia, France, India, Italy, Israel, Kenya, Mauritius, Morocco, Mozambique, Namibia, Nigeria, Rwanda, Senegal, Singapore, Somalia, South Africa, Spain, Sudan, Tanzania, UAE, Uganda, UK, USA, and Zambia – I detailed various facets of spectrum-allocation and frequency interference issues pertinent to Africa relating to the outcomes of the November 2015 International Telecommunication Union World Radiocommunication Conference (ITU WRC-15), and looked ahead to the next WRC in 2019. Reflecting on the continuing frictions between the satellite provider and user communities on the one side, and the providers of IMT wireless services using current LTE and developing 5G technologies on the other, I concluded by pointing out that, in connection with spectrum issues, GVF has resources which it can make available to show how complementary communications technologies can co-exist meaningfully in a diverse ecosystem of solutions if they are positioned in an appropriate way, managing the most effective utilization of spectrum for all.

During a session on *Return on Investment*, during which I focused on returns that enhance and grow social capital and build capacity, the panel discussion – not for the first time in the course of the Summit dialogue – made clear reference to the changing structure of satellite terminal equipment and service pricing frameworks arising out of the many technological advances that include the continued launching of bandwidth efficient high throughput satellite capacity to geostationary orbit (GEO), together with plans for new low earth orbit (LEO) satellite constellations.

The official Summit summary document – focusing on such key Summit dialogue facets as technology evolution, spectrum, security, business models, capacity building – together with copies of the Summit presentations, will be available for download from the Summit website: **http://extensia-events.com/events/future-sat-africa-2016-summit-4th-to-6th-october-2016/**.

Martin Jarrold is Director of International Programs of the GVF. He can be reached at

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Speedcast Acquires Harris Caprock

Sydney, Australia, November 1, 2016–SpeedCast International Limited (ASX: SDA), a leading global satellite communications and network service provider, today announced it has entered into a definitive agreement to acquire Harris CapRock in a cash transaction valued at US$425 million. Harris CapRock is a global leader in the Energy and Maritime segments.

The acquisition strengthens SpeedCast's already strong position in the Maritime industry, in which Harris CapRock has a leading position in the fast-growing and bandwidth-hungry Cruise sector, and creates a global leader in Energy, positioning the company for future growth.

The combined entity will service over 6200 vessels, hundreds of rigs and platforms, and enterprise and government customers around the world with a wide portfolio of communications and IT services, and an industry-leading global support network. This expanded global footprint and infrastructure, with over 240 field engineers around the world, will enable SpeedCast to provide best-in-class services and support to our customers in over 100 countries. "The acquisition of Harris CapRock is a transformational opportunity for SpeedCast. With this acquisition SpeedCast becomes the global leader in the industry, with a scale that enables us to deliver world-class services and support in over 100 countries. Harris CapRock's industry-leading product and technology portfolio also gives us the ability to deliver innovative new offerings to customers across the Maritime, Energy, Enterprise, Telecom, and Government segments. The acquisition enables us to build a leadership position in the Energy sector at an attractive stage in the market cycle. I am also excited about how the combination of SpeedCast and Harris CapRock will accelerate our position in the Cruise sector, building on our acquisition of WINS Limited earlier in the year," said SpeedCast CEO Pierre-Jean Beylier. "I am thrilled to welcome the Harris CapRock team to SpeedCast. Together we can expand the portfolio of services that we offer to our customers and position the combined group as an even stronger global provider of state-of-the-art communications and technology services."

The transaction is expected to complete by the end of Q1 2017 subject to customary closing conditions, including anti-trust and regulatory approval.

Euroconsult Takes Majority Stake in SATConsult

Paris, France, August 24, 2016 - Euroconsult announced that it has taken a majority stake in Southern Aerospace & Telecom Consulting (SATConsult), an independent consulting company based in Toulouse focused on supporting the development of satellite infrastructure worldwide.

Under the terms of the agreement, Euroconsult and SATConsult will continue to operate as separate companies and will work in concert on a project-by-project basis. Together, their teams cover the full spectrum of customers' requirements in the satellite industry including market, financial, technical, operational and legal assessments.

Established in 1983, Euroconsult provides strategic consulting, develops comprehensive research and organizes executive-level annual summits and training programs for the satellite industry. SATConsult is a consulting firm which provides engineering services and legal expertise to satellite operators to support procurement and construction monitoring of both space and ground segments in telecom and remote sensing domains. Together the two companies boast an international roster of nearly 80 experts from a host of countries that can be called upon for projects across the entire spectrum of the satellite value chain and expertise domains.

The complementary nature of the two independent companies combined with the seasoned staff of experts will bring a high level of competence to future projects across the satellite value chain, according to Euroconsult.

How Satellites Make Better Wine

Wine is nature's magical accident," wrote former champion jockey and mystery writer Dick Francis. We enjoy wine today because naturally occurring yeast on grapes turns the sugar within them into alcohol.

The Right Amount of Vigor

Growing grapes for wine depends on a deep and intimate knowledge of what the French call the *terroir* (ter-WAH): how the region's soil, climate and terrain affect the taste of the grapes grown there and the quality of the wine. Traditionally, knowledge of the *terroir* was gained by endless walking of the rows of vines, inspecting and pruning the plants, irrigating the dry spots and draining the wet ones. Pruning sets the stage for what they call vigor: the amount of leaf that vines grow. Vines need to be vigorous – but not too much so – to produce a good-quality grape.

Such methods work well for small, family-owned vineyards. They are an increasingly poor fit, however, for the global business that wine has become. More than one million wine producers around the world bottle and ship close to 3 billion cases per year. The "new world" vineyards of the US, South America, South Africa and Australia \ are in a hurry to build understanding of their *terroir* – and have turned to a combination of satellite and information technology called "precision viticulture" to do it.

Eyes in the Sky

Two space-based technologies underlie precision viticulture: satellite imaging and global positioning by satellite, better known as GPS.

Winemakers take photographs captured and transmitted by satellites in orbit and enter them into geographic information system (GIS) software to generate detailed vineyard maps. The images are sharp enough to let the entire vineyard be divided into 2-meter square blocks, and the software is capable of recording elevation, slope, soil condition and water retention ability for each block. It still requires walking the vineyard to gather that information, but the result is a digital asset of enormous value in getting the most from the land. Using it, winegrowers can determine the best grape, plant spacing, arrangement of rows and irrigation or drainage for each 2-meter block.

But photographs in visible light are just the start. Infrared detection from space can reveal much more. Specialized satellites beam infrared light at the ground and receive reflections. These can be analyzed to produce something called a normalized difference vegetation index (NDVI), which accurately measures the amount of leaf area in each 2-meter block. By taking repeated scans through the growing season, winegrowers can get a detailed block-by-block analysis of the all-important vigor. They can then focus their attention on blocks where there is too much or too little, and apply the time-honored practices of winegrowing to reduce or increase it. The result is lower labor cost, higher productivity and grapes of a more consistent quality year in and year out.

Pinned to the Ground

This level of detailed understanding takes more than pictures from space. It also takes GPS. It is the GPS coordinates that pin the satellite images to specific loca-tions on Earth, block by 2-meter block, making what would otherwise be nice pictures into useful information. For larger vineyards, GPS and GIS systems are also used to steer mecha-nized pruning, watering and harvesting machines.

The world now faces a major undersupply of wine production, according to a 2013 report by Morgan Stanley. In the past ten years, satellite and information technology have allowed growers to reduce costs and make their operations more com-petitive. With the market turning up across much of the world, the future looks bright for those growing and making wine, as well as those enjoying the results of nature's magical accident.

————————————

Sources:

"The Digital Grape," by David R. Green, *Fine Wine*, March 19, 2012. "Satellite Technology Helping to Produce the Perfect Grape," by Laurissa Smith, ABC Rural, July 6, 2015. "How to Create a Perfect Vineyard: Buy a GPS," by Jamie Goode, *The Guardian*, July 13, 2014. "The Global Wine Industry: Slowly Moving from Balance to Shortage," Morgan Stanley, October 22, 2013.

This article was produced for *Satellite Executive Briefing* by the Society of Satellite Professionals International www.bettersatelliteworld.com See the "Better Wine" video at www.sspi.org/cpages/how-satellites-put-a-better-wine-in-your-glass

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Globecast Appoints Butterfield Director of Sales-Latin America

Paris, France, November 3, 2016-**Globecast,** the global solutions provider for media, has today announced the appointment of **Neil Butterfield** as Director of Sales for Latin America. Butterfield is the first of several appointments to be announced by the company in the coming weeks and reflects a refreshed approach to the Americas markets as Globecast continues to expand.

Neil Butterfield

Butterfield, who's fluent in Spanish, Portuguese, and English, is based out of Globecast's Miami office, and is responsible for expanding Globecast's customer base in the broadcast, program and service provider markets throughout Latin America.

For the past decade Butterfield has held a variety of roles with Intelsat, most recently as Senior Product Specialist, Media Product Management. Prior to that, he was a Media Contribution Specialist with the satellite operator. He has previously worked for PanAmSat and the Associated Press.

Andrew Jordan Succeeds William Wade as CEO of AsiaSat

Hong Kong, October 17, 2016 - **Asia Satellite Telecommunications Holdings Limited** announced that **William Wade** will retire as Executive Director, President and Chief Executive Officer with effect from November 1, 2016, and remain as Senior Advisor of AsiaSat until March 31, 2017.

Andrew Jordan will be appointed by the Board to succeed Mr. Wade as Executive Director, President and Chief Executive Officer with effect from 1 November 2016. Mr. Jordan, aged 56, has over 25 years of experience in the satellite industry. He was the General Manager in the Marketing Department of AsiaSat from 1991 to 1993.

Andrew Jordan

Jordan has held executive positions with several satellite operators, and has led complex deal negotiations in China, Hong Kong SAR, Australia, Italy and the United Kingdom. He obtained a Bachelor's degree in Chinese from London University's School of Oriental and African Studies.

New Head of Bremen Airbus Site

Bremen Germany, November 2, 2016--Oliver Juckenhöfel (46) is taking over as the new Head of the **Airbus** space site in Bremen, with effect from 1 November 2016. At the same time, he is assuming responsibility for On-Orbit Services and Exploration. Bart Reijnen, whom he is replacing in both roles, is in turn taking charge of the Airbus subsidiary Satair Group.

Juckenhöfel will be responsible for all Airbus activities relating to the field of manned space flight and space exploration: all tasks connected with the operation and use of European ISS components, the European Service Module for the NASA Orion mission, space robotics, research in zero-gravity conditions and the development of future service spacecraft.

The Airbus space site in Bremen, with its workforce of around 1,000 people, is Europe's industrial centre for manned space flight and upper-stage technology. The European Service Module for the new NASA Orion spacecraft is currently being assembled there. Some 500 highly qualified employees are working on it, and are also responsible for key European contributions to the International Space Station ISS, such as the Columbus space laboratory and operation of the European sections of the space station.

As well as this, about 500 staff at Airbus Safran Launchers (ASL) are building the upper stage of the European Ariane 5 launcher – ASL is the world market leader in commercial satellite transport – and are preparing development of the upper stage of the new Ariane 6.

Juckenhöfel has held various positions in the Group since 2008, and since 2013 has headed the European Service Module programme, a key component of the new NASA Orion mission.

Stephen Rudd to Head Paradigm's International Business Efforts

London, UK, November 1, 2016-**Paradigm** announced the appointment of **Stephen Rudd** to further develop its international business, primarily in the Middle East and Asia.

Rudd joins Paradigm from Vislink where he was most recently CEO and previously held the roles of Managing Director of Advent Communications and heading up Vislink Group's Asia Pacific operation out of Singapore.

Stephen Rudd

Rudd has a successful track record of developing international business and revenue streams and putting business plans into practice.

Rudd will be stepping up Paradigm's Business Development activities, focussing especially on the Middle East and Asia.

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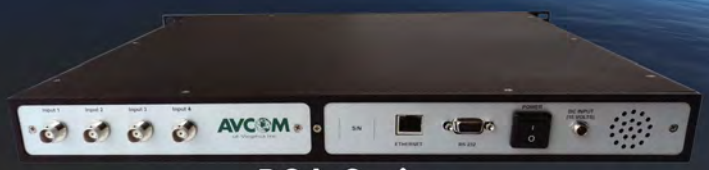

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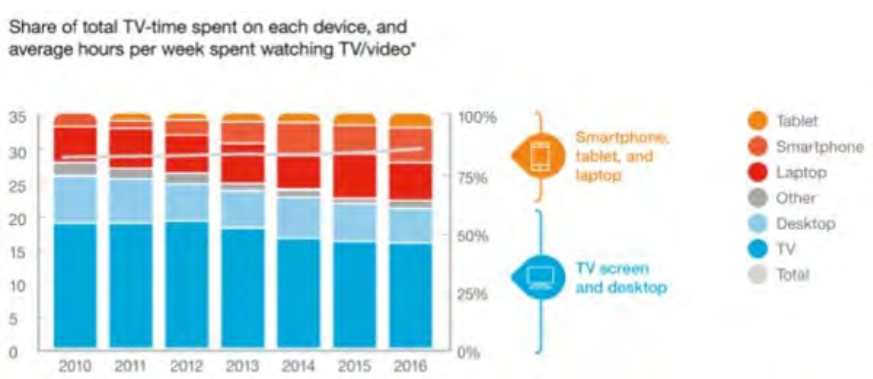
Mobile Video Viewing up Over 200 Hours a Year

Stockholm, Sweden, November 3, 2016—Ericsson (NASDAQ: ERIC) today launched the seventh edition of its annual ConsumerLab TV & Media Report, which details the enormous and rapid shift in TV and video viewing behavior towards mobility. The report also shows that while both mobile video and on-demand TV viewing have soared over the past seven years, content discovery remains a huge frustration for consumers.

Continued Shift to Mobile

Average viewing times on mobile devices has grown by more than 200 hours a year since 2012, driving up overall TV and video viewing by an additional 1.5 hours a week. The surge in mobile viewing is offset with a decline in fixed screen viewing of 2.5 hours a week, however the appetite for TV and video is not waning.



Weekly share of time spent watching TV and video on mobile devices has grown by 85 percent (2010-2016); on fixed screens it has gone down by 14 percent over the same period

40 percent of consumers globally are 'very interested' in a mobile data plan that includes unrestricted video streaming.

In the US, 20 percent of mobile viewing is paid-for content using services such as Netflix, Hulu, and Amazon Prime.

Content Discovery – How Hard Can It Be?

A major issue, highlighted by the report, is low consumer satisfaction when trying to find something to watch. 44 percent of US consumers say they can't find anything to watch on linear TV on a daily basis, an increase of 22 percent compared with last year (36 percent). In contrast, US consumers spend 45 percent more time choosing what to watch on VOD services than linear TV.

Paradoxically, 63 percent of consumers claim that they are very satisfied with content discovery when it comes to their VOD service, while only 51 percent say the same for linear TV. The findings suggest that although the VOD discovery process is more time consuming than with linear broadcast TV, consumers rate it as less frustrating, as it implicitly promises.

Popularity of On-demand Services Soars

The total viewing time of on-demand content – such as streamed TV series, movies and other TV programs – has increased 50 percent since 2010. Strong indicators of this growing engagement and satisfaction with VOD services include:

Consumers continue to embrace binge watching; 37 percent watch two or more episodes of the same show in a row on a weekly basis, more than a fifth say they do this daily

Consumer spending on VOD services in the US has increased by over 60 percent since 2012, from $13 to $20 per month

40 percent of respondents say they watch YouTube daily; a substantial 10 percent of consumers say they watch YouTube for more than three hours a day

Zeynep Ahmet, Senior Advisor, Ericsson ConsumerLab says: "Based on our extensive research, we can see consumers increasingly ask for seamless access to high quality TV and video content, across services and devices. For consumers in general, and millennials in particular, being able to watch on the smartphone is key. Consumers not only want the shared, social broadcast TV experience, they also expect the flexibility of an à la carte on-demand media offering. Today's experience is multifaceted and consumers want to create their own worlds of compelling, personalized content."

Based on interviews with 30,000 individuals in 24 countries, statistically representing the views of 1.1 billion people, the Ericsson ConsumerLab TV and Media Report 2016 is the largest study of its kind into TV viewing habits. With supporting data and insight from on-device measurements and qualitative research, the report details the latest consumer behaviors, attitudes and demands in relation to TV and Media, and the potential impact these trends can have on current industry business models.

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* PWC, E&M Outlook
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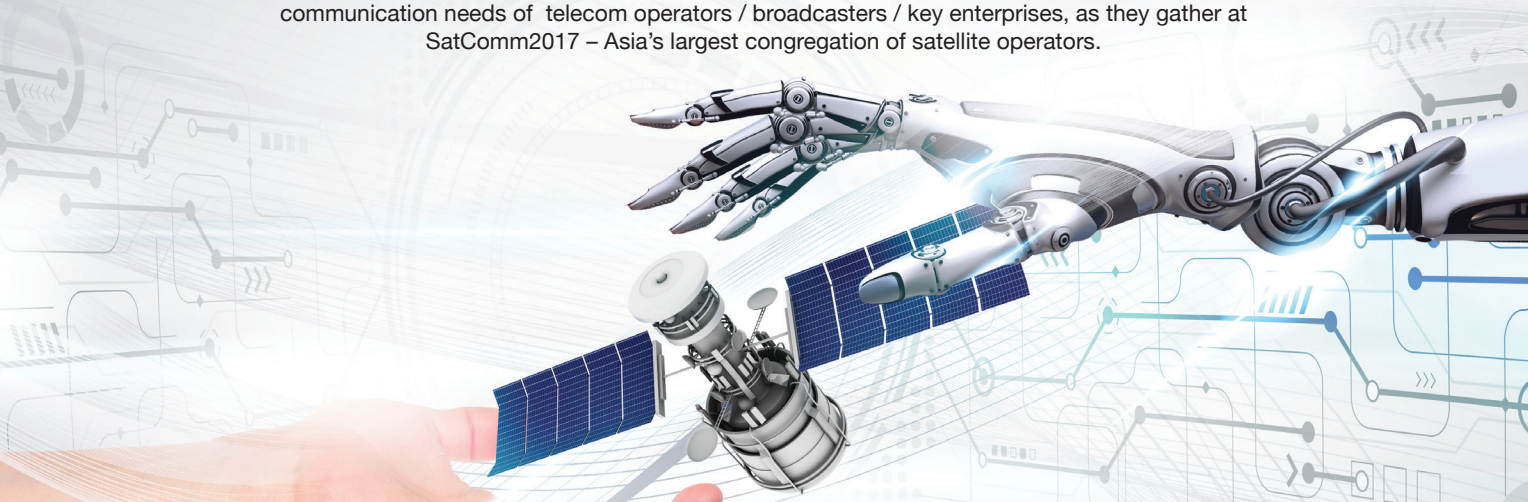

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Pay TV Innovations Forum Releases Global Learnings from Industry Landscape

Cheseaux, Switzerland, September 12, 2016 – NAGRA, in partnership with MTM, an international research and strategy consultancy, published the global learnings from the Pay-TV Innovation Forum, a comprehensive research programme launched earlier this year which examines the state of pay-TV innovation around the world.

The study confirms that industry participants strongly believe that pay-TV, while still growing worldwide, has entered a period of significant change, creating both challenges and opportunities pay-TV operators. 83 percent of executives state that competition is set to increase dramatically, as pay-TV companies, telcos and OTT service providers compete for subscribers. As a result, innovation is becoming more important and more urgent for the pay-TV industry, with 82 percent of executives considering it to be one of the top three strategic priorities for the industry going forward and 78 percent agreeing that in order to grow, service providers will have to innovate strongly over the next five years.

Looking forward, executives cited strengthening their core pay-TV platform by going beyond traditional services as their main area of opportunity by focusing on multiscreen/T! V everywhere services (76 percent), new types of content (74 percent), and new content pricing and packaging strategies (73 percent). Just over half of executives also see opportunities in advance advertising and data (54 percent), as well as standalone OTT services (53 percent).

Identifying opportunities for innovation globally, the research notes that many service providers have already started investing in new growth areas. North American providers, for example, see a significant commercial opportunity in new forms of content that appeal to Millennials and Generation Z such as digital-first short-form content, on-boarding of third-party OTT services, virtual reality, and gaming. Some European and Asia Pacific pay-TV service providers also see value in providing OTT or gaming services on their pay-TV platforms, particularly through partnerships. Only a smaller number of large scale operators currently address business adjacencies such as advanced advertising and Internet of Things (IoT).

The research also identifies four major innovation success factors for the industry including strong customer and market insight, having the right platforms and processes, as well as strategic and collaborative partnerships with best-of-breed technology suppliers and content companies.

"As broadband becomes more ubiquitous in several markets, competition from streaming media platforms intensifies and consumer TV and video journeys evolve, it is clear that the industry needs to innovate at a faster pace to satisfy its customers and remain relevant," said Simon Trudelle, Senior Product Marketing Director for NAGRA. "Thanks to the work of the Pay-TV Innovation Forum, we now have a global view of the state of innovation around the world and a foundation of key learnings to ensure future success and growth for pay-TV service provi! ders."

"The pay-TV industry is a global success story," said Jon Watts, Managing Partner at MTM. "Despite some regional differences, the majority of executives expect to continue innovating around their core pay-TV services, improving user experience and developing new ways to price and package content, bringing new kinds of content onto their TV platforms, and continuing to invest in multiscreen offerings. The research programme also shows that successful service providers have focused strongly on developing their innovation capabilities, enabling them to adapt to new market conditions."

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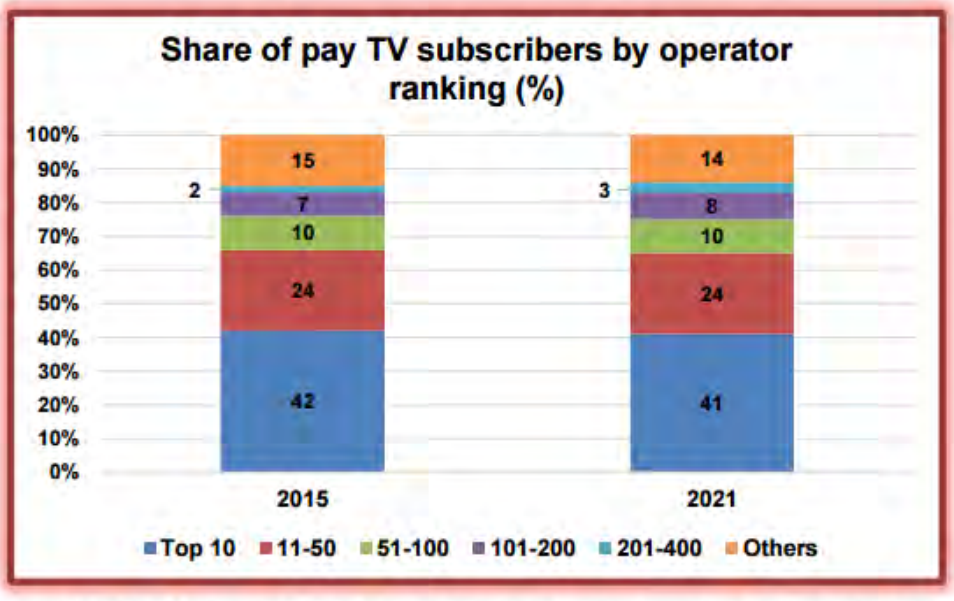

Source: Digital TV Research. Note: This chart shows the concentration of pay TV subscribers by operator, so the top 10 operators accounted for 42% of global pay TV subs by end-2015.

The top 100 operators accounted for three-quarters of the world's pay TV subscribers by end-2015, with this proportion not expected to change over the next five years. The top 10 operators took 42% by end-2015, according to the Global Pay TV Operator Forecasts report.

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