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SATELLITE PRO

TECHNOLOGY INTELLIGENCE FOR THE SATCOM MARKET

MIDDLE EAST

VSAT CHALLENGES

HTS has brought technology improvements, but also challenges

BIG DATA

A look at what 'Big Data' can do for the satellite industry

THE ENERGY CONUNDRUM

The oil & gas sector is facing huge demand for bandwidth, but services need to be delivered at a much lower cost

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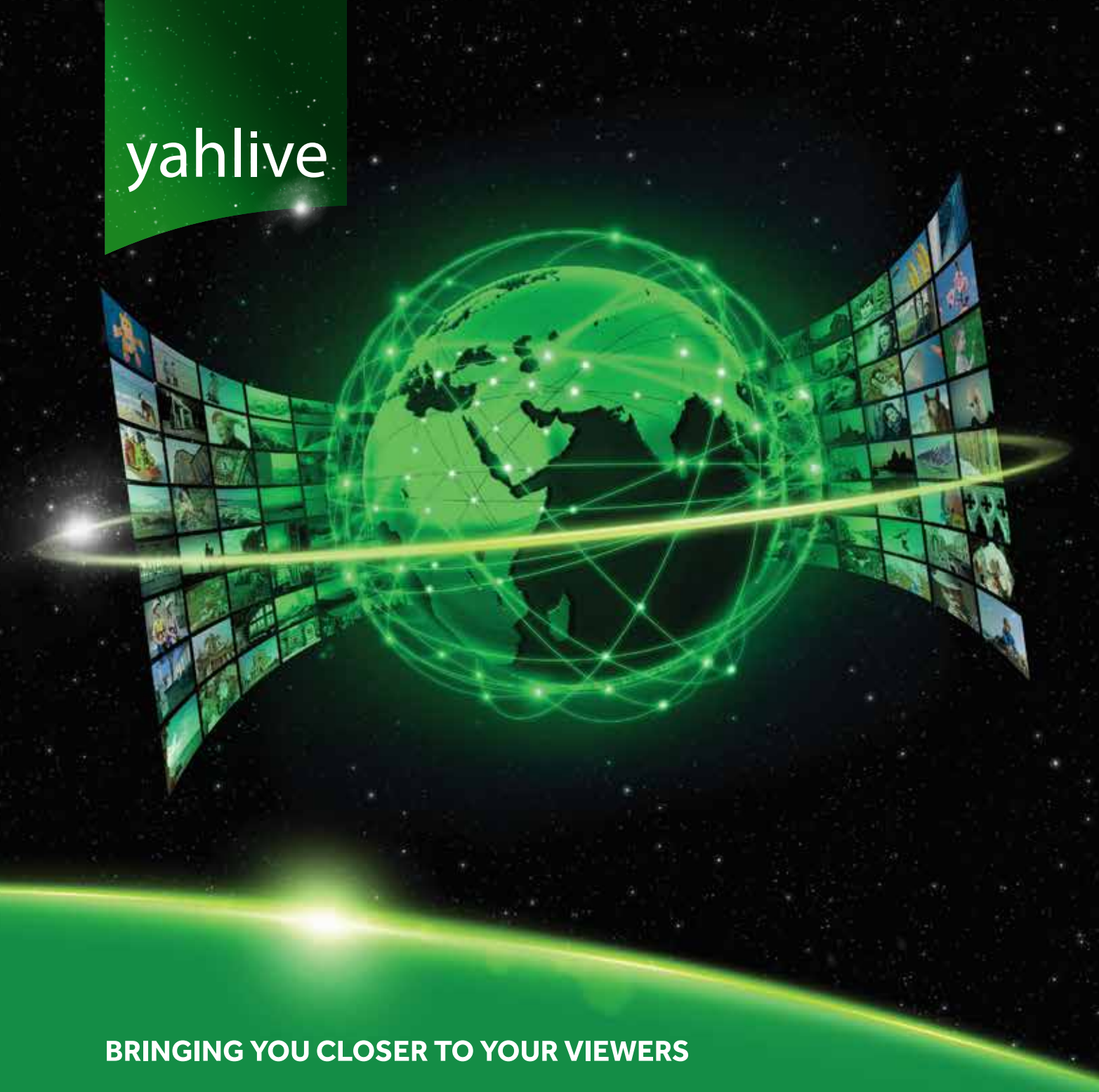

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Energy Needs

Welcome to the November edition of *SatellitePro ME*. I hope all of you are ready for the ASBU BroadcastPro Selevision Summit and Awards. The event is taking place on November 15, and I guarantee it will be a great opportunity to learn, interact with industry professionals and lots of fun. I look forward to seeing all of you there.

Our cover story this month is about how the oil and gas industry can benefit from the use of HTS satellite bandwidth. Not only is it more cost effective, especially with the blow the industry is facing as a result of the drop in oil prices, but it just plain makes sense. The needs of the modern offshore oil rig have changed, and with real time monitoring, crew welfare and more applications to consume data like never before, bandwidth demand is going through the roof.

Another article that I think you will find really interesting is one on the challenges of VSAT in the industry. The top brass in the business explain the challenges that their customers are facing, and ways to correctly address them. The most important issue raised was that sometimes even an incorrectly pointed antenna can operate fine, but will still cause significant satellite interference for other VSAT antennas.

We will be at the second Global Satshow in Turkey, taking place on the November 29 and 30. There will be CEO sessions attended by the heads of Es'hailsat, Thuraya, Inmarsat, Turksat and more. I strongly suggest you register and attend what promises to be a premier event for the satellite industry in the Middle East and Europe.

To end with, I wish you a wonderful November. As always, I'd love to hear your feedback and comments on this issue of the magazine. Please send me an email or call the number in the panel on the left.

Clayton Vallabhan
Editor

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"If we retain every statistic, every incident, every detail of satellite interference, eventually as our data store grows we can apply deep learning methods to it"
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"If we look at technology and the breakneck strides that the computer industry has made, this is rivalled only by the gigantic strides in aviation and space travel"
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Information

15 November 2016 | Habtoor Grand, Dubai, UAE
Summit: 10am - 4pm | Awards: 7pm – 10pm
broadcastpromeawards.com

Yahsat appoints Chief Human Capital Officer

Yahsat has appointed Mona Al Muhairi as Chief Human Capital Officer. Mona has more than 20 years of human capital experience and has been promoted to the role having previously held the position of Executive Director – Human Capital at Yahsat since 2007. Mona is currently in charge of performance management, career growth, team development and Emiratisation, and is responsible for ensuring that the human capital initiatives support Yahsat's overall strategic objectives.

Commenting on this latest executive appointment, Yahsat CEO Masood M Sharif Mahmood said: "Mona has played a key role in developing what is Yahsat's strongest asset – our human capital. Under her guidance and direction, Yahsat has achieved an impressive workforce nationalisation with over 62% UAE nationals."

Al Yah 3, Yahsat's third satellite, is currently in the final production stage at satellite manufacturer Orbital ATK in the US. As part of its building process, Yahsat has introduced

Mona Al Muhairi, Chief Human Capital Officer, Yahsat.

a global programme for the development of its engineers. It allows a select group of Emirati engineers to participate in the end-to-end satellite manufacturing process to launch Al Yah 3. Furthermore, Yahsat, Masdar Institute and Orbital ATK have initiated a Master's programme in Space Systems and Engineering.

Mahmood added: "I wish Mona my congratulations on her new role that has been earned through dedication and hard work. We have confidence that her efforts will go from strength to strength in building our organisation by overseeing Yahsat's human capital assets."

Part of Mona's new responsibilities will be supporting Yahsat's overall growth, forming the company's strategic human capital objectives, creating and developing Emiratisation initiatives plans, upgrading the human capital practices, and leading and planning national capacity building operations. Furthermore, she will ensure preparedness for strong UAE national cadres, creating a work environment that promotes effective communication and productive cooperation.

Ultimately a legacy will be developed that will positively contribute to the UAE's future development and establish a strong network of knowledge transfer.

+ www.yahsat.com

QATAR UNIVERSITY AND NOKIA HOST SESSION ON 5G

Qatar University and Nokia co-hosted a special session on 5G technology and its use within the telecom and IoT (Internet of Things) sector for its College of Engineering students on 19 October at the university campus. Attended by its female engineering students, Aji Ed, Head of Technology for Middle East & Africa at Nokia, and Milivoj Vela, Technology Vision and Innovation Lead at Nokia, presented the basics for 5G technology and how it would be used for better user experience and efficient use of technology.

Dr Nizar Zorba, Associate Professor at College of Engineering, Qatar University, added: "The presentations were useful with latest updates on 5G, and we thank the Nokia experts for taking time out of their schedule to talk to our students and share insights into the technologies of the near future."

+ www.nokia.com

MBRSC LAUNCHES SECOND ANNUAL EMM WORKSHOP

MBRSC has launched the second Annual EMM Science Workshop, which aims to shed light on the history of the Red Planet and its evolution over millions of years, as well as other scientific research.

The second Annual EMM Science Workshop was held with the participation and the presence of around 120 students, graduates and professors from UAE universities and the international scientific community, as well as students from the REU programme.

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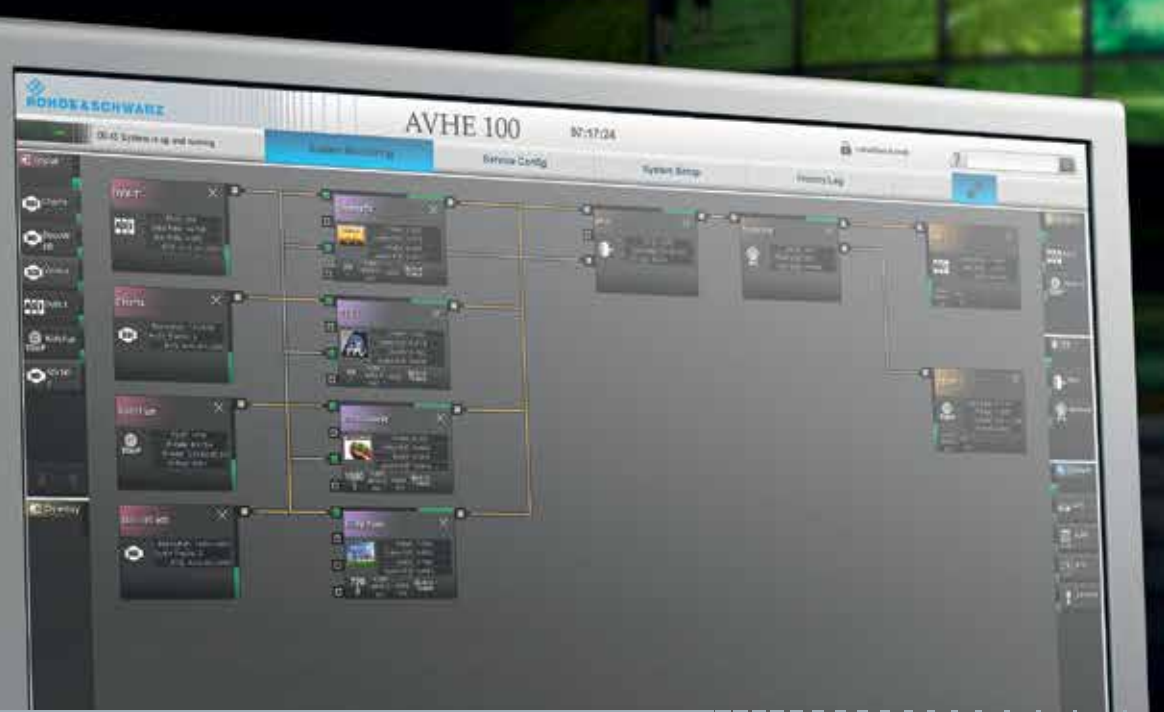

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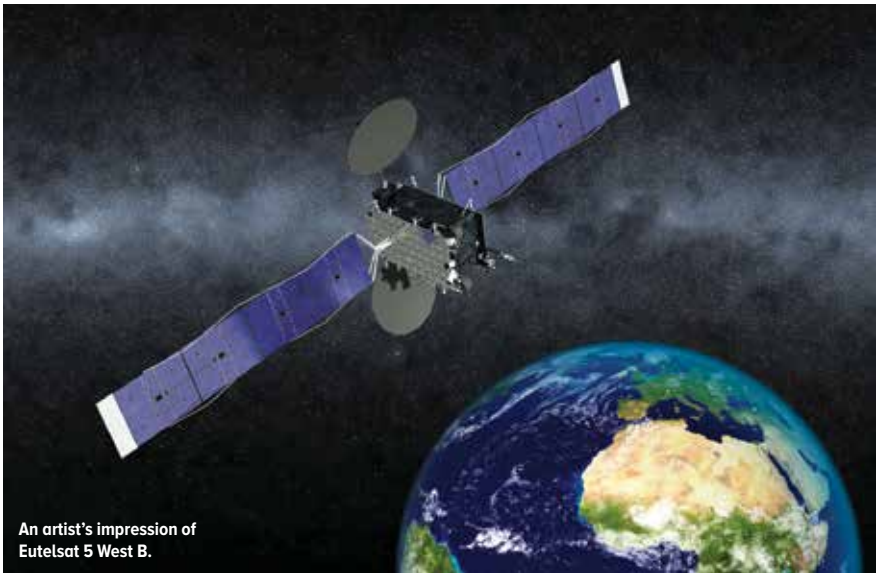
Eutelsat signs vendors for new satellite

Eutelsat has selected Airbus Defence and Space and Orbital ATK to build a new satellite for the key 5° West orbital position serving mainly video markets in Europe and North Africa. Under the terms of the agreement, Airbus Defence and Space will build the satellite's payload while the platform will be manufactured by Orbital ATK.

To be launched in 2018, EUTELSAT 5 West B will replace the EUTELSAT 5 West A satellite, a key digital infrastructure addressing predominantly French, Italian and Algerian broadcast markets. EUTELSAT 5 West B will provide business continuity and improved quality for these services via a Ku-band payload of 35 equivalent 36 MHz transponders connected to three service areas.

EUTELSAT 5 West B is the first satellite to be procured within the framework of Eutelsat's capex reduction strategy announced in June 2016, applying notably the principle of 'design-to-cost'. Through an improved match of the satellite's coverage with specific customer requirements at 5° West, savings will be achieved in power requirements and hardware.

+ www.eutelsat.com



An artist's impression of Eutelsat 5 West B.

WILLIAM WADE MAKES WAY FOR ANDREW JORDAN AS CEO OF ASIASAT

AsiaSat has announced that William Wade will retire as Executive Director, President and CEO with effect from 1 November 2016, and remain as Senior Advisor of AsiaSat until 31 March 2017.

Andrew Jordan will be appointed by the Board to succeed Wade as Executive Director, President and CEO with effect from 1 November, 2016. Jordan, aged 56, has over 25 years of experience in the satellite industry. He was GM of the Marketing Department of AsiaSat from 1991 to 1993. Jordan has held executive positions with several satellite operators, and has led complex deal negotiations in China, Hong Kong, Australia, Italy and the United Kingdom.

AsiaSat Chairman Ju Weimin said: "On behalf of the Board of Directors, I would like to express my sincere gratitude to Wade for his many years of dedicated and exceptional service. AsiaSat's solid reputation in the industry and its strong commitment to quality and reliability are a credit to his leadership. We look forward to his contributions as Senior Advisor to assist in the leadership transition."

+ www.asiasat.com

STC AND NOKIA TO DEPLOY 4.5G ACROSS SAUDI ARABIA

STC and Nokia have signed an agreement to expand high-speed mobile broadband capacity and coverage in Saudi Arabia using Nokia's 4.5G technology. The enhanced network will meet the ever-increasing demands of subscribers across the country, including the millions of visitors who travel to the cities of Mecca and Medina each year, particularly during the Hajj and Ramadan seasons.

Nokia's 4.5G technology leverages techniques such as carrier aggregation to optimize network resources and boost speeds to meet growing data demands. Data traffic has increased in Saudi Arabia following the expansion of 4G, with the network in Mecca and Medina in particular experiencing spikes in demand. Nokia has already completed the first phase of the deployment in Mecca and Medina, where the company was asked to dramatically increase capacity.

Using 4.5G technology, including Saudi Arabia's first indoor small cells deployment, STC managed the huge traffic demands during this year's Hajj pilgrimage, which during peak times recorded an increase in 4G traffic of 600 percent compared to 2015. Nokia will continue to deploy its 4.5G macro and small cell radio access network and microwave packet radio technology to provide ubiquitous coverage and faster access to the Internet across the country. This will allow STC to launch new services and expand the delivery of voice-over-LTE (VoLTE) to more subscribers. This agreement continues a long history of collaboration between Nokia and STC.

+ www.stc.com.sa

+ www.nokia.com

Intelsat donates capacity to the Red Cross for hurricane relief

Intelsat is donating capacity to the American Red Cross to support relief operations in Haiti following the devastation caused by Hurricane Matthew. The hurricane passed over the southwestern peninsula of the Caribbean nation on October 4, killing hundreds, destroying thousands of homes and leaving an estimated 1.4 million Haitians in urgent need of humanitarian aid, according to the United Nations.

The American Red Cross has established a field office in Les Cayes, a Haitian coastal city devastated by the hurricane force winds as well as high rainfall and storm surge. Intelsat will provide a VSAT connection for the American Red Cross facility in Les Cayes for 90 days using Ku-band capacity from Intelsat 29e, the first satellite in the Intelsat EpicNG platform. This high-performance, high-efficiency satellite, located at 310° East, uses the latest in HTS technology to enable the fast and efficient roll-out of broadband connectivity.

Intelsat donated capacity to the American Red Cross for Hurricane Matthew.

"Intelsat is a long-standing partner of the American Red Cross. We often provide their teams with vital connectivity during large disasters to enhance their field communications capacity in support of their urgent relief work," said Kurt Riegelman, Intelsat's SVP of Sales and Marketing.

+ www.intelsat.com

INTELLIAN ANNOUNCES INITIAL PUBLIC OFFERING

Intellian Technologies has announced an initial public offering of 1,450,000 common shares via the KOSDAQ, at an initial price of $17.27 per share. The initial public offering will result in roughly $26m in raised capital and a total market capitalisation for the company of just below $124m. Shares will start trading on the KOSDAQ Market on October 18, 2016 under the ticker symbol 189300 KS Equity. Founded in 2004, Intellian is the global leader in maritime satellite communication systems. Company turnover in 2015 reached $54m, with operating profit reported as $4.7m. Sales in the first six months of 2016 amounted to $38.6m, generating an operating profit of $6.5m. Proceeds from this offering will facilitate the company's continued innovation and delivery of scalable solutions to the wider mobility satellite communications sector. The next phase of growth for Intellian will expand the company's footprint into other verticals such as aviation, land-mobile and military communications.

"This is an exciting day for all of us. In only 12 years we have taken a leadership position over others who had been in the maritime market for decades," said Eric Sung, President and CEO of Intellian.

"Our innovative approach has led not only to this important milestone in our own success story, but also to growth for all our partners along the way, and key advancements in connectivity for the entire maritime industry," he continued.

+ www.intelliantech.com

THURAYA AND OOREDOO MALDIVES SIGN AGREEMENT

Thuraya and Ooredoo Maldives have announced an agreement to supply resorts and fisheries with mobile satellite products and services across the archipelago in the Indian Ocean. The initial phase of the agreement will provide fisheries and anglers with voice products and broadband connectivity over Thuraya's satellite network.

The agreement addresses a mandate issued by the Maldives government, progressively requiring commercial fishing operators to fit their vessels with satellite communication equipment and to supply anglers with satellite phones. This is in line with the approach adopted by other fisheries management authorities throughout the world.

Thuraya SatSleeve+ and SatSleeve Hotspot are sleek adaptors that transform smartphones into satellite phones. They offer fast, simple connectivity on the move, especially in remote areas where terrestrial networks have become unavailable or unreliable.

+ www.thuraya.com

Salem Al Marri elected as IAA member

Salem Al Marri, Assistant Director General for Scientific and Technical Affairs at Mohammed bin Rashid Space Centre, was elected as an IAA corresponding member in a ceremony held on the sidelines of the International Astronautical Congress (IAC) in Guadalajara, Mexico.
Al Marri was elected for his outstanding contributions to the science, technology and space sectors in the UAE and his efforts in promoting international cooperation in the advancement of the space sector worldwide. As a corresponding member, Al Marri will contribute to the international endeavours and the cooperation between all countries and organisations for the advancement of space technology and sciences around the world.

Al Marri expressed his pride and happiness to be the first Emirati elected to such a prestigious organisation as the IAA and to represent MBRSC and the UAE space sector, saying: "The space sector in the UAE has reached a good position

Salem Al Marri, Assistant Director General for Scientific and Technical Affairs at MBRSC.

in the global space community in such a short time. This drives us to play a positive role in global space affairs and participate in the international endeavours of developing peaceful applications of space technology and sciences."

Al Marri currently holds the position of Assistant Director General for Scientific and Technical Affairs at MBRSC, and he was the Project Manager for the satellite projects DubaiSat-1 and DubaiSat-2.

+ www.mbrsc.com

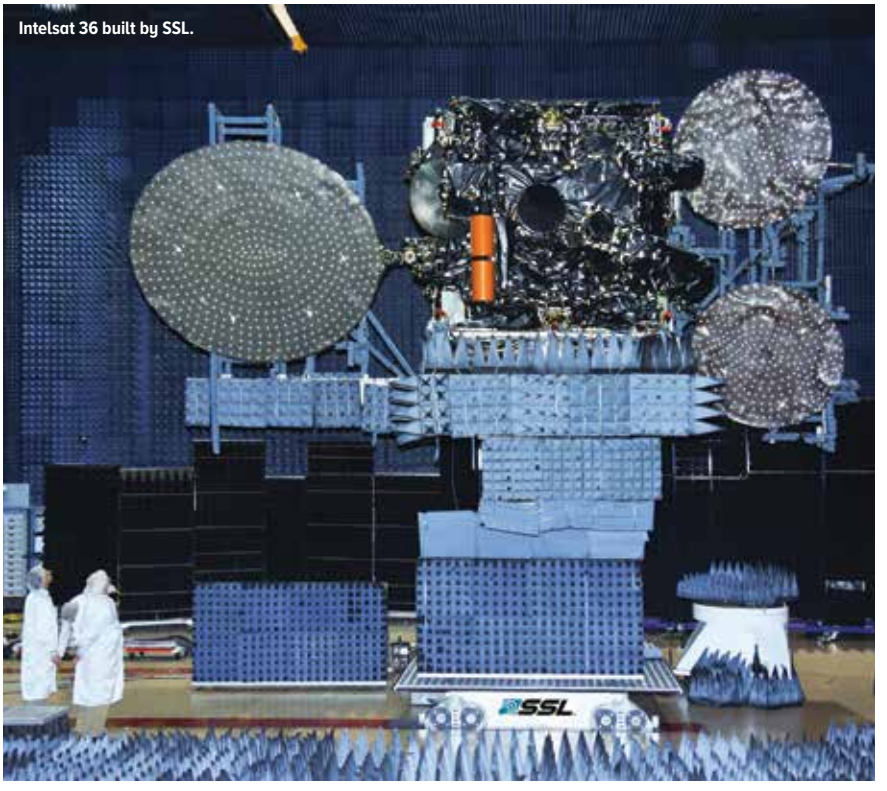
ADVANTECH WIRELESS RECEIVES ORDER FOR MILITARY MODEMS

Advantech Wireless has announced it has received a significant follow-on order for its military-grade satellite modems. The AMT-73L and the newer AMT-83L line of modems from Advantech Wireless are the first worldwide satellite modems to be MIL-STD-188-165A-certified.

The newer AMT-83L military-grade satellite modem from Advantech Wireless adds a number of advanced features to the DISA certified AMT-73L series. Among these new features are DVB-S2 with LDPC Coding and Adaptive Coding and Modulation (ACM), IP data interface, GSE encapsulation, Direct Sequence Spread Spectrum (DSSS) spreading and AES 128/256 encryption.

"These modems have been designed to fulfil advanced two-way satellite gateway communication requirements in Defence Satellite Communications Systems (DSCS)," said Cristi Damian, VP Business Development at Advantech Wireless.

+ www.advantechwireless.com



Intelsat 36 built by SSL.

INTELSAT 36 ENTERS SERVICE

Intelsat has announced that the Intelsat 36 satellite has entered service, providing broadcasting and DTH services for Africa's MultiChoice.

Built for Intelsat by SSL, Intelsat 36 was launched aboard an Ariane 5 launch vehicle in August. The satellite, co-located with Intelsat 20 at 68.5° East, includes a Ku-band payload used by MultiChoice and a C-band payload that provides in-orbit resilience.

"There are dynamic changes taking place across the global media landscape, and Intelsat 36 supports our customers as they address the growing demand for content throughout the African continent," said Brian Jakins, Regional Vice President, Africa Sales, Intelsat.

"This satellite will enable our customer, MultiChoice, to extend HD channels throughout the region. The C-band payload will provide additional redundancy for media customers to ensure that all viewers have access to reliable, high-quality content."

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The Energy **Conundrum**

With an ever increasing demand for bandwidth for critical communications, IoT and crew welfare, the oil & gas sector needs satellite more than ever. However, the global weakening of oil prices means services need to be delivered at a much lower cost per bit to be justifiable

Satellites are playing an increasing role in the support of the global oil & gas industry. Oil & gas companies are major users of satellite communications services and among the largest commercial groups of satellite earth observation data users.

According to Riyadh Al Adely, MD of SkyStream, the industry works in some of the harshest environments on Earth, in remote locations far removed from infrastructure and in extreme temperatures and weather conditions. Solutions involving a satellite element are therefore seen as increasingly feasible.

"Increasing exploration in deep waters and remote locations, such as the Arctic, can benefit from specialised earth observation capabilities by satellite for planning and operational stages. Even archived earth observation data, providing analysis of climate change and ocean trends, may assist in strategic decision-making and risk mitigation.

"One of the main benefits of satellite surveys is that they can be carried out across a range of countries and potential sites, and provide an efficient tool for the identification of potential new prospects," explains Al Adely.

Fahad Kahoor, Director of Market Development for Energy at Thuraya, says that as urban dwellers, we often overlook the role of satellite technology in providing vital communication links to remote areas where terrestrial networks are unavailable or out of reach. Despite the roll-out of terrestrial networks to many parts of the world, there are many regions that remain unconnected and rely on satellite connectivity.

"It is either physically not possible to connect users at sea or at exploration and production sites, where satellite networks are most likely the only viable tool for delivering reliable point-to-point communications and internet connectivity, because it is immune to disruption," explains Kahoor.

"Satellite technology is being used to maintain morale among employees who are required to operate in remote environments for extended periods. It allows them to stay connected with their family and loved ones. The growing demand for applications such as voice, video conferencing, email communications and data transfer has further driven up bandwidth requirements."

Though it is true that bandwidth requirements have gone up significantly, with the introduction of HTS the satellite community can now deliver much higher capacity than traditionally. Shahrokh Amiri, Intelsat Director of MENA sales, says HTS has changed the quantum of bandwidth available to provide solutions, as well as the price at which connectivity is available.

"Oil rigs require an unusually high reliability/availability connectivity due to the importance of maintaining operations running, as opposed to consumer broadband connectivity. Satellites can deliver up to more than 99.9% availability"

HUSSEIN OTEIFA, GM, SES Middle East

"With our first two Intelsat EpicNG satellites – Intelsat 29e and Intelsat 33e – in orbit, we are delivering on the promise of HTS – higher performance and better economics. We are the only operator with experience implementing truly HTS solutions on a global basis across the biggest applications. Our focus on optimising within the entire ecosystem, including hardware, means that our customers are transitioning seamlessly onto the platform, with immediate benefits in terms of higher performance due to efficiency gains.

"For the oil & gas sector, this increase in throughput is allowing our service providers to expand their application use cases and addressable markets. Oil & gas customers are taking advantage of ever more powerful VSAT-based applications that improve operations and efficiency. Specifically, we anticipate more safety and security broadband-based applications and also increased access to training and enhanced crew services," says Amiri.

Hussein Oteifa, GM, SES Middle East, thinks HTS has changed a lot of the industry. One of the biggest trends through HTS is an increase in video and bandwidth-hungry data applications.

"Satellite communication systems can also deliver live HD video coverage of ocean floor drilling activities. Also, HTS satellites provide broadband access with high data rates, fulfilling the needs of today's applications. Oil rigs require an unusually high reliability/availability connectivity due to the importance of maintaining operations running, as opposed to consumer broadband connectivity. Satellites can deliver up to more than 99.9% availability," adds Oteifa.

Ronald van der Breggen, CCO of Leosat, says the assumption that all HTS is the same needs to be addressed. He says all current HTS solutions in MEO and LEO are 'bent-pipe' and fully reliant on ground infrastructure for them to operate.

"This adds cost, technical complexity, organisational challenges and management issues. Above all, it takes away the opportunity to cover the entire Earth through HTS in one hop, thus adding latency as it needs to touch the Earth and go back up again and connect to another satellite to continue the link. In addition to that, if such HTS solution is operating in the GEO belt, then you need to add 500ms to the latency on top of everything else. Data flowing through that kind of infrastructure is affected in latency, security and ultimately availability.

"Not so with LeoSat. With our low Earth orbit HTS infrastructure, data can flow through our spatial MPLS network to its destination in one single hop. This makes for a very transparent, simple and robust infrastructure with unique attributes in low latency, security and

capacity that none of the alternatives have. So not all HTS is the same. LeoSat offers a better, end-to-end service, unlike any of its alternatives. These enhanced characteristics put our services into a class of their own," says van der Breggen.

With HTS, the oil & gas industry has access to a whole host of new communication-related possibilities, some that were perhaps a lot more cost-prohibitive in the past.

Amiri says one of the priorities for the industry is crew retention. This is important as an aspect of efficient operations, and connectivity has become an essential element for personnel working in remote locations for long periods of times.

"Just as they would at home, crew expect to be able to keep in touch with their family and friends via Skype, access social media or watch online entertainment. The crew can also access educational and training programmes, enabling them to pursue their education, or get medical assistance if necessary.

"Telemedicine reflects the growing business trend of more user-generated video being transported across the network. The same satellite broadband connectivity that ensures that personnel have access to improved communications with loved ones and entertainment can be used to support telemedicine. With affordable video conferencing and the ability to cost-effectively transmit site-generated x-rays or videos of injuries, physicians are able to safely assess and treat a patient remotely, not only saving time and money, but more importantly, improving health," adds Amiri.

Oteifa agrees, adding that another important aspect for the oil & gas industry is the need to access and examine large amounts of data.

"This data is constantly pulled from the sea during drilling. This includes leak detection, flow measurements, and pressure and temperature information, to name a few. The data collected is sent back to offshore via satellite to be analysed, and through the data many problems can be solved or prevented.

"Another reason to collate this data is to improve productivity and operational efficiency. The IoT connects many types of machines in a network, allowing companies to benefit from knowledge of all operations regardless of region and gain from the efficiencies of digitalised automation. SES satellite capacity enables oil producers to remotely and securely manage their operation – tracking everything from the direction of the drill bit piercing the ocean floor to the volume of oil flowing from offshore wells through a vast system of pipelines," says Oteifa.

Al Adely explains that before efficient satellite connectivity, data used to be collected and then sent to the company's headquarters after the end of the dive. This was then sent for processing, which could entail a lot of time and effort, especially in a situation that needed an instant decision. Now this same information is

"We should recognise that this spurt in demand depends on the overall dynamics of the global political economy. I expect the entry of new players in the satellite industry, and most probably announcements on new satellite systems"

FAHAD KAHOOR, Director of Market Development for Energy, Thuraya

Fahad Kahoor, Director of Market Development for Energy, Thuraya.

Ronald van der Breggen, CCO, Leosat.

Riyadh Al Adely, MD, SkyStream.

Hussein Oteifa, GM, SES Middle East.

sent to the office via satellite in real time, saving a lot of hassle for the client.

Environmental safety is also increasingly important. To limit the risk of spill incidents, remote monitoring via sensors provides rig workers with data and information they need to identify any unusual situation, and activate any safety measure or emergency procedure if needed. IoT also enables the oil & gas industry to make unexpected finds, and limits the impact of its activities on the environment.

The Challenges

Standard technologies such as mobile communications networks predominantly function on an onshore basis, where appropriate equipment and infrastructure is in place and functioning properly. This, however, causes issues in extreme disaster situations such as floods and storms, as well as where activities are carried out in remote offshore locations, according to Al Adely.

"In such cases, satellite technologies are useful in providing access to a wireless communications network that is independent of terrestrial infrastructure. Another challenge for the service providers is to always seek new technology and implement new applications to address the growing challenges of this industry.

"With affordable video conferencing and the ability to cost effectively transmit site-generated x-rays or videos of injuries, physicians are able to safely assess and treat a patient remotely, not only saving time and money, but more importantly, improving health"

SHAHROKH AMIRI, Director of MENA Sales, Intelsat

Regulations in the region are still tough, and that forces the client to deal with only a limited number of suppliers, which deprives the client from using other expertise available in the market. Most importantly, the drop in oil prices is another major challenge that directly affects the allocated budget for satellite communication," explains Al Adely.

Amiri says the energy sector depends on satellite for critical commercial infrastructure, in both boom times and during periods of uncertainty. He says this is why Intelsat's efforts are focused on maximising satellite's traditional advantages of reach, ubiquity, reliability, point-to-multi-point capabilities and security, while delivering higher performance paired with better economics.

"Solving these challenges for our customers was the driving force behind Intelsat EpicNG. The open architecture and backward compatible design allows customers to seamlessly migrate their existing network onto our platform and enables them to scale and integrate the latest in satellite and terrestrial technology, while minimising capex investment and operating cost, solving this key challenge for the oil & gas sector," adds Amiri.

Van der Breggen says the challenge of data transportation and connectivity has been resolved with the development of a unique low Earth orbit data network solution, conceived by two former Schlumberger executives with a long history of working with the challenges of data transportation in the energy sector.

"LeoSat's data network is comprised

of a constellation of up to 108 low Earth orbit communications satellites, all interconnected through laser links, creating an optical backbone in space which is about 1.5 times faster than terrestrial fibre. Using optical inter-satellite links, and operating in polar orbits at an altitude five times closer to Earth than MEO and 25 times closer than GEO, allows LeoSat to provide an ultra-low latency, high throughput and global data network. This system architecture is also able to encrypt and logically separate the data as it flows through the system, providing secure end-to-end communications with no terrestrial touch points," explains van der Breggen.

The Future

So what does the future look like for satellite connectivity in the oil & gas sector? According to experts in the field, the advent of global HTS platforms will have a transformative effect on the sector, delivering the kind of connectivity to remote locations that currently is only experienced in highly populated regions of the globe.

"The higher power and our investments in new technologies will see the introduction of new electronic antennas that will make it much simpler to install site hardware and access the satellites. The combination of the global reach of the Intelsat EpicNG platform and IntelsatOne Flex will enable service providers to adjust their services to provide customers bandwidth when and where it is needed, delivering an enterprise grade, wholesale Mbps service with tiered Committed Information Rate (CIR) plans that allow service providers to offer unique and tailored services. The improvement in throughput delivered will unlock new applications and services for the oil & gas sector," explains Amiri.


Shahrokh Amiri, Director of MENA Sales, Intelsat.

Kahoor expects new players to enter the satellite sphere, but warns that an increase in satellite demand will be directly linked to the global economy.

"Looking forward, we foresee satellite to continue to play a major role, with increased demand for connectivity and communications; however, we should recognise that this spurt in demand depends on the overall dynamics of the global political economy. I expect the entry of new players in the satellite industry, and most probably announcements on new satellite systems. Thuraya, for instance, recently announced its next-generation constellation that will include the launch of new satellites and plans for the new system to be a one-stop shop for L-band, HTS, IoT and GSM terrestrial services, offering an unparalleled portfolio of mobile products, applications and services," concludes Kahoor. PRO

Besides critical communications on an oil rig, what other crucial aspects is satellite used for?

Fahad Kahoor, Director of Market Development for Energy at Thuraya

Real time monitoring and remote Access:
Real-time measurement of how operations are run 24/7 for upstream and midstream, including well-head monitoring, is highly critical. Oil & gas companies need to be apprised of the status of oil production regularly to adjust production capacity where and when needed in the supply chain. During critical times, remote access and reporting are vital in controlling operations while identifying causes and resolving issues.

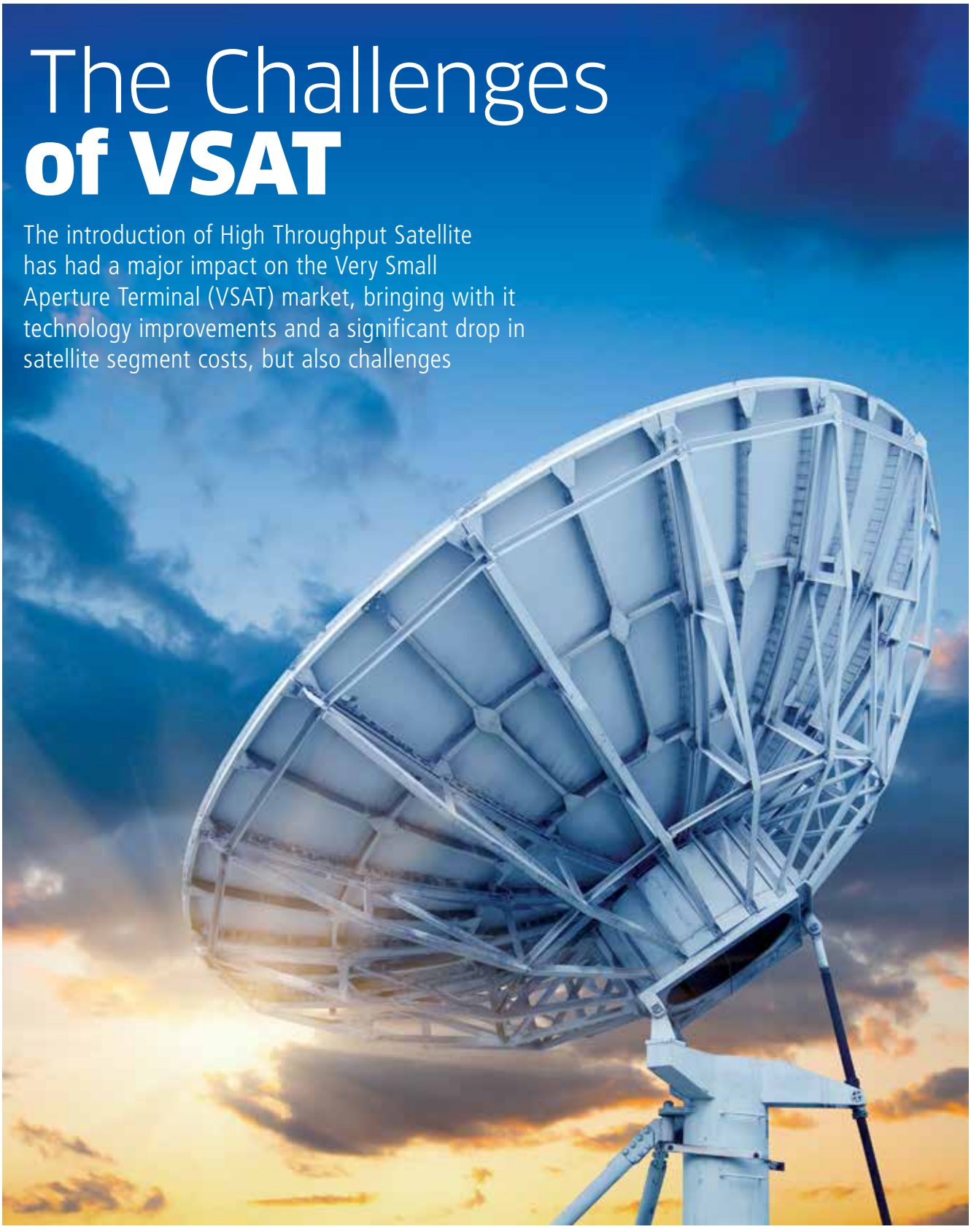
Continuous connection regardless of location:
Companies today need to consider private radio, GSM and mobile satellite solutions as part of their overall communications infrastructure. MSS (mobile satellite service) solutions have the resiliency and reliability to act as a backup plan for terrestrial solutions. For geographically remote locations not served by terrestrial networks, oil & gas companies can leverage the strength and capacity of L-band networks to enjoy uninterrupted connectivity, even under adverse weather conditions.

Securing assets:
Security and pipeline monitoring applications are a growing concern in the energy sector. To address this, IoT (internet of things) applications can be leveraged for video surveillance to monitor operations in areas which are not easily accessible by teams. Deployment of VPN via mobile satellite solutions such as IP broadband terminals provides an additional layer of secure and reliable, end-to-end connectivity over public or private communication networks.

Personal GPS devices:
For the safety of lone workers in remote areas, companies can supply their teams with personal GPS devices that mark waypoints along their route to share with colleagues and friends. These devices can also send location information during emergencies; an essential feature in satellite handsets.

The Challenges of VSAT

The introduction of High Throughput Satellite has had a major impact on the Very Small Aperture Terminal (VSAT) market, bringing with it technology improvements and a significant drop in satellite segment costs, but also challenges




Martin Coleman, Executive Director, IRG.


Petter Amundsen, CEO of VeriSat.

VSAT, and in particular TDMA/ Burst Mode networks, remain challenging in the satellite environment. To avoid creating interference problems for other satellite services, it is essential that terminal quality, control and installation be correct.

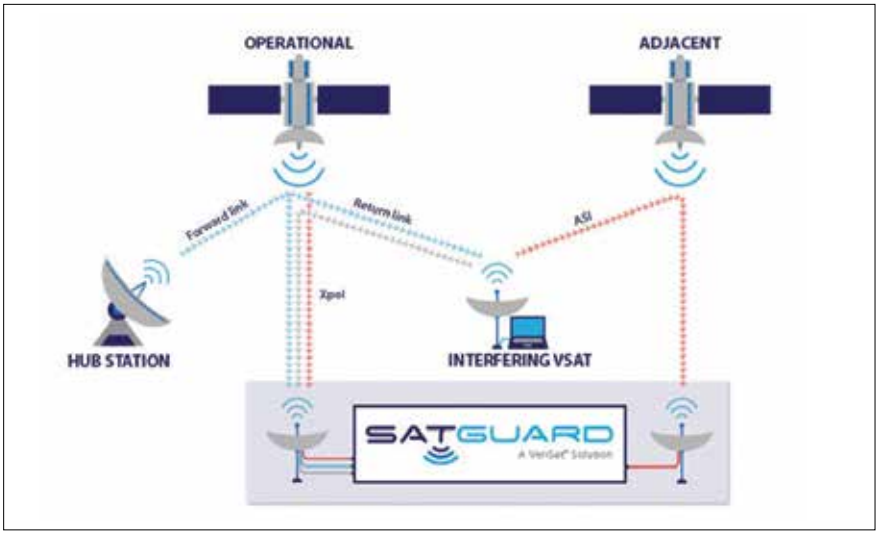
There has been exponential growth of VSATs over recent years, with many providing much-needed communications to often remote areas across the globe. However, with so many units being installed and, in the past, no active monitoring or control of terminal installation quality, bad installations have caused interference problems for the satellite industry for many years.

Petter Amundsen, CEO of VeriSat, says: "It is unfortunately too common to perform VSAT installations without the necessary accuracy in antenna pointing and cross-polarisation adjustment. A challenge when pointing the antenna is that an incorrectly pointed antenna can operate fine but still the misalignment can cause significant satellite interference."

He attributes this to several factors: untrained staff, time pressure, inadequate monitoring of installation quality – even the best installer can make mistakes.

Indeed, VSAT interference has been on the radar for the Satellite Interference Reduction Group (sIRG) since the organisation was founded 20 years ago. Executive Director Martin Coleman sees it as the major culprit when it comes to interference. "It has been widely reported that VSAT is the biggest single cause of satellite interference, responsible for around 40% of all interference. At the same time, it is also the hardest to solve, hence responsible for the largest amount of downtime. The problem is of course that when these systems cause interference, it

> **"It has been widely reported that VSAT is the biggest single cause of satellite interference, responsible for around 40% of all interference"**
>
> MARTIN COLEMAN, Executive Director, IRG



doesn't normally affect the VSAT terminal or network causing the interference, it affects many other satellite users."

Qualified installers are important, and the Global VSAT Forum (GVF) has been working hard, offering thorough training programmes to VSAT installers. However, in reality this is often not enforced, and even a well-trained installer can from time to time make mistakes. Making the tools smarter seriously reduces errors.

Prevention

Coleman thinks smarter tools are the answer, and IRG has been championing a number of new innovations emerging for the VSAT market aimed at addressing these challenges, such as SatGuard from VeriSat and Satmotion Pocket from Integrasys.

Satmotion Pocket, for example, is a simple tool which can be downloaded on a mobile or tablet device, or even Google Glass. It simplifies the commissioning process, which means deployment time comes down, but also greatly reduces the risk of errors, including satellite interference.

Alvaro Sanchez, Sales and Marketing Director, Integrasys, says: "We are seeing a huge range of new applications emerge for VSAT, such as the Internet of Things (IoT). As VSAT networks continue to grow, we need to make the jobs of installers and the network operators easier to manage, and ultimately bring down the operating costs, which is currently one of the biggest stumbling blocks for VSAT operators."

"A challenge when pointing the antenna is that an incorrectly pointed antenna can operate fine but still the misalignment can cause significant satellite interference"

PETTER AMUNDSEN, CEO, Verisat

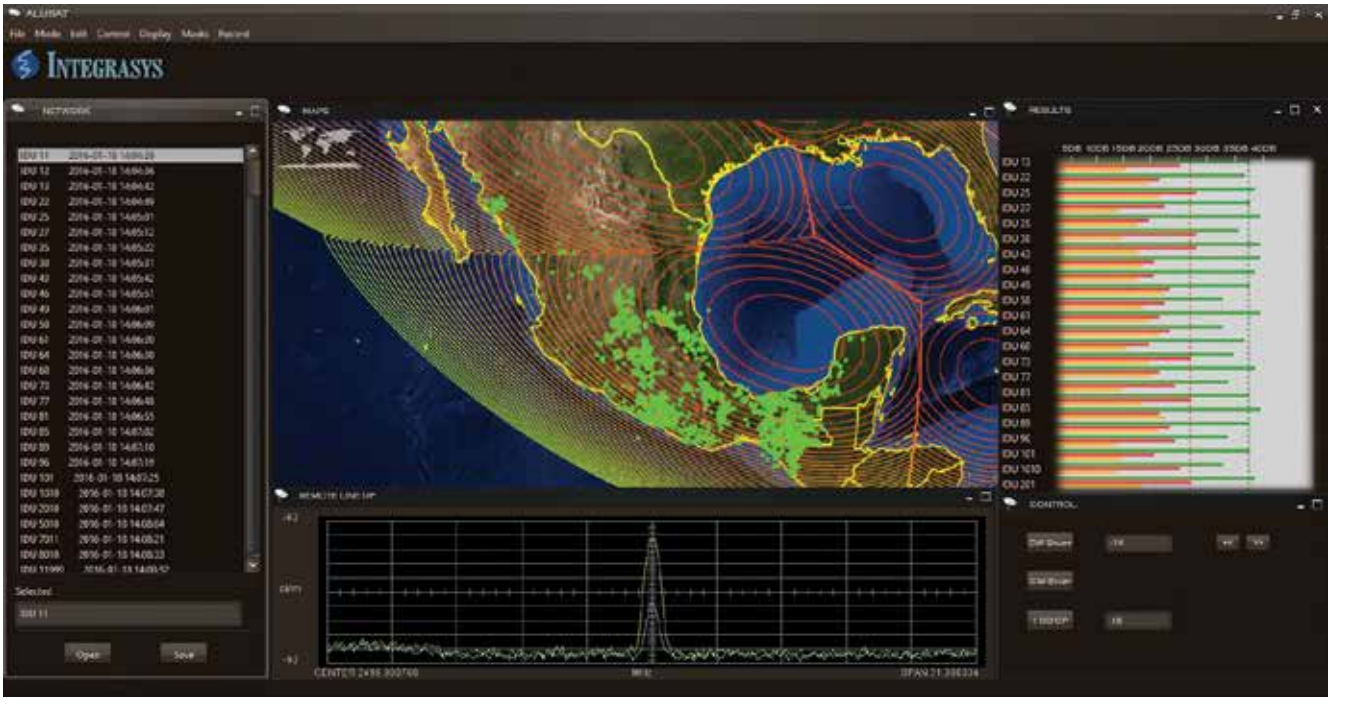
Andrew Bond, Sales Director and Head of Marketing at ETL Systems, feels that reducing failure rates has a lot to do with having the right equipment in place. "The more that VSAT equipment is manufactured to withstand the harsh and rather unique environment of VSAT installations, the more we can reduce failures and provide reliable communications. We know, for example, that these systems are often subject to adverse weather conditions, so let's ensure the units and the equipment can withstand the extremes of weather."

ETL Systems provides a range of indoor and outdoor RF products suitable for VSAT applications, including RF over fibre links, RF switch matrices, splitters and combiners, and redundancy switches for antenna and modem redundancy.

Bond adds: "Building in antenna and modem redundancy to VSAT systems is crucial to ensuring there is always a backup plan for when something goes wrong. With proper redundancy, the VSAT operator can quickly switch the feed as problems become evident. Furthermore, selecting equipment which provides redundant active components and hot-swap capabilities maximises the reliability of your VSAT system."

The Certainty of Errors

Amundsen notes: "Even when VSATs are properly installed using trained staff and



smart tools, errors can occur further down the line. Naturally, that is part and parcel of the environment. If they are constantly moving, they are constantly having to re-align the antenna and that can be easily misaligned, especially in those situations. Even for the static units, they are often in remote locations and often with no trained staff around. Degradation of the VSAT or associated hardware often goes unnoticed until its effects become noticeable as interference to other satellite services. The challenge has then been to determine which terminal is causing interference, since many terminals share the same frequency in TDMA mode."

According to Coleman, the satellite operator members of IRG have spotted a trend. "As soon as there is any type (fixed or mobile) of VSATs in any given area, wherever it is in the world, the amount of cross-polar interference and Adjacent Satellite Interference (ASI) greatly increases. As they get older, then added to that is GSM retransmission."

Sanchez echoes this concern. "A lot of VSATs are remote and unmonitored, and often without due diligence and regular maintenance. Add to that extreme weather conditions often witnessed in these areas that severely affect the outdoor unit. It is not surprising therefore that many of these units will fail at some point, and only if they are lucky, they won't bring down the entire network in the process."

"As VSAT networks continue to grow, we need to make the jobs of installers and the network operators easier to manage, and ultimately bring down the operating costs, which is currently one of the biggest stumbling blocks for VSAT operators"

ALVARO SANCHEZ, Sales and Marketing Director, Integrasys

Some VSAT equipment is being built to withstand this. For example, ETL Systems' latest RF over fibre link module for VSAT is fully weatherproof and extremely compact, making it easy to get to remote locations and rugged enough to cope with the harsh conditions only too common in the VSAT environment, whether from the journey to get to the location or from constant movement throughout its life.

There is a definite consensus that one of the biggest challenges with VSAT is the lack of visibility when something goes wrong. Coleman says we need better monitoring to resolve that, citing some good examples of smart tools emerging from IRG membership.

This includes Alusat from Integrasys, a tool which sits at the VSAT operator's Network Operation Centre (NOC) and monitors the entire VSAT network, proactively checking the uplink and downlink health of the units. Operators can determine different thresholds for RX and TX and the system can act automatically in different circumstances. It also delivers measured values of co-polar power, cross polar isolation, adjacent satellite interference and 1db compression point for networks with adaptive power adjustment capability.

VeriSat's SatGuard tool is the first solution on the market that can pinpoint the source of the VSAT interference with certainty as it occurs, and can monitor the

Andrew Bond, Sales Director and Head of Marketing at ETL Systems.

Alvaro Sanchez, Sales and Marketing Director, Integrasys.

Integrasys Installer testing a VSAT dish for signal interference.

level of VSAT terminal interference on a regular basis through passive and non-interfering monitoring. It enables satellite operators to pinpoint where any source of VSAT interference is coming from, so that they can then alert the VSAT operator.

CAPEX vs OPEX

Sanchez believes it is also a question of OPEX. "The economy of scale has enabled a drop in capital expenditure at the remote site, and it is still falling, however the operational expenses have remained constant. VSAT sites will soon have a 50-50 split in terms of CAPEX versus OPEX expenditure. It is likely that CAPEX will continue to fall, but the savings are still not being made by most when it comes to operating cost, therefore before long it will likely cost more to deploy and maintain a VSAT than to buy one."

The Good News

VSAT network design and build are far superior today than ever before. Along with integration of better tools and automation, this is making the future brighter. Coleman believes that making VSAT networks function better with fewer errors will require all the tools in the box.

"As with anything, the more tools we have at our disposal, the better. Solving VSAT will be a combination of ensuring we have rugged solutions that will withstand weather, such as those provided by ETL Systems. If we combine that with better tools to ensure an error-free installation, then we are halfway there. However, errors will occur, and having the ability to constantly monitor to spot them as they happen will have a huge impact. By giving the VSAT networks tools such as AluSat from Integrasys and arming the satellite operators with SatGuard from VeriSat, we can greatly increase the arsenal. By combining all of these and more, we can really make a difference to the VSAT industry, both in terms of interference and other error reduction, and in terms of ultimately decreasing operating expenditure," he concludes. PRO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Satellite Evolution Sparks a **Service Revolution**

The changing DNA of satellites prompts a landslide of new products and services for clients across many different verticals

Technology changes lives. That statement, as banal as it sounds, implies two major elements of fundamental importance. The first is the observation that technological shifts create markets, and not the other way round. The second is that faster technological evolution sparks a revolution in the services and products that are available. Markets, and the individual consumers that define them, do not presage and pronounce demands, technological breakthroughs do. Unforeseen and unforeseeable products are created by translating new technology into applications that rapidly transform entire industries, sectors, behaviors and business models. Technologies ferment the markets, and this is exactly what is happening with satellite technology today.

The Old and New School of Thinking

For a long time the satellite business was framed by the stable and reliable coordinates of orbital positions, satellite fleets, and their spectrum and capacity. All of this was viewed, of course, in the perspective of rate cards and price points. Admittedly, in this old school of thought the orbiting real estate of satellite operators delivered fantastic results, transmitting thousands of TV programs reliably and in the highest quality to millions of households and billions of people. In turn this created mass audience solutions downstream, as well as instant and remote connectivity over continents and deserted areas. Yet the optics were always focused on a small slice of a larger sector.

The new school of thinking has overthrown that approach. Now technology is the launching pad for new products and markets, as new capabilities in the sky are immediately applied on the ground in tailor made ways for each market. As satellites change their DNA rapidly to become fluid and flexible, they grow their already key role in the connected and rapidly evolving world. The new approach positions satellite to deliver on the demands for the new age of connectivity. High performance satellite constellations are being put in place with a strategic mix of spectrum types, and wide and spot beams. Reusable and re-deployable beams boost capacity and bandwidth efficiencies. Roaming capabilities enable seamless maritime and aeronautical connectivity experiences, and the terabit per second satellite is on the horizon, pushing the boundaries of global connectivity to infinity.

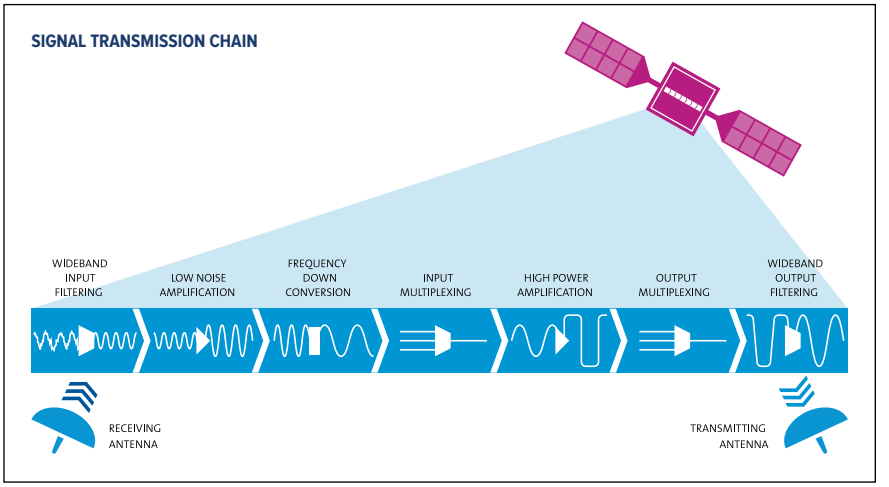
SES is perfectly positioned to drive this technological revolution, and knows that it is not about one big idea or one big satellite. Technologies such as High Throughput and terabits are not the exclusive elements of the winning formula, but are part of the tools SES will use to chart a new course beyond frontiers, and not just for itself, but for the entire industry. By breaking with ideology, and reconsidering the entire business with a precise, market-focused, and insightful view, SES will take the most advantage of the fundamental changes underway. The optimal formula will be a precise balance between a differentiated focus on four market verticals and a global scalability of all solutions across the globe. The sheer size of the SES operations and fleet, the importance of its spacecraft investment, and the high pace of its satellite launch manifest, will allow SES to develop solutions with a worldwide scale and deploy these with an accelerated approach in all four verticals that each have different maturity levels. The four verticals SES focuses its business on are: Video, Enterprise, Mobility and Government.

"Roaming capabilities enable seamless maritime and aeronautical connectivity experiences, and the terabit per second satellite is on the horizon, pushing the boundaries of global connectivity to infinity"

Energising Global Video and Data Markets

The new dynamic is energising all segments of the global connectivity market and its four main wings.

In Video, cutting-edge Ultra High Definition (UHD) is pushing picture quality to new heights and fuels the launch of even larger and more powerful screens. Satellite is the ideal delivery method for such high quality video, and broadcasting UHD to homes across the globe is possible thanks to advances in compression technology. UHD is delivered to viewers in High Efficiency Video Coding (HEVC) instead of the previous



"The Internet of Things is a big part of this step change in communications, allowing machine to machine connection and data exchange. This kind of connectivity needs reliable, real-time, and scalable communications support"

compression standard H.264 that is used for HD. HEVC reduces bandwidth requirements and therefore makes broadcasting UHD affordable for customers. The global success of non-linear video platforms is changing the way consumers watch video. The new generation's preference for streaming and Over-the-Top content is pushing video to every screen on every device. In this new landscape of video, seamless hybrid networks that integrate satellite into terrestrial infrastructure will lead the way by delivering high quality video that is both linear and on demand to viewers anywhere in the world.

In Data and on land, organisations also need reliable high speed broadband and cellular coverage on a global scale regardless of terrestrial infrastructure. Telecommunications providers, mobile phone operators, energy suppliers, mining companies, car manufacturers, banks, and retail chains all seek to elevate their communications capabilities using new technology. The Internet of Things is a big part of this step change in communications, allowing machine to machine connection and data exchange. This kind of connectivity needs reliable, real-time, and scalable communications support, service that satellites are tailor made to provide. SES is already empowering the connected world – from smart cities to smart operations and smart spaces, and is ready to expand globally by working actively with partners to create new solutions prepared for the arrival of HTS.

In Mobility new technologies that deliver connectivity regardless of location are fundamentally changing the travel experience both in the air and at sea, delivering airline and cruise ship passengers a connected living room experience during their trip. The possibilities offered by the technology have set expectations high and cause a boom in demand that is unprecedented.

Finally, the Government segment is increasingly demanding global connectivity on land, sea, and in the air. These services are vital to governments worldwide who share the daunting mission of protecting their people in increasingly turbulent times. Satellite technology meets those needs, providing protected connectivity for defence and security solutions, surveillance, disaster recovery and e-inclusion (initiatives such such as SES's e-health, e-learning, and e-elections).

Microprocessed Payloads Further Revolutionise Performance

Technological progress drives markets and pushes them several steps further to create dramatic changes in customer experiences, and more progress is coming.

The satellites that orbit the Earth are marvels of engineering. Each is made of building blocks that enable it to receive and redistribute signals from Earth. The key element is the transponder, a physical unit that allows the satellite to fulfil its role in transmitting video and data to large audiences and geographies extremely efficiently. The transponder receives the signal from the ground in a specific frequency band – typically C-band, Ku-band or Ka-band, which have been used for data and video transmission for decades. The payload then filters the signal, converts it to another frequency (since the upstream traffic cannot collide with the downstream signal), amplifies it, multiplexes it to combine it with other signals into a package, and finally sends it back to Earth to be received by the dishes of those using the service. The inside of a satellite thus contains hundreds of filters, switches, converters, multiplexers and amplifiers to do that.

Now there is an on-board revolution underway.

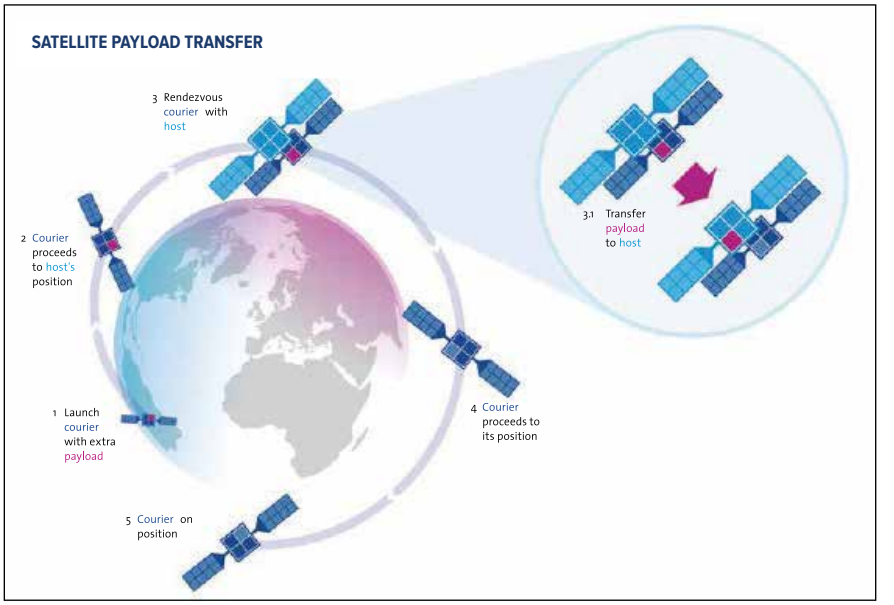
The inclusion of extremely powerful digital signal processors (DSPs) will revolutionise the way satellites operate, perform, interact, connect and serve customers. This will significantly change the satellite's design and increase its capabilities by replacing a large portion of traditional on-board hardware with DSPs. The uplink signal will no longer flow through external filters, switches and frequency converters, but rather be fed into DSPs for conversion, transformation, digital amplification, and re-conversion to the downstream frequency for transmission. This will allow engineers to dramatically reduce a satellite's hardware, replacing major parts of the transponder with fairly light chips that have unprecedented processing power. Next generation DSPs will be powerful enough to process hundreds of Gigahertz of bandwidth. One single DSP would replace hundreds of filters, frequency converters, switch matrixes, and output filters – reducing the mass of the satellite by more than a tonne. This technology is already being used by SES in a selection of development projects.

Technology Yields Value for Customers

The digitalisation of satellites is dramatically changing SES's capabilities in the sky. The next generation of satellites will be flexible and adaptive, providing an improved customer experience. Complex multiplexing of channels, a feature of digital signal processing, allows a satellite to continuously form and shape beams or hop from one beam to another. This enables the satellites to use resources according to demand by seamlessly switching frequencies and allocating spectrum with the maximum efficiency. The new satellites will be able to transmit thousands of Gigabits per second, multiplying on-board traffic by one or more orders of magnitude. Even further, the new satellites will operate simultaneously in broadcast and unicast mode, allowing data and video service to converge.

This technology will result in a number of benefits for SES customers. With the new technology, resources can be customised so that they are available when and where they are needed, also allowing for video content differentiation that is based on location. Thanks to the adaptive nature of digital signal processing SES will also be able to adjust the signal strength to a customer's antenna size, and avoid frequencies that have been interfered with. Customers will also get the added benefit of cost savings. Because the technology is homogenous SES will have the flexibility to use available spectrum without the requirement to customise filters and receivers, and therefore can pass on the associated cost savings. Even further, these features will be available in GEO and MEO architectures, allowing for synergies across these two orbits, and significant volume discounts.

Digital processing will enable satellites to seamlessly blend into telecommunications and terrestrial infrastructure, creating hybrid systems that allow the systematic offload of traffic from innovative global video platforms, and delivering linear and non-linear signals in Internet Protocol to multiple screens. It will form the backbone for new trunking and backhaul models for mobile phone operators by feeding signals from satellites into terrestrial head ends and towers that transmit enormous quantities of data (and often video) to more and more demanding mobile phone networks.



And it will be the key enabler for powerful and innovative hosted payloads, serving the specific needs of a variety of governments and institutions. Providing high-powered coverage, thanks to the technological improvements in satellites, will transform the security environment globally. Future Intelligence Surveillance and Recognition (ISR) platforms will monitor borders, events and municipalities, while HD surveillance platforms on unmanned air vehicles (UAVs) will develop even further alongside this new satellite technology.

A Step Further: Modular Systems

The fast metamorphosis of satellites will not stop at digital processing. They will also accelerate their production time and, on the other side, extend their lifetime.

The current product lifecycle of a geostationary satellite is linear. Five years in advance of a satellite's launch, SES predicts the service capabilities for its nominal lifespan of 15 years. The service payload satellites carry define their capabilities for the entire lifetime of service.

Now, advances in satellite engineering have the potential to break this dynamic. Due to the launch mass saved by electric propulsion and digital processing, satellite engineers have more real estate with which they can consider modular designs. This will allow operators to add pieces to an existing satellite in orbit that were unknown and unheard of at the time of its procurement and launch: modular satellite designs will disrupt the static nature of the satellites in service today.

To make modular design possible, satellites need to have a connector and docking mechanism installed. New satellites will be launched and used as delivery vehicles. Once a new service payload is ready for a host satellite in orbit, it will be attached to the next satellite being prepared for launch.

Once that satellite is launched, it will make a stop at the host satellite to drop off the service payload before continuing on to its intended orbital position.

These multi-purpose missions will eliminate the need to launch additional or replacement payloads individually and therefore maximise the value of each launch. As the industry accelerates the development of innovations, satellites and payloads will be put into operation in much shorter time frames: as little as two years. These flexible payloads will generate new service offerings for customers, further driving down the cost per bit. The technology for this connecting and docking equipment in space already exists, and has been used successfully on the International Space Station and other government projects. While the equipment is not yet commercially viable, SES innovators intend to adapt the technology for commercial applications. PRO

Whitepaper by SES

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Vice-President and Prime Minister of the United Arab Emirates and Ruler of Dubai

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Bigger **and Better**

This year's GITEX Technology Week was bigger than ever before, with a host of new zones where visitors could interact and learn about the latest technology available


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Polycom showcases **Trio and Centro at GITEX**

This year at GITEX Technology Week, Polycom showcased the latest portfolio of video, voice and content-sharing collaboration solutions that help businesses enable their workforce to work from anywhere. Polycom was exhibiting in partnership with FVC and Sitec.

Daniel Schmierer, Area Sales Vice President, Middle East and Africa at Polycom, said: "The innovation in audio, video and content collaboration technologies is indicative of the rising demand for better connectivity and effective collaboration from anywhere. Workforce is ultimately demanding solutions that allow flexible working and working from anywhere. Polycom is passionate about customer success and has developed a plethora of new solutions that help businesses to fuel their workplace of the future."

Key Polycom solutions on display by FVC, Sitec and Westcon were the Polycom RealPresence Trio, a solution that transforms the three-point conference phone into a voice, content-sharing and video system that can fit into any team environment.

Also present was Polycom RealPresence Centro, the first solution purpose-built to put people at the centre of collaboration. The solution introduces a brand new paradigm for group conferencing that drives deep engagement.

Du and Qualcomm demonstrate WiGig at GITEX

Du and Qualcomm Technologies Inc have announced that the companies have successfully showcased 802.11ad multi-gigabit Wi-Fi technology (also known as WiGig), a first in the Middle East region. The demonstration took place during GITEX Technology Week in Dubai, paving the way for rapid deployment of 802.11ad in the region. 802.11ad delivers peak speeds of up to 4.6Gbps, lower latency and improved network capacity. Using millimetre-wave spectrum (mmWave) at 60GHz, 802.11ad serves as a foundational technology for 5G.

Du is proud to have been selected as smart city partner for Wi-Fi in Dubai and has recently launched WiFi UAE with 300+ hotspots. 802.11ad will be a crucial addition to du's already impressive technology portfolio, providing a step up in Wi-Fi capacity and addressing the ever-increasing demand for data while offering enhanced user experiences. Together with 5G technologies, 802.11ad will enable du to provide multi-gigabit wireless connectivity across its networks.

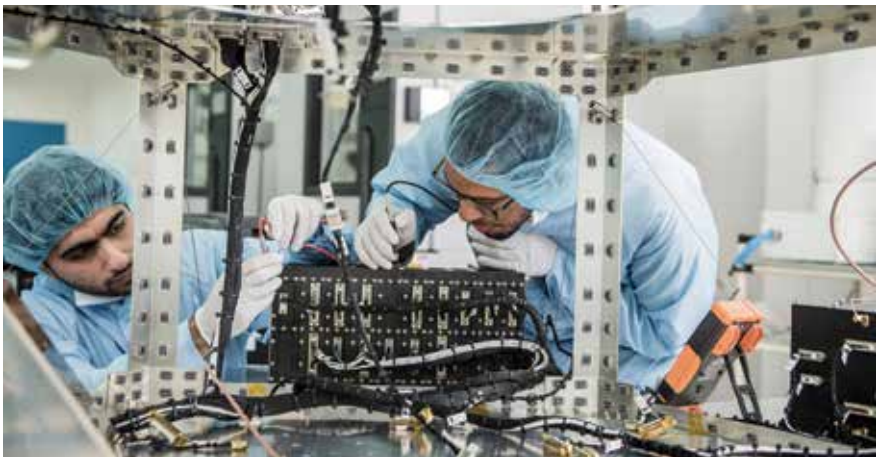
As an important step in the evolution of Wi-Fi, 802.11ad is designed to enable a new class of applications and services such as wire-equivalent docking, low-latency video streaming, multimedia kiosks, untethered VR glasses and more. Working seamlessly with 802.11ac Wave 2, 802.11ad is designed to transform the experiences for Wi-Fi users, whether in the office, at home or in public venues.

"Working with Qualcomm Technologies has enabled us to introduce yet another first in the Middle East, with the successful testing of 802.11ad technology. We are currently working with other companies to add this technology to our Wi-Fi portfolio and make it available for all users in UAE," said Saleem AlBlooshi, Executive Vice President of Network Development and Operations at du. "This successful demonstration adds further impetus to the initiative of His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice-President and Prime Minister of UAE and Ruler of Dubai, in establishing the UAE as a global leader in all aspects and as an innovator in technology in the Middle East region."

"Powering the industry's first commercial 802.11ad-enabled access point, laptop and smartphone products, Qualcomm Technologies pride ourselves in continuing to play an instrumental role in bringing advanced Wi-Fi technologies to life and with working alongside innovative companies like du in building a strong 802.11ad end-to-end ecosystem," said Rahul Patel, GM, Connectivity, Qualcomm Technologies.

MBRSC promotes space technologies at GITEX

MBRSC participated at GITEX Technology Week this year. The Space Centre presented the exhibition's visitors with a vivid experience of the Clean Room used for manufacturing satellites in the Space Technologies Laboratories at MBRSC, Dubai. It also showcased space technologies developed at the centre, as well as awareness raising and educational initiatives for school and college students. These include the NanoSatellite Outreach Programme (NSOP), nano-satellite project Nayif-1, *Red Planet* magazine, the Year of Reading initiative and *Majarat* magazine, a scientific magazine dedicated to space science and technology.



At the Innovation Zone, MBRSC's engineers were actually working inside a model of the clean room in which KhalifaSat is currently being manufactured. The clean room was designed according to specific standards in terms of humidity, temperature and dust, where users must abide by certain rules to have access to it.

At the Government to Government Zone, MBRSC presented analytical reports of specific areas in the UAE to monitor progress in infrastructure, including buildings and road networks, in addition to detecting changes in vegetation and water resources in specific locations using both built-in and commercial tools and applications. Engineers also explained how MBRSC's space technologies are used, such as the SAFIY project, a smart application for feature extraction and 3D modelling using high-resolution images captured by DubaiSat-2, and the Coast Extraction Application, for coastline extraction using remote sensing and image processing technologies.

Furthermore, MBRSC briefed visitors to the Education Zone about its educational initiatives, namely nano-satellite project Nayif-1 and the NanoSatellite Outreach Programme (NSOP), which aims to develop the necessary human infrastructure for the space sector in universities.

Infinet Wireless brings XG1000 to the show

Infinet Wireless showcased its new range of XG1000 antennas at GITEX Technology Week that effectively doubles the capacity of the previous XG range.

Kamal Mokrani, VP, Global Sales & Marketing, Infinet Wireless, said: "This year we are leveraging our presence in the region to launch some new products, which not only addresses the needs of the customer base we have today, but also opens some new doors in different sectors of telecoms in general. The top-of-our-range product called the XG1000 takes us to the level of 1Gbit. With the XG1000, capacity is doubled over the previous generation antenna. This is ideal for operators, and we're getting a lot of interest, especially as everyone is deploying the 4G/ LTE base stations."

According to Mokrani, InfiNet Wireless's experience of radio frequency innovation – and translating that into the real world needs of customers – ensures that its products combine unsurpassed reliability and technical functionality, enabling the delivery of truly flexible wireless networks with unparalleled quality of service.

"When it comes to point-to-multipoint, when people start deploying a lot of wireless, you start getting interference. What we are doing is releasing the next generation beam forming technology, which reduces noise almost to zero. We found ways that there can be almost zero packet losses even in very noisy environments. We are testing this in Kabul, because of its heavy use of radios. It's all about interference mitigation, and one of the things Infinet is known for is trying to squeeze as much data through the same and even sometimes less spectrum," said Mokrani.

Sitec returns to GITEX with **a host of UC solutions**

Sitec is back at GITEX Technology Week once again this year, and its stand has been constantly buzzing with interested visitors.

The company has established itself as one of the leading value-added distributors of information and communication technology hardware and associated services. Sitec is a customer-focused company serving the Middle East, Africa and South Asia region.

Mohammad Al Azzeh, Sales Account Manager at Sitec, said: "We have been at GITEX for four years and specialise in UC. We are distributors for a lot of vendors for project partners like Skype for Business, V6, IP phones from Polycom, Snom and Fanvil. Our aim is to connect every company with a single solution in one environment, without them having to buy separate solutions. We support all our end users as well as vendors for any needs they have in the region."

Sitec says it diligently seeks out and sources a broad range of innovative yet practical solutions that are selling well in the SME business sector.

"A new offering is CC4Skype, which is a complete solution for contact centres with Skype for Business, the future of contact centres and this is where people are moving towards," said Al Azzeh.

Etisalat demonstrates eSIM-enabled supercar at GITEX

QuarkSe, an eSIM solutions and niche application provider for the IoT, has launched the first eSIM-enabled electric car in the world, in partnership with Rimac and Etisalat in UAE. This is also the first time a supercar has been eSIM-enabled. The supercar, with the eSIM download and the activation process, were demonstrated at GITEX 2016 in Dubai.

"Etisalat is a market innovator and is pleased to work with partners such as RIMAC and QuarkSe to develop the new generation of connected cars. Etisalat is always in the forefront of innovation," said Rashed Majed Al Abbar, Vice President Consumer Innovations at Etisalat.

eSIM will gradually replace the classic physical SIM card. It will enable a quick and easy activation process for a much wider array of devices than before, such as wearables, smart metering, smart city elements and cars, as well as mobile phones, laptops and tablets.

"Allowing our customers to connect their Rimac Concept S supercar for telematics and support with the best network at any location and to use the mobile number they wish is in line with our promise to deliver the best customer experience with state-of-the-art technology," said Mate Rimac, founder and CEO of Rimac Automobil. "QuarkSe is supplying a disruptive solution to the industry, and we are glad to have Etisalat as the first mobile operator to deliver eSIMs over the air to our cars."

"By adopting the new eSIM Phase 2 GSMA standard of Etisalat, QuarkSe and Rimac are leaders in the next generation of mobile services. We are in the frontiers of technology adoption aiming to deliver outstanding customer experience with our local profile assistant (LPA) software module," said Luiz C. G. Silva, CEO of QuarkSe.

"This is an epochal market shift – the eSIM will be present in 90% of the devices in five years, from wearables to cars, and QuarkSe will support this transition to a more flexible mobile ecosystem," added Silva.

WORLD SPACE RISK FORUM

UNLOCKING BUSINESS IN SPACE

Biennial Event • Dubai • November 2 - 4, 2016

The World Space Risk Forum (WSRF) is the largest specialist gathering of its kind, bringing together satellite operators, manufacturers, space agencies, risk managers, brokers, underwriters, lawyers and capital providers to network and learn more about the threats we face as an industry. For this year's conference, to be held in Dubai from 2nd to 4th November, the theme is "Unlocking Business in Space".

The WSRF provides a forum to understand risk implications from new technology and innovations and ways to mitigate these risks. We expect more than 400 attendees worldwide for far-ranging discussions on topics including manufacturing and design innovations, regulatory and legal trends and implications, cyber and space debris risks, access to capital and impact of technology and new applications.

Join us for the world's leading space risks conference at The Fairmont The Palm, Dubai. More information and registration: www.worldspaceriskforum.com

Can Big Data Solve **Satellite Interference**

The term 'Big Data' is being increasingly used across multiple industries, but there hasn't really been much of an explanation about what it actually means, as the term has different interpretations to the various parts of the industry

At IRG, we are just starting to learn how it may be used to benefit interference mitigation. It is an enormous concept, as the name denotes, but if we can learn how to use it properly, collect the data and ask the right questions of that data, we can use it to make decisions, solve problems and educate.

So what is 'Big Data'? And how does it relate to satellite interference? To get a better idea of what Big Data means we need look no further than the Internet and the billions of people - and things - that are connected to it. Data is literally everywhere, to a point where it can seem quite overwhelming. By 2020, the United Nations Economic Commission for Europe forecasts that the amount of data on a global scale will reach approximately 40 Zettabytes. Imagine using this Data with new processing techniques so that we solve future interference scenarios at a faster rate based on the past. This, of course, can be applied to any industry.

What if, through predictive analytics and being able to join the dots quickly, value can be extracted from that data? The more we can analyse quickly and effectively will gain accuracy and used to evolve decision-making and problem solving. There is so much data out there so, instead of letting it simply exist, why don't we start to use it in a positive way?

How do we extract value from Big Data?

First of all we have to collect, core and relevant data. Our industry probably has this locked away and in different formats that make this idea difficult at this point in time, especially in the case of a subject such as interference. But, it is the first step and the collection of data will be a continuous process and automation will play its part here.

Big Data allows prediction and solution through statistical analysis and we can learn so much from the data that we have access to through a technique called Deep Learning. Deep Learning is the emerging technique that when applied enables computers to identify items of interest from large quantities of data and identify relationships between that data. There is plenty happening in terms of the evolution

of Big Data and the techniques that may be applied to extract meaningful information.

So what does this mean for satellite interference and how does Big Data fit in?
IRG is very conscious of this shift to Big Data and has also recognised the benefits that it can offer to the satellite industry, as it has done in multiple industries already. It is important that IRG doesn't 'miss the boat' in terms of taking advantage of the positive effect that Big Data analytics could potentially have on the problem of satellite interference, but we need to start working on this in earnest – now.

The frustrating issue of satellite interference is something that is still causes problems to users of satellite systems. However, it is also an issue that is being aggressively tackled by both industry bodies and companies. Highly experienced engineers continue to work tirelessly to make the business of identifying and eradicating interferers a great deal easier than in the past. Interference is often completely unnecessary, yet holds consequences for the industry in terms of disruption and money. Pinpointing the source of the problem means a sharp increase in using resources and personnel, and excessive pressure to resolve it quickly. The vast majority of instances of interference come down to improper installation of ground equipment, lack of training, poor ground equipment manufacturing, and a lack of adherence to industry standards and guidelines. However, as we have seen very specifically in recent times, political motivation can also lead to incidents of malicious jamming - and this is extremely challenging to deal with.

But could analysis of all satellite interference data and relevant data that probably exists within the internet, help us to fundamentally address the interference issue? If we retain every statistic, every incident, every detail of satellite interference, eventually as our Data store grows we can apply deep learning methods to it in order to help us to predict and resolve future incidents and potentially help stop them occurring in the first place. By collecting those statistics, adding the analysis from interfering signal characteristics to the Data store, certain "signatures" could be extracted that could lead to possible auto-classification of interference types and better user-friendly tools to progress our mission of mitigating interference.

"For years, quantum computing was largely a branch of fundamental physics and computer science, but it is gradually being harnessed in technologies with the potential to support ground-breaking and creative applications such as high precision measurements and medical imaging"

MARTIN COLEMAN, Executive Director, Satellite Interference Reduction Group (IRG)

IRG has begun building a repository of the basics such as articles, statistics and presentations that inform us about satellite interference. It is a very small start, but, for once everything the group has presented since 2011 (and some from earlier events) is now in one place, and growing. This can be found via the IRG website (www.satirg.org) or directly at http://data.satirg.org.

However, this is just the beginning and there is a great deal that the industry must learn before it can begin to employ Deep Learning to any Data. More recently, my attention has been drawn to the emergence of quantum computing technologies and the natural tie with Deep Learning machines, etc. However, this may have other effects. With our industry now firmly concentrating on CyberSecurity the new technology of quantum processing poses an interesting problem to our industry, certainly over the next decade or so. Quantum processing fundamentally threatens to undermine even the most sophisticated cybersecurity systems installed by businesses and governments. The processing power is so great it is that there is a one-in-seven risk that these technologies will undermine some of the most critical public-key cryptography tools within the next 10 years, and a 50% risk that many of these tools will be obsolete by 2031. With Public-key cryptography the foundation for digital commerce within many large organisations, including financial institutions, online retailers, and government agencies.

The threats stem from the power of quantum computing to execute tasks far beyond the reach of conventional computers. Existing computers use long strings of "bits" that encode either a 0 or a 1. By contrast, quantum computing enables the bit to embody the 0 and 1 states at the same time. By manipulating a large collection of quantum bits, known as qubits, a quantum computer can process countless configurations of 0s and 1s simultaneously.

For years, quantum computing was largely a branch of fundamental physics and computer science, but it is gradually being harnessed in technologies with the potential to support ground-breaking and creative applications such as high precision measurements and medical imaging.

We at IRG think that CyberSecurity is a digital form of interference hence our interest is peaked. Also, we try to keep ahead of the technology game to help bring new thinking to the table and ensure that we as an industry are not too short-sighted in our approach to the future. PRO

by Martin Coleman, Executive Director, Satellite Interference Reduction Group (IRG)

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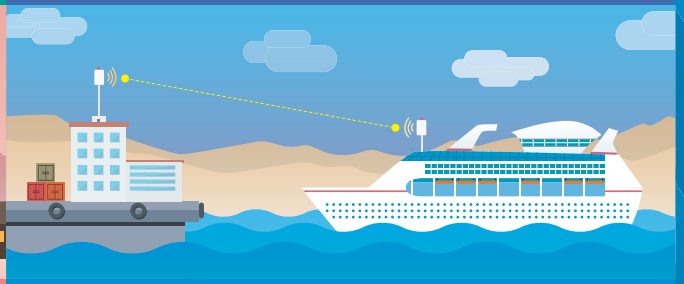
APPLICATIONS

Connecting remote locations to operator POPs

Reliable connectivity in adverse climatic conditions

Safe to deploy in hazardous locations



Off-shore wireless links

Fun Times

The third BroadcastPro Masters Cup took place at the Emirates Golf Club in Dubai on October 27, 2016. Players from the industry enjoyed playing an 18-hole round, followed by a networking dinner and a host of prizes

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BROADCASTPRO GOLF DAYS

Turkey to host second GSS

The second Global SatShow on November 29-30 will feature a host of opportunities to interact with industry professionals from satellite companies around the world. The show will be held at Istanbul's Haliç Congress Center

Hakan Kurt, Chairman and CEO, medyacity.

The format of the Global Satshow features a CEO summit, six future maker sessions and a 5,000sqm exhibition floor with exhibitors from every aspect of the satellite industry. Hosted by ESOA and organised by medyacity, the Global SatShow provides a premier opportunity to meet the entire industry under one roof. ESOA is a non-profit organisation established with the objective of serving and promoting the common interests of satellite operators. The Association today represents the interests of all EMEA satellite operators who deliver information communication services across the globe.

The show boasts a repertoire of ministers, satellite operators, launchers, telecom operators, teleport operators, more than 400 international TV channels and more than 10,000 trade visitors comprising satellite and telco executives.

The Global Satshow is set to be an efficient business development platform for regulating the World Satellite Market. It will discuss future strategies and exhibit the latest developments in technology through conference sessions, the exhibition and exclusive business meetings. Keynote speakers will feature CEOs from Arabsat, Avanti, Es'hailsat, Hellas-sat, Inmarsat, Turksat and Azercosmos.

Hakan Kurt, Chairman and CEO of medyacity, believes the event will prove to be the voice of satellite operators in Europe and EMEA. Another major factor contributing to the exhibition's race to the top is the dynamism in the satellite space industry within Eurasia and the Middle East.

The show will provide a great opportunity for the leading companies of the industry to have a glimpse of new business and trade opportunities, target and market-oriented analyses of labour markets and business potentias in the industry., with the contribution of the industry steering participants.

One session, Address: Colony Street, No: 2025, Mars, is expected to draw great attention and interest on November 29, the first day of the event. CEO Bas Lansdorp of Mars One, a non-profit foundation, will deliver a presentation. Lansdorp will illustrate Mars One's aspiration to establish a colony on Mars, the only planet in the solar system that is seemingly an alternative to the Earth for humanity, with its surface conditions and the existence of water, and will further elaborate on the reasons why and how they will do this.

The Mobility via Satellites session features speakers from global mobility leaders, 5G technologies and M2M communications in order to discuss upcoming satellite mobility solutions, including those focused on telecommunications, navigation and more, based on current and future requirements by globe, region and vertical.

Khalid Balkheyour, Chairman and CEO of Arabsat, says: "Global Satshow is an efficient business development platform for the satellite market to discuss future plans and technological developments."

Ali Ahmed Al Kuwari, CEO of Es'hailsat, says: "Global Satshow has become an important event in the annual calendar for the global satellite industry, where CEOs and key decision-makers exchange ideas and explore cooperation and partnership opportunities. We are happy to support this event and wish everyone a successful show."

The CEO Summit, which will feature CEOs of global satellite operators from around the world, is the session expected to create the biggest impression this year. Eight CEOs will share their predictions for future of the satellite industry during the summit, themed on future cooperation among regional and global satellite operators. With a total market value exceeding $100 billion, the CEOs will steer the global satellite markets from Istanbul. PRO

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Insuring Space

Laurent Lemaire, Chairman and CEO, elseco, speaks about how the satellite insurance industry is maturing, and how space exploration is essential to the development of mankind

Though most of us still equate space with astronauts, rockets taking off with a fiery tail and the search for water on Mars, the fact is that space is already an integral part of our lives and we are just as much a part of it. Whenever we watch TV, send an SMS, receive an email or simply log onto the internet, we are having an engagement with the wider world, so to speak.

Gradually, we are beginning to realise that space exploration is essential to our future and the perpetuation of the human race. It was Marshall McLuhan who put the phrase most succinctly when he called the world a global village. Our use of space has truly underscored that sentiment and made it all the more relevant.

The leading global forum for space development, the World Space Risk Forum (WSRF), will witness more than 400 of the world's top satellite operators, manufacturers, launch providers, space agencies, risk managers, insurance brokers, underwriters, lawyers and capital providers coming together to focus on 'Unlocking Business in Space'.

The time couldn't be more opportune. If we look at technology and the breakneck strides that the computer industry has made, this is rivalled only by the gigantic strides in aviation and space travel. No two other disciplines in the world come even close. We now stand on the cusp of combining these two major industries into a single initiative with the harnessing of the resources of space at a pace that might even surprise us.

It might well be in our lifetimes that, because of space, crossing continents on Earth in a mere fraction of the time taken today could well become a reality. In addition, space travel and the establishment of bases in space could become the norm.

But behind the romance, the excitement and the mystique is the practicality of cost.

"It might well be in our lifetimes that, because of space, crossing continents on Earth in a mere fraction of the time taken today could well become a reality"

LAURENT LEMAIRE, Chairman and CEO, elseco

In space there is no such thing as a free ride, and when you are experimenting, the risk element has to be factored in.

These logical and relevant reasons make this forum extremely important. The WSRF strikes a practical and timely note in paying attention to the bottom line. The first major step is not just to get your stars in a row, if one can paraphrase the statement, but to get all the players in this grand adventure onto the same page on costs and risks.

Space exploration and its commercial use depend on all those who gather in Dubai having belief, but also conviction, that business in space is profitable and that such profitability is not exploitative, but a partner in progress.

The transformation in this Earth to deeper space relationship is slated to be swift and dramatic. The WSRF sees itself as a catalyst in many ways, and at the same time, a very concerned and close ally in maintaining equilibrium and balance so that we do not hurtle into developments prematurely.

Game-changing innovations, disruptive technology, digital revolution and other exciting movements once limited to the FANG/GAFA-like companies are now the buzz words of our world.

With the advent of nano-satellites and drones and ultra-high throughput spacecraft, the permutations are endless. In the light of such a pace, conferences like the WSRF assume strategic importance because they validate and signpost the path we must collectively take for the future.

During the three days, we expect the Forum to create awareness and fresh thought and bring to the table issues concerning insurance coverage, manufacturing and design innovations, regulatory and legal trends and implications, cyber and space debris risks, access to capital, and the impact of technology and new applications. PRO

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