SATELLITEPRO

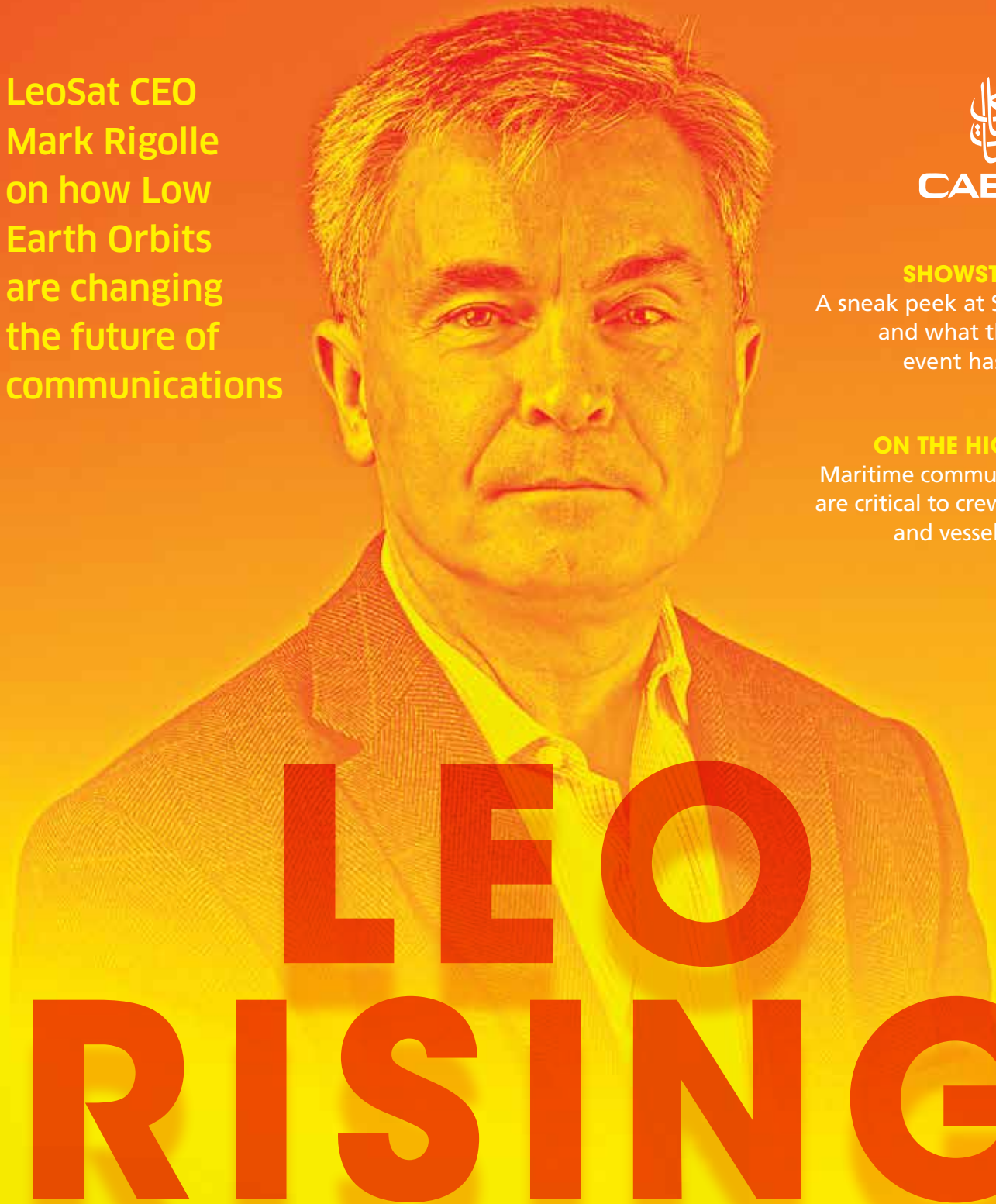## TECHNOLOGY INTELLIGENCE FOR THE SATCOM MARKET

MIDDLE EAST

LeoSat CEO Mark Rigolle on how Low Earth Orbits are changing the future of communications

CABSAT

SHOWSTOPPERS
A sneak peek at SATEXPO and what this year's event has in store

ON THE HIGH SEAS
Maritime communications are critical to crew welfare and vessel tracking

LEO RISING

HIGH QUALITY PREMIUM CONTENT AT 25.5°E/26°E MENA BROADCAST HOTSPOT

Es'hailSat's high powered satellites provide the key infrastructure to media networks and broadcasters to distribute services such as linear TV, video on demand, high definition TV and 4K TV, across the region.

Space to deliver your vision

SatEditorial

One Small Step for Man

Welcome to the March edition of *SatellitePro ME*. Did you know last month marked a first in the UAE's cubesat project? Nayif-1, a cubesat created by students of the American University of Sharjah with help from MBRSC engineers, launched aboard a PSLV rocket from ISRO, and transmitted its first signal. The message was from His Highness Sheikh Mohammed bin Rashid Al Maktoum, the Vice President and Prime Minister of the United Arab Emirates and Ruler of Dubai. Originally in Arabic, translated to English it read: "The renaissance of peoples, nations and civilisations starts with education; and the future of nations starts at their schools." What a profound thought.

In this issue we have the pleasure of speaking with Mark Rigolle, CEO of LeoSat Enterprises, about how LEO orbits are changing the future of communications and mobility. With LEO orbits being nearly 25 times closer to Earth than traditional GEO orbits, there are significantly reduced levels of latency. This makes it all the more important for tasks like communications where, as we all know, low latency is key. In the last 10-years data usage has exploded, with increasingly more data being created in the past two years than in the entire previous history of the human race. According to Rigolle industry pundits determine that by the year 2020, about 1.7MB of new information will be created every second for every human being on the planet. Read more in our cover story.

In other news, I'm very excited to see everyone from the industry at CABSAT this month. A key new feature is the SATEXPO. We have all the information on the different panels and discussions which will take place there, so please read through the CABSAT section in the magazine to get the lowdown on what's taking place. I'll be running the halls as usual, but if you'd like to fix an appointment, please get in touch with me.

Have a wonderful March. 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

In this edition:

YAMAL-300K

YAMAL-401

YAMAL-402

YAMAL-202

GAZPROM
SPACE SYSTEMS

YAMAL-402 55E   YAMAL-202 49E   YAMAL-300K 183E

Nayif-1 transmits its first message from space

>> MBRSC has announced that Nayif-1 has transmitted its first message in Arabic from space – a quote by His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai. The quote was in Arabic but translates to:

"The renaissance of peoples, nations and civilisations starts with education; and the future of nations starts at their schools" – His Highness Sheikh Mohammed bin Rashid Al Maktoum.

Ground stations all over the world that operate on amateur radio bands were able to receive the message. The message was transmitted from Nayif-1's ground station at the American University of Sharjah (AUS), under the supervision of a team of engineers from MBRSC and university professors.

+ **www.aus.edu**

+ **www.mbrsc.ae**
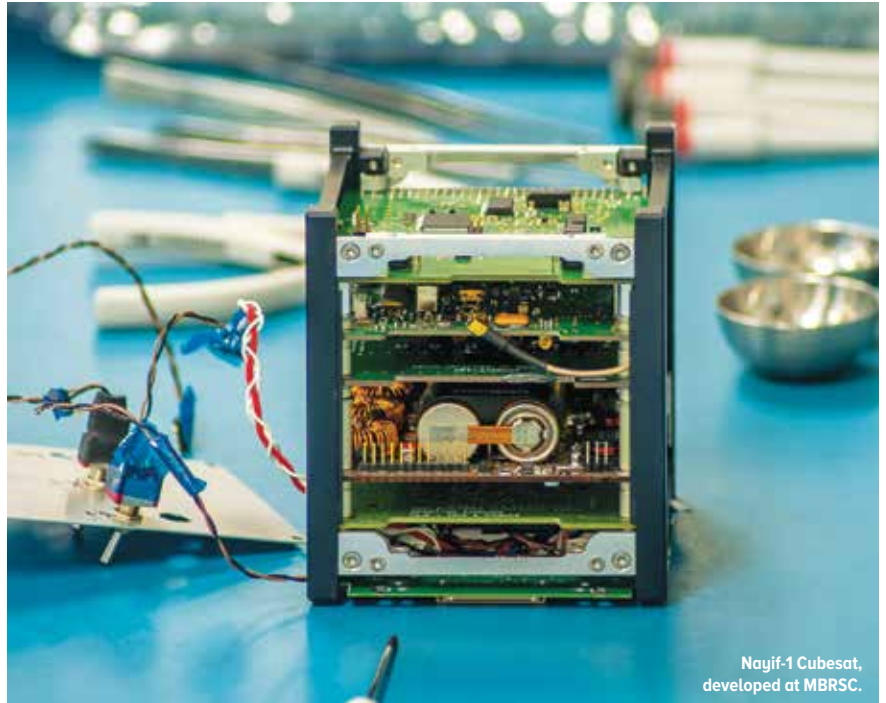
Nayif-1 Cubesat, developed at MBRSC.

EUTELSAT ADDS 150 NEW HD CHANNELS FOR MENA

With almost 150 HD channels (up 40% in one year), of which 100 are exclusive, the 7/8° West position hosted by Eutelsat and Nilesat satellites leads the transition to HD in the Middle East and North Africa.

Free-to-air channels in HD now outnumber pay, with strong brands launched exclusively at this neighbourhood including five channels launched by Kuwait TV and Echourouk News HD, the 24/7 Algerian news channel.

HD TV continues to gain ground across the broadcast satellites operated by Eutelsat Communications, with the 230 HD channels launched in 2016 equalling the total number launched during the previous two years.

The symbolic landmark of 1,000 channels was crossed this month with the launch at Eutelsat's HOTBIRD neighbourhood of CGTN HD, the news and current affairs channel of China's CCTV media organisation.

+ **www.eutelsat.com**

UAE TO SET UP COLONY ON MARS BY 2117

His Highness Sheikh Mohammed bin Rashid Al Maktoum and Abu Dhabi Crown Prince and Deputy Supreme Commander of the UAE Armed Forces His Highness Sheikh Mohamed bin Zayed Al Nahyan have unveiled the Mars 2117 Project, which aims at its final stage to establish the first inhabitable human settlement in Mars by 2117.

His Highness Sheikh Mohammed bin Rashid said that exploring space is an old human dream, and the objective is for the UAE to lead international efforts.

+ **www.space.gov.ae**

YAHSAT HOSTS PARTNER FORUM IN ABU DHABI

Yahsat hosted its annual service partner forum in Abu Dhabi this week. Yahsat welcomed existing and new YahClick service partners from across its footprint in the Middle East, Africa, and Central and Southwest Asia.

The forum, now in its fifth edition, is designed to enable partners to exchange local knowledge and industry insight on regional challenges, discuss market opportunities and plan initiatives jointly with Yahsat's satellite broadband service, YahClick.

The operator provides multi-purpose satellite solutions (government and commercial) for broadband, broadcast, government and communications use across the Middle East, Africa and Europe, in addition to Central and Southwest Asia.

Yahsat is the first company in the Middle East and Africa to offer multi-purpose Ka-band satellite services.

+ **www.yahsat.ae**

Iridium's NEXT sats to launch in June

» Iridium has announced it has received a targeted launch date of mid-June for the second mission of ten Iridium NEXT satellites. Originally anticipated for mid-April 2017, the date has shifted due to a backlog in SpaceX's launch manifest as a result of last year's September 1 anomaly. This second launch will deliver another ten Iridium NEXT satellites to low-Earth-orbit (LEO) on a SpaceX Falcon 9 rocket. SpaceX is targeting six subsequent Iridium NEXT launches, approximately one every two months, thereafter.

"After such a successful first launch, we are eager to maintain the momentum until our network is completed," said Matt Desch, Iridium CEO. "Even with this eight-week shift, SpaceX's targeted schedule completes our constellation in mid-2018."

This announcement comes as Iridium has successfully connected the first Iridium NEXT satellite via its crosslinks into its global LEO constellation. The new satellite is expected to begin providing service to Iridium customers in the coming days. This marks a major milestone for the Iridium NEXT programme, as the testing and validation phase is ahead of schedule and the satellites are working well.

"Our team at our Satellite Network Operations Centre has been working around the clock to confirm the health and performance of these new satellites," said Scott Smith, COO at Iridium.

+ www.iridium.com
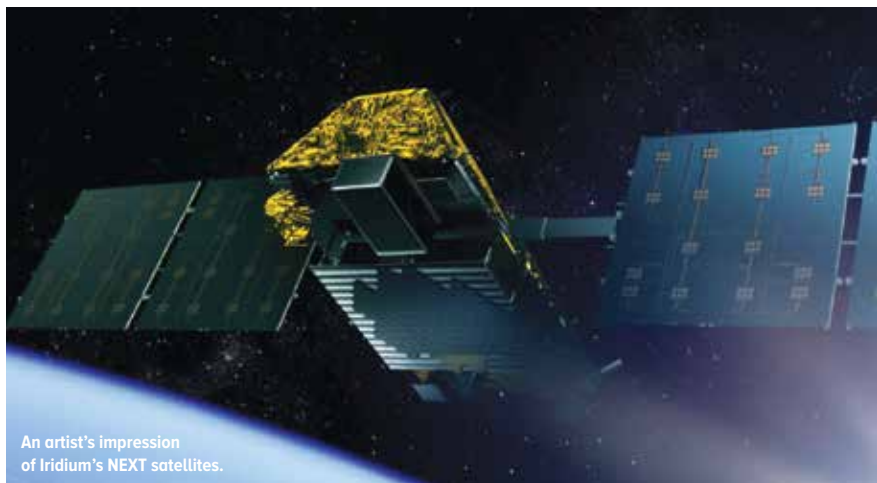
An artist's impression of Iridium's NEXT satellites.

MARLINK AND PETSE EXTEND PARTNERSHIP TO PROVIDE VSAT

Petroleum & Energy Services (PETSE) and Marlink have signed a new five-year agreement for supply of a second Terralink HUB communications service concept with associated satellite airtime. The new agreement expands further the comprehensive range of VSAT communication services in KSA that was introduced through a similar deal signed in 2015, and will additionally support PETSE's ambition to establish dedicated M2M services in the region.

A licensed VSAT services provider, industrial distributor and oilfield service contractor in the Kingdom, PETSE will now have an even stronger presence as a full VSAT service provider, enabling high levels of IP connectivity with support from Marlink on the Terralink HUB platform.

Following this additional HUB acquisition and airtime contract, PETSE ensures its ability to meet the capacity requirements of its existing and future customer base while optimising its own performance and organisation. The company will establish its second HUB in Riyadh.

+ www.marlink.com

PEACEKEEPING FORCES SELECT SAFEFLEET TELEMATICS

Globalstar SmartOne.

Globalstar has announced that two EU peacekeeping organisations have deployed the SafeFleet Telematics fleet management solution, incorporating Globalstar's SmartOne device.

The European Union Monitoring Mission in Georgia (EUMM) and EU Rule of Law Mission (EULEX) both chose SafeFleet Telematics to track and manage fleets, monitor driver behaviour and safeguard personnel and civilian passengers in Georgia and Kosovo.

Both organisations have responsibility for maintaining law and order, as well as carrying out judiciary duties and policing.

+ www.globalstar.com

+ www.eumm.eu

SRG SSR CONFIRMS LONG TERM COMMITMENT TO HOTBIRD

Eutelsat has announced that SRG SSR, Switzerland's public TV and radio broadcaster, has confirmed its long-term commitment to the HOT BIRD neighbourhood with the multi-year renewal of one transponder that complements a second transponder already booked on a long-term basis.

SRG SSR occupies the two HOTBIRD transponders to broadcast seven channels (RTS Un, RTS Deux, SRF 1, SRF Zwei, SRF Info, RSI LA 1, RSI LA 2) exclusively in HD quality to Swiss homes beyond range of quality terrestrial reception and for Swiss citizens living abroad. The capacity is also used for HbbTV services.

+ www.eutelsat.com

+ www.srgssr.ch

Statu Shipping chooses Marlink VSAT

>> Istanbul-headquartered Statu Shipping has chosen Ozsay Satellite Communications to migrate its 11-strong bulk container vessel fleet to Marlink's VSAT-based satellite communication services. Marlink will deliver high-speed maritime broadband using its market-leading Sealink VSAT and new 1GB Allowance plans managed by the XChange communications management system, enabling Statu Shipping to benefit from higher throughput and improved reliability and stability on its real-time fleet monitoring and planned maintenance systems.

Statu Shipping's primary driver for migrating its fleet to VSAT was to achieve more bandwidth and uptime for the Navatom fleet management system, developed by subsidiary software company Hive. Navatom is a cloud-based web application that shows vessel and company activity in real time using cutting-edge web technologies. Since its deployment throughout Statu Shipping's fleet, Navatom has provided significant improvements in management performance.

Statu Shipping vessels equipped with Marlink VSAT.

However, the Hive team advised Statu Shipping that migrating to Marlink VSAT with Ozsay Satellite Communications would unlock the potential of their solution.

Marlink and Ozsay Satellite Communications have already migrated six Statu Shipping vessels to the Sealink service, with the remaining five expected to be completed by June 2017.

Early reports show a significant reduction in the numerous issues experienced using the Navatom solution,

which previously suffered from regular disconnects and slow connection speeds.

Statu Shipping's move to VSAT began with a trial of the Sealink 1 GB Allowance plan, with speeds of 3096/512Kbps on an 83cm antenna. Following successful completion of the three-month trial, the company opted to use 1GB Sealink Allowance on all of its vessels, in addition to installing Marlink's advanced XChange system.

+ www.marlink.com

TELENOR SELLS INDIAN BUSINESS TO AIRTEL

On 23 February 2017, Telenor entered into a definitive agreement with Bharti Airtel Limited (Airtel), whereby Airtel will take full ownership of Telenor India.

Airtel is India's largest wireless operator, with over 269 million subscribers and a revenue market share of over 33%. As the new owner, Airtel will take over Telenor India's spectrum, licences and operations, including its employees and customer base.

+ www.telenor.com

+ www.airtel.com

Sigve Brekke, CEO, Telenor.

ARABSAT AND ONT LAUNCH TUNISIAN PLATFORM ON BADR-4

Arabsat and ONT have announced the signing of an agreement to launch a Tunisian broadcast platform on Arabsat Badr-4 at 26°E.

This platform operation will start by end of Q2 2017 and will give Tunisian and regional broadcasters direct access from Tunis to the growing 26°E neighbourhood.

"This platform is the result of the long-term cooperation between Arabsat and the Office National de la Telediffusion Tunisien (ONT) which had started several years ago," said Khalid Balkheyour, CEO of Arabsat. "It will enhance our relationship with Tunisia, where Arabsat is already present through our satellite control station."

"Expanding our cooperation with Arabsat will enable us to meet our customers' needs and position ONT as a true one-stop shop. We believe the 26°E neighbourhood will continue its growth through the addition of exclusive TV channels," added Dhaker Baccouch, CEO of ONT.

+ www.arabsat.com

NSSL GLOBAL ANNOUNCE UPGRADE TO VSAT NETWORK

NSSL Global has announced a major upgrade to its VSAT network with the activation of a new beam which will extend Ku-band coverage across the entire South Indian Ocean. The new beam significantly extends the reach of NSSLGlobal's VSAT network in an important international shipping route, providing its maritime customers with ever wider and more robust connectivity at sea.

The new Ku-band beam is available to NSSLGlobal customers from March 2017 and runs on Japanese satellite operator SKY Perfect JSAT's new JCSat 110A satellite, launched in late 2016. Operated from Perth, Australia, the beam covers the area from the west coast of Australia to the waters around Mozambique and the eastern coast of Africa. This will further extend NSSLGlobal's satellite coverage, improving the user experience for vessels sailing across the Atlantic Ocean, around Cape Point and on to Southeast Asia, Australia and India.

+ www.nsslglobal.com

NORTHTELECOM APPOINTS GROUP CFO

NorthTelecom has announced the appointment of John Brophy as Group Chief Financial Officer (CFO).

Brophy comes to NorthTelecom from a strong background in finance and accounting, which will be of great value to the company as NorthTelecom continues to grow.

He originally studied economics at the London School of Economics before working in the City of London for 10 years with Bank of America and Unibank.

He has a long-standing business consultancy relationship with Manchester Business School in the UK, and has worked with other business schools in the UK and abroad.

"I am delighted to be joining one of the leading companies in the sector, particularly at this exciting time in NorthTelecom's development as it continues to grow and expand its global presence," said Brophy.

+ www.northtelecom.com

THURAYA OPENS OFFICES IN THE US

Thuraya Telecommunications Company announced it has opened an office in the US.

Located centrally between Washington, DC and Tysons Corner, Virginia, the new office offers close proximity to investors, key government and commercial customers and partners.

Thuraya, a leading mobile satellite services (MSS) operator, is headquartered in the UAE and has offices in Singapore. Its newest address marks a further step in the development of its ongoing FUTURA project and next-generation constellation plans.

With roaming agreements established in 175 countries, Thuraya is an international operator providing reliable roaming services with 389 agreements worldwide, including with AT&T and T-Mobile in the US.

+ www.thuraya.com

Samer Halawi, CEO, Thuraya.

ISRO launches 104 satellites in one mission

>> India has launched a rocket carrying 104 satellites in a record single mission on February 15, as its space agency looks to zoom ahead in the commercial space race.

The rocket blasted off from the southern spaceport of Sriharikota.

The PSLV launched the 714-kg Cartosat-2 satellite for earth observation and 103 co-passenger satellites, together weighing about 664kg, at lift-off. The satellites were placed in an orbit 505km above the Earth.

Of the 101 international co-passenger nano-satellites, 96 were from the US, and one each from Israel, Kazakhstan, the Netherlands, Switzerland and the United Arab Emirates. The weight of all the satellites at launch will total 1,378 kg. The PSLV-C37 also carried two ISRO nano satellites — INS-1A and INS-1B.

India has set a world record as the first country to launch the most satellites in one go and leave behind Russia, which launched 39 satellites in a single mission in June 2014.

"We are making a century by launching over 100 satellites at one go," S. Somnath, a Director at the Indian Space Research Organisation (ISRO), was quoted as saying at a science convention.

+ **isro.gov.in**

ISRO's PSLV rocket takes off with 104 satellites on-board.

INTELSAT'S EPIC^NG COVERAGE INCREASES WITH INTELSAT 33E

Intelsat has announced that Intelsat 33e, the second of the Intelsat Epic^NG high throughput satellites (HTS), successfully completed all in-orbit testing and entered service on 29 January 2017.

Manufactured by Boeing and launched in August 2016, Intelsat 33e is equipped with the most advanced digital payload on a commercial spacecraft. With this exceptionally flexible HTS payload design, Intelsat 33e, operating from 60° East, will extend Intelsat's HTS services in C-, Ku- and Ka-band to Europe, the Middle East, Africa, Asia Pacific, and the Mediterranean and Indian Ocean regions.

This will enable the delivery of enterprise-grade broadband services to fixed and mobile network operators, aeronautical and maritime mobility service providers, and government customers. Intelsat 33e's powerful spot beams will also enable the distribution of regionalised content for media customers operating in the region.

The customers committed to Intelsat 33e and the applications supported reflect the vast geographic coverage of the satellite.

+ **www.intelsat.com**

TAQNIA SELECTS EUTELSAT FOR HTS AERO SERVICES

Saudi Arabian Airlines uses Taqnia's Aero platform.

TAQNIA SPACE Aero services platform has signed an agreement with Eutelsat for HTS Aero services. The multi-million-dollar multi-year deal covers spotbeam capacity on the EUTELSAT 3B satellite in order to provide HTS connectivity services to Taqnia Space Airline clients over MENA, Mediterranean and European regions.

Bandwidth on EUTELSAT 3B will support live TV, onboard voice/GSM and broadband connectivity from Q3 2017 on commercial aircraft connected to the TSC Aero platform.

Saudi Arabian Airlines, one of the leading airlines in the Middle East, will be the first commercial airline connected to the TSC Aero platform, with more than 100 medium and long-haul aircraft.

Passengers will enjoy the Taqnia Space Connectivity package through their devices – laptops, tablets, smartphones – on domestic flights over Saudi Arabia and international flights over MENA, the Mediterranean and Europe.

His Excellency the CEO of Taqnia Space company, Engineer Abdullah Al-Osaimi, commented: "This cooperation with Eutelsat empowers Taqnia Space in the fast-changing landscape of inflight services. It supports our strategy to expand our TSC Aero platform to global coverage and capacity in order to satisfy demand driven by regional and international commercial airlines. Adding EUTELSAT 3B satellite capacity to the TSC Aero platform is a continuation of a growth plan initiated a few years back with the 5C satellite over the Middle East, that will be followed by two major satellite projects, SGS-1 (2018) and 6D (2019)."

+ **www.taqnia.com**

+ **www.eutelsat.com**

LEO RISING

Mark Rigolle, CEO of LeoSat Enterprises speaks exclusively with *SatellitePro ME* about how LEO orbits are changing the future of communications and mobility

LEO satellites orbit the earth much closer than GEO satellites, making them much more effective for communications and mobility applications.

Today the world is increasingly data-driven, cloud-based and transnational, creating ever-growing demand to move large quantities of data quickly and securely around the globe. In the last 10 years data usage has exploded, with more data created in the past two years than in the entire previous history of the human race. Industry pundits determine that by the year 2020, about 1.7MB of new information will be created every second for every human being on the planet.

The availability of data, a new generation of technologies such as IoT and M2M, and a cultural shift toward data-driven decision-making and automation are continuing to drive our dependency on Big Data and fast and resilient communications networks. Bandwidth requirements are also rising with

the demand for always-on connectivity, and businesses are increasingly looking at how technology and connectivity can improve operational efficiency.

The question is: how can satellite networks start to become truly relevant in this wave towards increased dependency on Big Data and cyber security?

Mark Rigolle, CEO of LeoSat, says: "It is true to say that satellite has up until now been viewed as a last resort or gap filler for data transport, as traditional satellite networks operating in geostationary orbit (GEO) suffer from high latency and typically provide little throughput. While only annoying for voice and video applications, for data communication it is truly a limiting factor in reaching the desired performance or simply

"For customers, this unique use of technology allows for premise-to-premise connections with no terrestrial touch-point in-between and sets a new bar for high-speed networks"

MARK RIGOLLE, CEO, LeoSat Enterprises

"With LEO satellites orbiting the Earth at around 1,500km – that's 25 times closer than GEO satellites (36,000km) and five times closer than MEO satellites (8,000km), the case for using LEO for data networking becomes compelling. These low Earth orbit (LEO) satellites bring latencies down from 500+ms to only 20ms or so, and importantly they can now measure up to the latencies typical for terrestrial infrastructure," says Rigolle.

In addition to the issue of latency, as we move to a more data-centric world the traditional satellite architecture of 'bent pipe' is very much showing its limitations. Bent pipe means that whatever is transmitted to a satellite needs to come down straight away.

Rigolle explains: "While this has worked well to connect our continents back in the 60s and 70s, and still works well for DTH video applications, it does not work well for data. Using that type of technology for data requires the use of many Earth stations with antennas that are connected to terrestrial infrastructure to carry traffic to its final destination and/or beyond the reach of the satellite. This is suboptimal, to say the least, and comes with a great amount of expense and operational requirements."

So, while LEO as such will solve latency issues typically associated with satellite, the real game-changer for data will be achieved by stepping away from traditional bent pipe and taking satellites to the next level, to spatial networking, according to him.

"One such system in development is LeoSat, consisting of a constellation of 78 satellites which form a fully redundant mesh network interconnected through laser links. This creates an optical backbone in space which is about 1.5 times faster than fibre. Data can be transferred from satellite to satellite without having to come down to Earth, as is required in a bent pipe system. This way, traffic can be sent from where it originates all the way across the globe to where it needs to terminate without touching anything on the ground until it reaches its destination. As obvious as this architecture may sound from a networking perspective, up until now it has not been available for high-speed data in the satellite industry.

"In addition, traditional satellite design only allows for modulation of data in RF, posing limitations for integration with terrestrial networks. In order for satellites to be seamlessly interoperable with terrestrial networks, either MPLS or IP, the satellites need to support full duplex and they also need to have routing and switching capabilities, similar to their terrestrial counterparts. With on-board processing (OBP) and MPLS networking as integrated features of the new LEO systems, they will be able to operate as a full duplex, spatial extension to terrestrial networks that can carry traffic to any place on earth, from pole to pole and from land to sea," explains Rigolle.

With LEO bringing all these advantages to the satellite market, allowing satellites to go beyond their traditional role of gap-filler, LEO systems will actually start to become a technology of choice for data communications.

New Opportunities for Multiple Market Segments
What can a new LEO data network offer? In sectors such as oil & gas, maritime, telecommunications, multinational enterprise and government services, LEO systems can solve essential communications and connectivity issues and meet the ever-growing demand to move large quantities of data quickly and securely around the world.

Rigolle says: "For a typical Fortune 1000 company, just a 10% increase in data accessibility will result in more than $65 million additional net income.

The key attributes of a system in low Earth orbit can be used for a number of applications, for example to provide 4G and 5G satellite backhaul to the cellular industry, give banks secure networks with their foreign offices, provide enormous uploading bandwidth required for oil & gas exploration, or allow internet access to passengers on cruise ships. LEO will not only provide a competitive advantage in the existing satellite services market, it will help to expand these markets by enabling new opportunities through previously unavailable levels of performance with true worldwide reach."

a showstopper for certain applications to work. So, whilst GEO remains strong in video, true data-driven applications such as 4G and 5G backhaul, remote management and enterprise connectivity require a fundamentally different satellite architecture that can solve the issues of latency, throughput, reach, mobility and security."

Latency Changes Everything
Network latency is defined as how much time it takes for a packet of data to get from one designated point to another. Ideally, in the world of data, latency needs to be as close to zero as possible in order to create a smooth user experience. For satellite networks, the closer you get to Earth, the less latency there is.

The oil & gas industry needs connectivity solutions with low latency and high throughput to improve productivity and on-shore/off-shore collaboration. Increasingly, modern rigs produce enormous amounts of data reviewed in near real time. Existing satellite networks cannot handle the bandwidth and speed requirements to move this amount of data quickly. The low latency and high throughput global data network in LEO will enable voice, video and cloud-based enterprise applications for digital oilfield communication, driving efficiencies and ensuring optimised connectivity.

As cellular protocols become more and more sophisticated and cellular use accelerates, there is an ever-increasing need to transport cellular signal for long distances at high speeds, in high volumes and in its native form.

Rigolle adds: "These growing backhaul needs are not being met by current terrestrial networks, and existing and planned satellite networks are too slow and the bandwidth too limited. For existing and emerging market telecom operators, LEO offers significant advantages as its latency, timing and transport are in compliance with the network standards of the newer 4G, 5G and LTE cellular systems. And with the continued growth in internet use, streaming media, smartphone use, mobile apps and the Internet of Things, the low latency of the LEO systems will become increasingly an attractive alternative to the high latency of GEO systems."

In the finance industry and in particular the trading sector, banks, hedge funds, trading firms and financial services companies are always looking for the latest technologies and innovations to stay ahead of the competition. With exchange technology and big data at the forefront as key differentiators for success, companies are looking to address the challenges of latency management and network connectivity. Low Earth orbit communications satellites with inter-satellite links can achieve lower latency and stronger end-to-end security compared to traditional terrestrial solutions used today, he explains.

When it comes to maritime, operators face significant problems getting adequate broadband networks to interlink ships

Mark Rigolle, CEO, Leosat Enterprises.

"With LEO satellites orbiting the earth at around 1,500 kms – that's 25 times closer than GEO satellites (36,000 kms) and five times closer than MEO satellites (8,000 kms), the case for using LEO for data networking becomes compelling"

MARK RIGOLLE, CEO, LeoSat Enterprises

to each other and to a main office, and to serve the ever-increasing data and internet needs of passengers and crew. On cruise lines, passengers are demanding more and more bandwidth to power consumer devices and for internet access.

"Existing satellite systems, most of which can only illuminate limited portions of the Earth from GEO or MEO orbits, cannot satisfy these needs. A LEO system with interconnected satellites can bring ships on-net, regardless of their global position, just as if they were a local network node, enabling operators to leverage the new smart ships digital infrastructure where cloud-based operations will improve efficiency, operational effectiveness and safety, as well as providing new business opportunities.

"The military and government sector

relies on a number of key attributes when it comes to communications networks. Critical operations require bandwidth-intensive applications, near real-time command and control, and advanced sensor capabilities. The proximity LEO satellites have to the Earth translates into lower latencies and better data rates. Security and resilience are also key attributes, and with a constellation of inter-connected satellites, data can travel from end to end across a single encrypted network, bypassing terrestrial infrastructure," explains Rigolle.

LeoSat – A New Communications Paradigm
There are a number of new LEO systems in development which will have a positive impact on data communications. Each of these forthcoming systems, be it Oneweb, SpaceX, Boeing or Telesat, brings different capabilities and opportunities for broadband communications.

"Our system, LeoSat, is focused solely on the business market and is being developed by Thales Alenia Space, a company with

unmatched expertise in designing and manufacturing low and medium Earth orbit constellations such as Iridium Next and O3B. The 78-satellite LeoSat constellation, effectively an MPLS network of routers in space, provides customers with very high throughput, low latency and highly secure communications between any two or more locations on Earth, independent of existing terrestrial networks.

This is achieved through deploying optical inter-satellite links (ISLs) between satellites, who in turn support symmetric connectivity to a ground antenna with speeds of up to 1.6Gbps and even 5.2Gbps where needed. Contrary to bent-pipe HTS solutions, gateways are not a prerequisite for LeoSat to operate its network.

"For customers, this unique use of technology allows for premise-to-premise connections with no terrestrial touch point in between, and sets a new bar for high-speed networks. In addition, data security is assured as data stays on LeoSat's physically separated satellite network for the entire

route, making it much less susceptible to monitoring, hacking or even disruption. Start of the launch of the constellation is expected in 2020," says Rigolle.

In the Middle East, it is clear that there are a lot of opportunities for growth in the data and mobility markets. From government applications to corporate networks, from cellular data solutions to the maritime sector: all markets present the need for faster secure communications in the MENA region.

"In this light, we are seeing a growing trend whereby FSS operators, looking to complement and expand their capabilities, are partnering with LEO satellite operators to provide combined GEO/LEO data services that cannot be supported by GEO alone. This trend (SES/O3B, Intelsat/OneWeb) is set to continue, and I am delighted to see that multiple FSS operators are in discussion with LeoSat as they see the value in partnering with us to offer the market enterprise-grade, low latency, extremely high-speed and secure data services worldwide," concludes Rigolle. **PRO**

"The key attributes of a system in low earth orbit can be used for a number of applications, for example, to provide 4G and 5G satellite backhaul to the cellular industry, give banks secured networks with their foreign offices, provide enormous uploading bandwidth required for oil & gas exploration or allow Internet access to passengers on cruise ships"

MARK RIGOLLE, CEO, LeoSat Enterprises

Communication
On the High Seas

Maritime communications are becoming more essential than ever to increase efficiency and crew welfare, along with advanced tracking capabilities
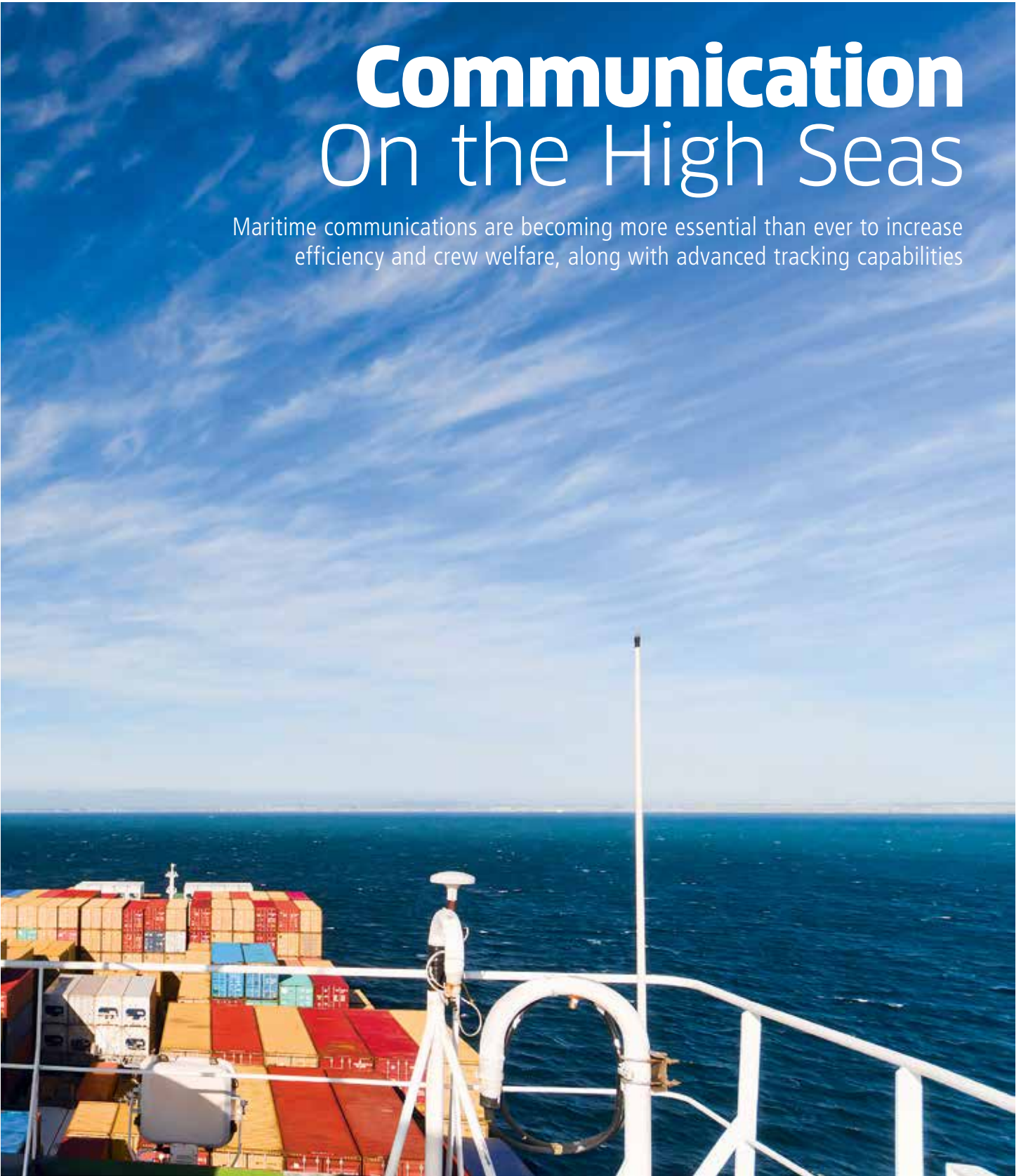
Gavan Murphy, Director of Marketing, EMEA, Globalstar.

Jens Ewerling, Director, Maritime Broadband – Cobham SATCOM.

From providing voice communications to fishing crews to enabling reliable Wi-Fi on oil support ships, satellite technology is vital to stay connected offshore, when GSM disappears just a few kilometres from land. Maritime customers are embracing the Internet of Things, and state-of-the-art tracking systems are helping ensure that maritime supply chain participants can reliably track their cargoes and the high-value vessels transporting them.

Gavan Murphy, Director of Marketing, EMEA, Globalstar, says: "Maritime businesses today need to maximise efficiency. Unscheduled downtime in a dockyard means lost revenues. Knowing where your vessels are and their condition, 24/7, enables this. Satellite solutions also help ensure crew safety in the dangerous environments mariners often face."

"Essentially the same rules apply to all maritime vessels: for reliable connectivity and voice communications, a satellite network is essential. Globalstar is used by military/ defence organisations in maritime contexts, as well as among commercial and leisure boat users. Our GSP-1700 satellite phone, marine kit and the SPOT Gen3 GPS satellite messenger are popular in the commercial fishing industry and by private yacht owners alike."

Jens Ewerling, Director, Maritime Broadband – Cobham SATCOM, thinks most

"Maritime businesses today need to maximise efficiency. Unscheduled downtime in a dockyard means lost revenues"

GAVAN MURPHY, Director of Marketing, EMEA, Globalstar

niches have their own needs from satcom. While the military use their own satellites and closed secure networks, in the commercial markets passenger vessels are looking for high bandwidth for many concurrent users, while merchant vessels are looking for the right coverage, reliability and level of investment.

"This is why it is important for us to have a full portfolio of antennas based on SAILOR VSAT technology alongside our Sea Tel customised range – requirements change by vessel type and every user is different, so we need to ensure they can choose a reliable Cobham-built antenna best suited to their needs," says Ewerling.

Julian Crudge, Director, Datacomms Division, Telenor, says the higher the number of users or the greater the complexity of

communications needs, the higher the speed and the more reliable the connection needs to be. In general, commercial vessels with the smallest staff on board, who are occupied on day-to-day tasks running the vessel, have the smallest connections, whereas a cruise ship with upwards of a thousand leisure passengers on board with time to spare will have the greatest need for connectivity.

Roger Harfouch, Regional Director MEA and Turkey, Maritime at Marlink, chimes in to point out how ships are tracked through satellite, and the equipment used for tracking and communications.

"Vessels have on board equipment talking to the satellites about their whereabouts, similar to how mobile phones tell the base station its location or GPS. By connecting the gyro on board to the satellite connection on board, the vessel's whereabouts can be communicated as often as desired and fed into the customer's or organisation's in-house or external mapping systems, GPS and gyro compass for the location data, and satcoms antenna/service for the transfer of said data.

"Ship owners choose between mobile satellite services, which usually have a pay per MB model, or the fixed cost fee model of VSAT. MSS is traditionally smaller antennas and lower bandwidths, and VSAT is slightly larger antennas, higher throughputs and

typically a fixed cost per month. Many choose to combine the technologies, utilising VSAT for primary communications and automatically switching to MSS if and when needed. Marlink has developed the XChange communications management system to handle the switching, but as the platform for a myriad of value-added services such as entertainment, telemedicine and remote access, it offers much more," says Harfouch.

Nabil Ben Soussia, MD, IEC Telecom, says vessels have different needs. The operational need is always the main one, and it depends on the vessel itself and its operations. He says that on some vessels, there are restrictions where some sensitive data has to be secured.

"Another level of service on the same vessel can be the crew welfare that has to be managed differently from one company to

> ## "Military vessels by their nature will require the most secure encrypted communications, compared with a fishing vessel, which will only be using their communications for voice and browsing"
>
> JULIAN CRUDGE, Director, Datacomms Division, Telenor

another. You can find vessels where the crew has restricted access to welfare (limited by volume or time), others may have no access or unlimited access. It always depends on the policy of the company and number of crew. You might afford unlimited welfare to a crew of five people, but you can't have it for a crew of 100 people," says Ben Soussia.

Crudge says a variety of communications solutions can be provided on board a ship, from VHF radio to Inmarsat GMDSS for safety and security solutions, to Inmarsat Fleetbroadband with connectivity to 0.4mbps, to full VSAT systems that can provide tens of mbps globally. In addition, ships can have GSM antennas installed on board to provide data connections when in range of land.

"Military vessels by their nature will require the most secure encrypted communications, compared with a fishing vessel, which will only be using their communications for voice and browsing and so don't need to have such a high level of security. As well as using commercial satellites, military customers will also use military satellite solutions such as using X-band or military Ka-band, which cannot be used by normal commercial customers, as they do not have access to the receive equipment," adds Crudge.

Fast Broadband

In general, cruise ships require large bandwidths to deliver service to all their passengers. They generally do this by routing the satellite service to Wi-Fi routers on board so it is easy for passengers to get connectivity. An important aspect of this service is managing or optimising bandwidth effectively so that each user gets a good experience.

Harfouch says: "Cruise vessels require the most capacity of any maritime users to serve all of their passengers. While connectivity is very in demand on board, it can also be used as a revenue stream. Passengers are prepared to pay for a fast, reliable service. Satcom allows cruise passengers to share personal moments on board via social media, which makes connectivity an important channel to market cruise holidays to new people."

Murphy says Globalstar has a unit called Sat-Fi that enables up to eight passengers or crew to use their smartphone or other Wi-Fi enabled device to send and receive calls, email and SMS text messages. Sat-Fi enables Wi-Fi

SPOT GEN 3 on sailing boat.

Roger Harfouch, Regional Director MEA and Turkey, Maritime at Marlink.

Julian Crudge, Director, Datacomms Division, Telenor.

connectivity up to 100 metres from the device.

"Sat-Fi offers the fastest, most affordable mobile satellite data plans and the clearest voice communications in the industry. These days, many executives and professionals can never really be totally incommunicado, even while on holiday. And in the era of social media, everyone in the family craves connectivity, especially on long journeys at sea. Sat-Fi enables as many as eight simultaneous users on a vessel to connect to Globalstar's satellite network using their own devices – a true BYOD solution for users at sea. Using a Sat-Fi satellite hotspot, which is the world's most powerful in its class, passengers and crew members can make and receive voice calls and email using an app that runs on Wi-Fi enabled devices including tablets, smartphones and laptops," explains Murphy.

Ben Soussia thinks that in the maritime industry the satellite communication has fewer limits than any other means of communication. It offers the required coverage, which is the main important criteria, but there is always a lack of capacity and bandwidth, and he feels the industry is very far from the speeds you can enjoy over terrestrial networks.

Ewerling says the only limitation is the budget. "With enough capacity, ships could experience the same kind of connectivity

> **"Value-added services and business-critical solutions will become more integrated as further consolidation happens in the market. VAS are important, as they help satcom users get the most of their investment in connectivity"**
>
> ROGER HARFOUCH, Regional Director MEA and Turkey, Maritime at Marlink

speeds as we get on land. Of course, this would in turn be limited by the cost of the bandwidth required to deliver fibre broadband levels of speed! From a technical standpoint within the antennas realm, there are limitations to do with antenna size and the location of a vessel within a satellite's footprint. With wide beam satellites, the closer you get to the edge of coverage, the larger the antenna needs to be to maintain a strong link. But spot beam HTS services are

overcoming this issue. With HTS services like Inmarsat's Fleet Xpress, Telenor's Thor 7 or Intelsat's EpicNG, it is possible to get a strong high-throughput link to the satellite even on the edges of coverage, which has led to the introduction of new SAILOR 60cm antennas that provide the highest performance in this class, even on the edges of coverage."

Harfouch adds: "The maritime environment brings with it some very specific challenges. Antennas and services have to provide reliable connectivity while the vessel is constantly moving within the six degrees of freedom. The antennas have to be able to track the satellite even in extreme sea conditions, so it can be technically challenging. However, today's modern stabilised antennas do a fantastic job of keeping track of the satellite. Structures on board a ship can cause blockages to the satellite though, so sometimes we will employ dual antenna systems to make sure there is a 360-degree view of space regardless of the vessel's position in relation to a satellite."

Improvements and HTS
Crudge thinks the main drawback of using satellite for maritime communications is the cost of the service and the equipment that needs to be installed on board. If demand for connectivity continues to rise and equipment becomes more standardised, with more

"Another level of service on the same vessel can be the crew welfare that has to be managed differently from one company to another. You can find vessels where the crew has restricted access to welfare"

NABIL BEN SOUSSIA, MD, IEC Telecom

vessels using one system, costs will fall; however, the volume of vessels will never be large enough for equipment prices to fall to the level of mobile or land-based applications. This is why he thinks satellite will therefore always be a niche solution for years to come.

He says: "High-throughput satellite in general means that instead of satellites being designed with one to four beams using the same frequencies, they are designed with multiple beams over any one area, with many beams using the same frequencies. As these beams are smaller, it means that frequencies can be reused many times, which in turn means that the mbps throughput of these satellites varies between 10 and 100 times the capacity of a traditional wide beam satellite."

"With smaller beams, the gain or amplification of the beam is much higher, so the number of mbps throughput for a given antenna size is that much greater. All this means that satellites are getting bigger in terms of the number of mbps they can deliver, which ultimately means cheaper prices in the market. However, these HTS satellite are more complicated and expensive to build, and even if the satellite is capable of delivering many multiples

of the amount of capacity compared with a traditional wide beam satellite, it doesn't mean all this capacity can be sold, as much of the capacity may be being provided in areas with low demand. Therefore, even though an HTS satellite can deliver ten times the capacity of a wide beam satellite, it doesn't mean the price will be 10 times cheaper."

Harfouch adds: "We will probably see more and more satellites in space, which means bandwidth will also become more and more available and coverage will continue to improve. Value-added services and business-critical solutions will become more integrated as further consolidation happens in the market. VAS are important, as they help satcom users get the most of their investment in connectivity."

"HTS will provide more

Globalstar's Sat-Fi solution for Wi-Fi on ships.

bandwidth to the market, which again will support congested areas such as the Suez/Panama canals and Singapore. Additionally, it will provide higher throughputs than available before on smaller antennas. But most important for Marlink is to stay agnostic and focus on providing the best possible connectivity network rather than being concerned with frequency or the type of satellite.

"As an example, it's very important for many of our customers' operations that their vessel can connect to multiple satellites at the same time, if one satellite's view is blocked due to movement or other nearby objects. For many of our customers, the way we design our connectivity network and what it provides of value is far more important than which satellite it is. This is why we work with all major satellite network operators; we can ensure much higher reliability and availability of service on a global basis," he concludes. PRO

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Smart Shipping:
UASC and MARLINK

UASC has partnered with Marlink to roll out SeaLink Plus
VSAT services across its entire fleet of 44 vessels

UASC have partnered with Marlink for almost 20 years and are rolling out Marlink's Sealink Plus VSAT across their entire fleet of 44 owned vessels, as well as their charters. They use their VSAT connectivity to improve operational efficiency and safety by closely monitoring and transmitting crucial data to and from their vessels. Furthermore, their connectivity has enabled highly valued internet access and welfare applications for crew.

About the customer

United Arab Shipping Company (UASC) is a global shipping company based in the

"Value Added Services were selected to complement UASC's connectivity. SkyFile Mail Premium will be used across the fleet for unified, optimal email and crucial data transfer"

Middle East. Founded in 1976, UASC has more than 185 offices around the world. The company is the largest container shipping line in the Middle East region and adjacent markets, covering over 240 ports and destinations worldwide.

UASC offers containerised cargo transportation, temperature controlled (reefer) and out of gauge cargo amongst other value-added services to a diversified global client-base.

UASC is currently implementing one of the industry's largest and most technologically advanced new building programmes, with seventeen new vessels

connectivity, vessels had been equipped with the connectivity solutions to match their specific needs at that time, finally resulting in a fragmented connectivity profile across their wide fleet.

UASC previously deployed 5 GB Sealink VSAT Allowances across their fleet. Later in 2014, 27 container ships were upgraded to Sealink Premium VSAT with unlimited bandwidth at speeds up to 512 Kbps and 64/32 Committed Information Rate (CIR), plus FleetBroadband (MSS) back up. Marlink also installed the XChange communications management platform to support management of connectivity onboard and remote administration of users and data. More recently, their 17 advanced 'ultra large' newbuild container ships were equipped with Sealink Plus VSAT with boosted CIR of 128 Kbps up and down, ensuring that sufficient bandwidth for business critical applications was available at all times.

Noticing a significant advancement in operational efficiency on their newbuild ships, UASC chose to roll out the same applications and bandwidth across all of their vessels. In 2016, UASC opted to harmonise their connectivity services across the entire fleet. The company also acknowledged that in order to provide quality broadband access and welfare applications to their highly valued crew, higher speeds were needed across the board.

The solution

UASC's decision to equip its new containerships with Marlink VSAT is in line with its commitment to build a new fleet of the most environmentally friendly, technologically advanced and eco-efficient container vessels in the world. UASC benefit from unlimited traffic volume on its VSAT, with data speeds guaranteed by their defined Committed Information Rate (CIR).

Marlink offered roll out of its Sealink Plus VSAT solution with 128/128 CIR to UASC to equip its entire fleet of 44 vessels. Sealink Plus comprises VSAT, MSS back-up and XChange, and UASC will always pay the same monthly fee for their connectivity, regardless of the bandwidth amount consumed or carrier used (VSAT or Inmarsat FleetBroadband).

Additional Value Added Services were selected to complement UASC's connectivity. SkyFile Mail Premium will be used across the fleet for unified, optimal email and crucial data transfer. Automatic File Transfer (AFT) was also provided as a functionality purpose-built by Marlink for UASC's specific needs.

Via AFT, essential data is automatically retrieved and transmitted at regular intervals from ship-to-shore and shore-to-ship. All types of transmitted files are then stored within the company's network with no need for emailing or manual intervention. From shore offices to the ships, data such as weather forecasts, software updates, user guides, anti-virus daily

on order; six 18,800 TEU and eleven 15,000 TEU containerships. With a strong focus on cost efficiency and green shipping, these vessels will be the first ultra-large containerships in the industry to be delivered 'LNG ready', to enable dual fuel (the use of both traditional heavy fuel oil as well as liquefied natural gas or LNG fuel), which is expected to significantly reduce environmental impact and reduce fuel costs.

The challenge

UASC have a long history of Marlink connectivity. Over the years, as their fleet has grown and in parallel their demand for

Marlink's
XChange Media.

"XChange Media delivers daily video and media content covering multi-lingual, international news, reports, sports, and documentaries, without the need for investing in expensive regional SatTV solutions"

updates and digital map updates are sent. From ship to shore, engine monitoring data, fuel consumption, sensor measurements and official forms are transmitted.

The IP connectivity enabled by Sealink VSAT combined with the Automatic File Transfer (AFT) enables UASC to continuously monitor engine performance and emissions, enabling voyage parameters to be adjusted per vessel and based on trends throughout the fleet. The sophisticated AFT solution has significantly digitalised UASC's operations, resulting in improved operational efficiency since daily tasks are now fully automatised and essential, up to date data is being monitored and assessed continually.

Also central to UASC's upgraded communication capabilities is the XChange communications management platform, which enhances network management and functionality for connectivity and voice calling on global basis. Universal Remote Access to the XChange enables IT staff to gain access to any onboard computer or network

device meaning they can implement software installations and IT updates across the board. Furthermore, XChange enables vital access to Data Manager,

Marlink's programme for web compression and filtering. The solution is provided free-of-charge and can be used to customise individual firewall

> "It's important that we have reliable VSAT services for all vessels in our fleet to help us to operate efficiently. We're also focused on providing crews with low-cost Internet, email and voice calling. Marlink's services fulfil these requirements and based on our previous experience of using Sealink VSAT across our fleet, we are happy to extend our partnership with them," said *Jamal Alani, Fleet Marine Technology Supervisor, UASC*

configurations to allow desired IP traffic, compress and block selected media content of visited web pages, filter access to web pages and monitor consumption details for the previous 90 days.

XChange also delivers ideal crew applications for UASC, whose crew are each allocated two hours of connectivity per day. XChange Bring Your Own Device (BYOD) is used onboard to enable crew data and voice from crew members' own devices.

Additionally, XChange Media delivers daily video and media content covering multi-lingual, international news, reports, sports, and documentaries, without the need for investing in expensive regional SatTV solutions. The two applications complement each other perfectly, since XChange Media can be viewed in a communal environment on a television, fostering good morale and fellowship, whilst XChange BYOD gives crew the comfort and privacy to chat with friends and family from their own cabins.

Key benefits

- Enhanced green credentials: UASC's new builds have best in fleet fuel efficiency and contribute towards UASC's status as an industry leader in green shipping.
- Business effectiveness and continuity: is achieved through real-time data monitoring of on board machinery including main engines and auxiliary equipment.
- Risks at sea are lowered: through improved transparency and control of onboard operations from shore.
- Crew are happy and performing: benefiting from internet and voice connectivity via their own devices, and regular news and media access – with UASC keeping full control of their communication costs.
- A harmonised, tightly managed IT infrastructure: software updates, IT security and networks can all be managed remotely and instantly from shore, and software and applications can be installed across the fleet.
- Higher throughput: facilitates the digitalisation of all vessels in the fleet and keeps business running seamlessly. **PRO**

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On the **Move**

Tom Freeman, SVP, Land Mobile, Kymeta, speaks exclusively with *SatellitePro ME* about how Kymeta's satellite antennas are changing the world of mobility

Tell me about your relationship with Toyota, and how you are developing antennas with them.

We have a long and deep relationship with Toyota, and we've been designing OEM-grade small aperture satellite communication. When they look at their operations, they see a problem of capacity, coverage, security and the cost of being able to update their automobiles around the world.

There are some amazing statistics around automobiles. A Boeing 787 aircraft has about 15 million lines of code in it. One million lines of code could be explained this way. If you took an A3 ream of paper and stacked 18 of them, that is a million lines. A Ford Taurus, on the other hand, has 56 million lines of code. An Audi A8 has 100 million lines of code. If you stack that up, that is taller than the Space Needle in Seattle. It is no surprise that everything that we think of as recalls are actually software problems. If you can solve the software problem, you can go ahead and make a much safer automobile. Toyota is very focused on making a safer car, so we spend a lot of effort in doing that.

How did Kymeta come up with the idea for using these antennas in cars?

In the process of getting there, we were making maritime systems, designed for boats. It's much more powerful than you need in a consumer car, it's much bigger and deeper too. We did this trip across America in which we started in Seattle and moved on down. It was Super Bowl Sunday, and we were so disheartened

> **"A Boeing 787 aircraft has about 15 million lines of code in it. One million lines of code could be explained this way. If you took an A3 ream of paper and stacked 18 of them, that is a million lines"**
>
> TOM FREEMAN, SVP, Land Mobile, Kymeta

to miss the game. As we get out on the highway, we realise that we have the internet because of this antenna on our car. We go to CBSSports.com and all of a sudden we're watching the game.

When we reach Oregon, I think, would Skype work? So I Skype some friends and we're having a great time. In big sections there is no LTE coverage. We're getting all this through satellite. We even binge watched *House of Cards* all the way out of Oregon to northern California for eight hours. It was just great, and I said to myself: this is going to change the world. We got to Washington, DC where the Satellite 2016 conference was, and it was a maritime aperture; we didn't think about this for automobiles.

How can Kymeta help out in the security industry?
The security industry needs our antennas. Any reasonably well motivated 16-year-old can buy a black market device off the internet that can completely fry all the cell phones within around 200m. They need secure communications. They do very high sophisticated computing. It's not the computing you have on a mobile phone, it's some CAD images and data processing. They need to have a big pipe. They need communications in and out, and it needs to be secure. Furthermore, you don't want to draw attention, so the antenna needs to be discreet and needs to be embedded in the roofline. That's when we said, let's take the maritime aperture and put it into a civilian armoured vehicle (CAV) or into a VIP vehicle, something where people in the Middle East, where you have the combination of wealth and security, might actually want to have in their cars.

Kymeta is delivering on the promise of global mobile connectivity, and we have announced plans to work with Aurum Security GmbH to bring Kymeta mTenna high-throughput satellite connectivity to VIP and civilian armoured vehicles (CAV). Now CAV manufacturers and integrators will be able to deliver global connectivity on the go that their customers demand, without impacting the natural design lines of the vehicle. This means anyone from VIPs to government officials to royalty will

> ## "That's when we said, let's take the maritime aperture and put it into a civilian armoured vehicle (CAV) or into a VIP vehicle"
>
> TOM FREEMAN, SVP, Land Mobile, Kymeta

have access to high bandwidth connectivity wherever they go that is invisible, secure and reliable, even in remote places.

With the Kymeta mTenna 70CM terminal, access to connectivity is omnipresent, easy to use, easy to buy and linked by secure high-throughput satellite internet, enhancing the vehicle's security through better integrated audio, data and video communication.

What about connected cars?
You have cars that have LTE connections, then there are cars where the phone transfers to the head unit, and then there are embedded SIMs. Now we're the next step up from that. We have maybe an

embedded SIM and a satellite connectivity. A consumer doesn't care where they get their bits, they just want their bits. They just want a device that can switch between cell phone coverage and satellite connectivity seamlessly.

What is the pricing of Kymeta satellite antennas?
Whenever you put something new into a car, it has to replace something that's there. It has to cost less than the system that was there and be more powerful than the system that you replaced. It has to weigh less too. We can guarantee that by the time we're out with the automobile companies like Toyota, it will meet all those criteria. However, today, because this is limited quantity and is a much bigger system that we'd put in a Toyota, since it's a maritime system, a system for superyachts, it retails for $39,500. Our nearest competitor offers a $150,000 phased-array system, which is much bigger and heavier at 550kg. We use 10 watts of power, whereas they use kilowatts of power. Moreover, they are a moving target. As we produce more, the price will come down, but there is a very active market now where this system needs to go in. **PRO**

Challenges of
HTS and Smallsats

Alvaro Sanchez, Sales and Marketing Director, Integrasys, speaks to
SatellitePro ME about how real-time RF monitoring can lead to lower rates of
interference and failure for High Throughput and Smallsats

Today, high throughput satellites provide much more capacity than the traditional satellite technology. This is achieved by high level frequency reuse and spot beam technology which enables frequency reuse across multiple narrowly focused spot beams (usually in the order of hundreds of kilometres). By contrast, traditional satellite technology uses a broad single beam (usually in the order of thousands of kilometres) to cover wide regions or even entire continents. In the ground station field, HTS brings many advantages, but also brings important complexity in ground station monitoring. Therefore, we have been working on a solution for HTS.

Currently these new higher throughput satellites are starting to be lighter, cheaper and easier to launch, creating a huge opportunity for our industry with disruptive business models and new verticals.

A fundamental difference to existing satellites is the fact that HTS are linked to ground infrastructure through a feeder link, using a regional spot beam dictating the location of possible teleports

or with multiple gateways. By contrast, teleports for traditional satellites can be set up in a wider area as their spot beam footprints cover entire continents and remote regions. As geostationary frequencies are getting full, these new smaller satellites tend to be launched in low and middle orbit, LEO and MEO.

"These new technologies bring a huge complexity designing gateways and monitoring systems for each beam, entailing setting up new teleports in remote areas"

ALVARO SANCHEZ, Sales and Marketing Director, Integrasys

These new technologies bring huge complexity to designing gateways and monitoring systems for each beam, entailing setting up new teleports in remote areas or, even worse, declining to monitor these new satellites.

Therefore, Integrasys has upgraded its Controlsat carrier monitoring system (CMS), a high throughput satellite and small satellite cost-effective solution. The ground station is planned using GeoBeam, Link Budget calculation software, taking into account satellite, orbit, beam antenna pattern and possible rain fade, then Integrasys' CMS minimises the investment significantly by using the HTS cost-effective solution.

When the project has been properly planned, Integrasys deploys Controlsat, the fastest CMS on the market, customised specially for HTS in selected areas by GeoBeam calculation. ControlSat is an RF monitoring system using a client/server architecture which controls all beams from the network operation centre (NOC) in real time. Controlsat
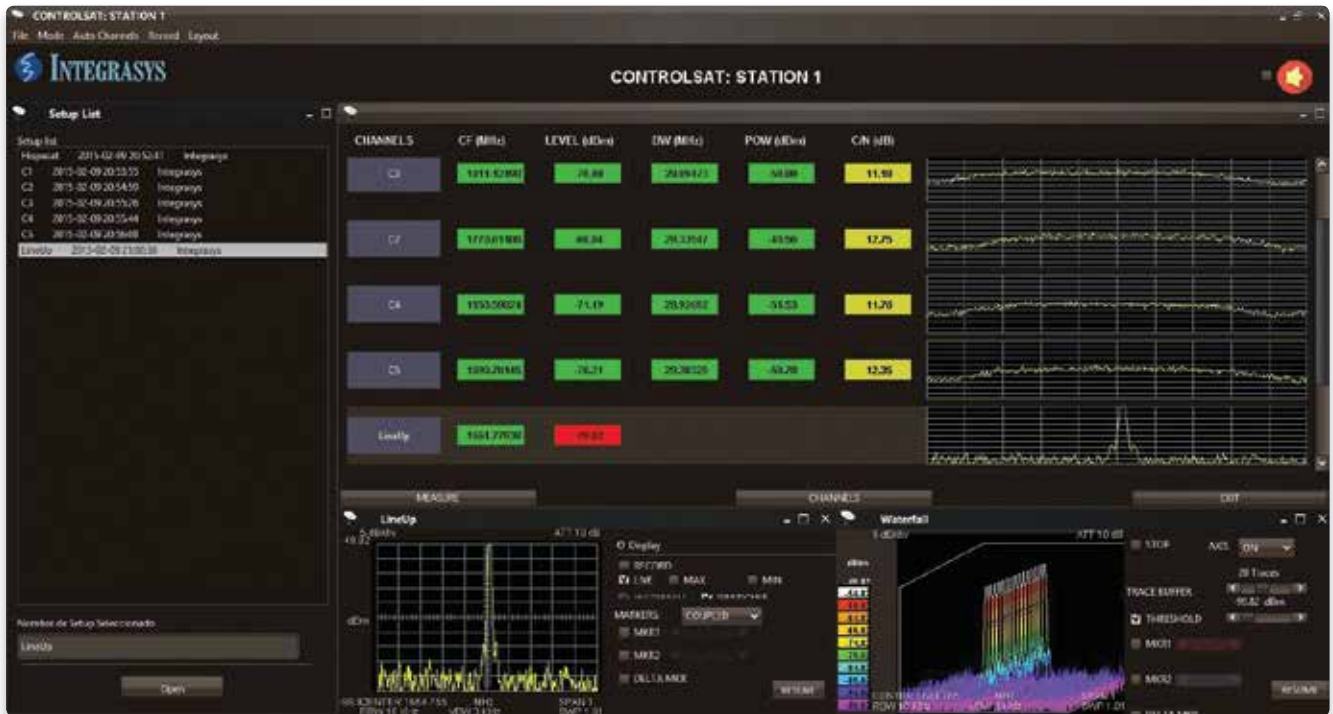
Controlsat CMS system.

is able to monitor transmission in Ka or Ku, while downlink spot beams are monitored remotely by down converting to L band, to minimise the investment. This allows the satellite operator to monitor all the downlink beams from the full satellite and all pols simultaneously, saving operator time and investment.

Currently, many HTS are not monitored by any satellite operator because the investment in ground stations is significantly expensive. We aim to provide an HTS solution for satellite operators which cannot afford this investment.

To provide an affordable solution, we have decided to monitor multiple low-cost RF devices with optimal performances from the same location in real time, using TCP/IP protocol. This capability minimises the cost and installation effort, because many beams do not have a teleport in that region; the beam is designed to cover remote areas (footprint order of hundreds of kilometres). Most of the time, the only way to monitor these beams is a remote installation and

"Currently, many HTS are not monitored by any satellite operator because the investment on ground stations is significantly expensive"

ALVARO SANCHEZ, Sales and Marketing Director, Integrasys

satellite link, so minimum equipment with maximum performance is required.

Controlsat, installed at the NOC, reads the frequency plan from the CMS database and adjusts the thresholds, alarms and warnings automatically and manually depending on customer requirements. It automatically detects interference or

service failure and trips a visual alarm, with sound and email reporting as well.

These capabilities allow the satellite operator to offer its customers accurate RF monitoring in all transponders, ensuring a service free of interference and failures. Monitoring RF signals using an HTS solution is the way to ensure spot beams are not affected by rain fade or interference.

As satellites move, antennas move as well. These new constellations are major interference challenges, so all interference and service failures can be recorded by the operator, in minimum size files, and later reproduced and post-measured by any customer or regulatory organisation, without the need for CMS, simply by using an internet browser.

We have managed to implement a cost-efficient and reliable CMS for high throughput satellites. Controlsat's advance capabilities make Integrasys' HTS solution essential for accurate, cost-effective high throughput satellite downlink and uplink real-time monitoring. PRO
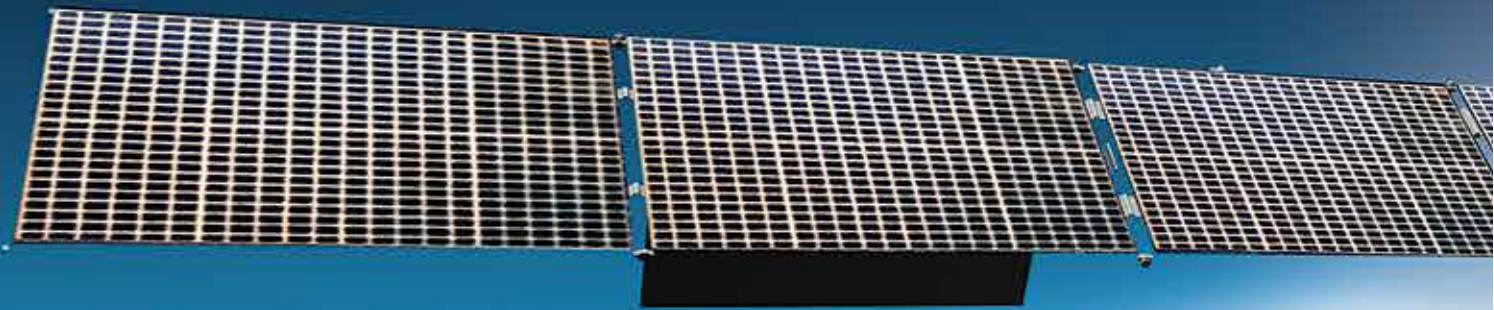
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Interference
in the Middle East

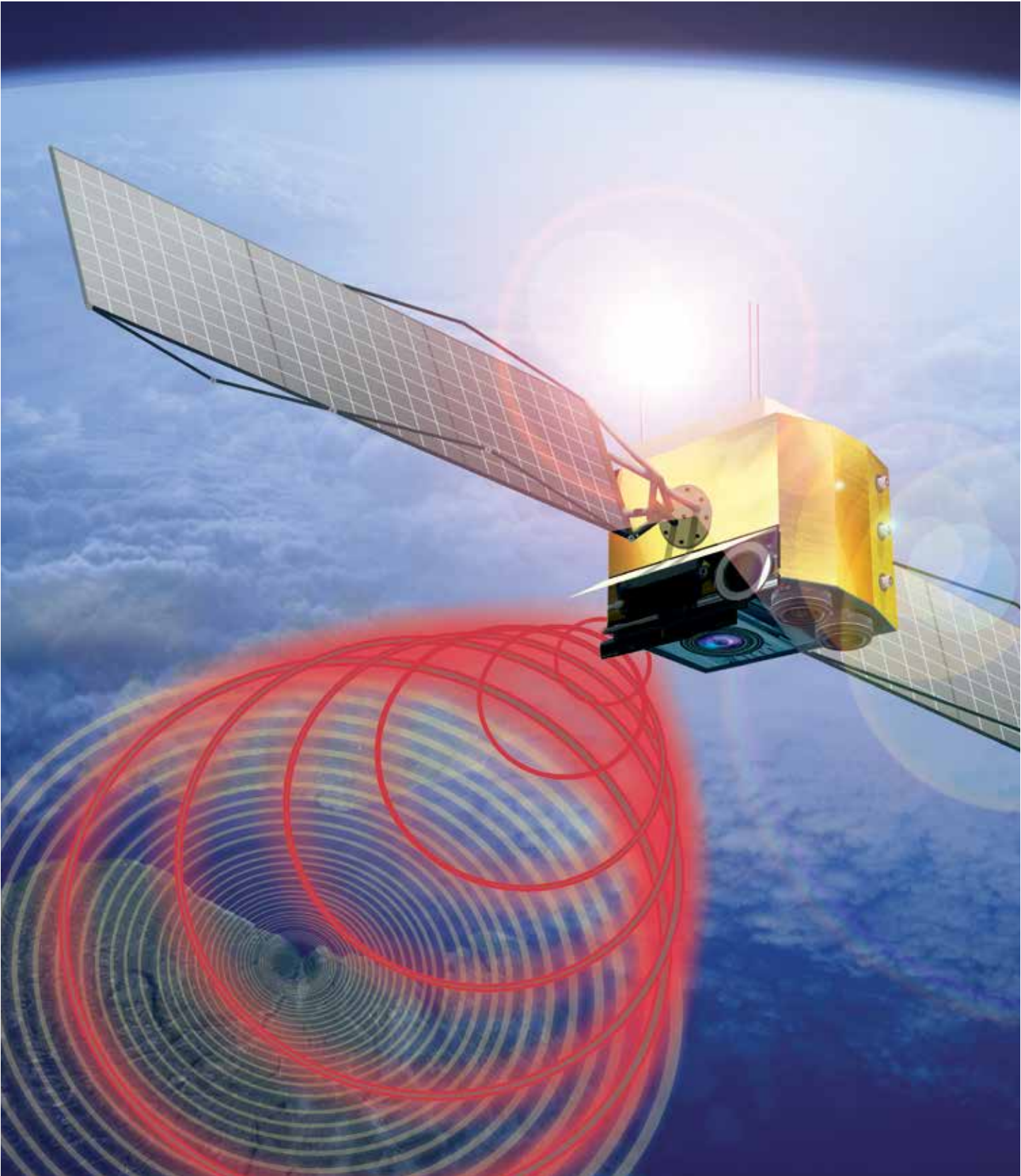Martin Coleman, Executive Director, the Satellite Interference Reduction Group, explains how the Middle East remains a challenge due to the problem of intentional interference

Over the past few years, we have been working to reduce satellite interference on a global scale. We are beginning to have an effect, and there are some excellent tools and technology emerging to help identify and stop interference. This is especially true in the VSAT market, where we have seen a great deal of innovation. However, the Middle East remains a tricky area, mainly due to the continuing problem of intentional interference.

The Jammers

This is always a difficult subject, but jamming continues to be a major issue, affecting services predominantly in the Middle East. It is tricky for a couple of reasons. First, it is often politically motivated and that can be a sensitive issue. As a technology forum, it is also one part of the issue we tend to shy away from, but it cannot be ignored by engineers. It is estimated that 80% of all intentional interference incidents target direct-to-home broadcast services, with the intention of blocking viewers from seeing certain types of content.

The other thing that makes it tricky is that it is extremely difficult to solve. It cannot be solved by carrier ID (CID), as naturally the jammers don't have CID and don't want to be identified. The other thing that makes it technically difficult is the fact that most jammers use a clean carrier – a carrier without modulation. That complicates geolocation, making it really challenging for satellite operators to identify the location of the jamming signal.

Innovation

I have often said innovation is the key to solving interference, and that certainly rings true in the case of intentional interference. We need the tools at our disposal to find the interfering carrier and stop the interference. Thankfully, there are numerous tools emerging on the market to help, but we need even more in the toolbox.

One way to better resolve intentional jamming is to spot it before it hits, and data has a big part to play here. Imagine searching and predicting various political situations, comparing that to the content being transmitted, and concluding which services are likely targets. So, to analyse Big Data, add deep learning algorithms and cognitive computing to the mix. This complex process can be simplified, automated and run on a continuous basis, meaning a satellite operator can then take preventive steps to protect a targeted service. This could involve changing the carrier in anticipation so that the jammer would then effectively miss the intended target.

Now that monitoring tools are smarter and more dynamic in their approach

to troubleshooting, they can be added to this analysis, always endeavouring to predict a problem before any services are affected and thus move from the current fire-fighting scenario to planned anticipation. Getting warnings and alerts earlier, using the enormous amount of data we can analyse, means operators are able to take immediate measures rather than wait for a service to be interrupted.

Another area where continuous innovation is the norm is geolocation systems. Our members are already heavily involved with that innovation process in this key arena, such as Kratos, Siemens Convergence Creators and Zodiac. Detection resolution errors are being reduced dramatically year on year. Of course, geolocation is the ultimate tool in our toolbox, but that does come with a heavy price tag both in capital cost and having the experienced personnel to work these complex systems. Much work is already being done to simply the geolocation processes into user-friendly interfaces.

All the major satellite operators have their own geolocation systems in place, but smaller operators do not. That is a challenge being met by the industry. Geolocation is now seen more and more as a service, a really good fit for operators who do not require costly full-time geolocation systems but want to access a service when needed. Siemens Convergence Creators recently announced a geolocation service which essentially gets rid of up-front investment and operational costs, making it affordable for most operators. Zodiac is also adding an up-to-date ephemeris data service to complement the whole geolocation process. I would of course like to see more work done to bring the service model together for all.

Politics

As mentioned above, as a technology forum, dealing with the politics is something we generally try to avoid. However, when it comes to jamming it cannot be completely ignored. The problem is that we often find the source but the operators alone cannot make the jammer stop. Our best bet is to work with the regulators in each region and present better, more reliable evidence about the interferer, to allow them to play

> ## "Although all the major satellite operators have their own geolocation systems in place, the same is not true for the smaller operators"
>
> MARTIN COLEMAN, Executive Director, the Satellite Interference Reduction Group

the political card swiftly and effectively.

The ITU has been extremely supportive in this regard, as have some of the regional regulators, but they could certainly do more. One of the biggest barriers here is the effectiveness and speed that such organisations struggle with. The simple fact of the matter is that satellite operators do not report interference immediately, as they must deal with it themselves

through moving carrier or by other means – that is simply quicker and simpler and, ultimately, customers get their service restored. However, the upshot is that regulators often don't have a proper overview of the scale of the problem of both deliberate and day-to-day interference.

The more we make them aware of, the more statistical information we can provide, the more the regulator can get involved and play its part.

Beating the Jammers

Intentional interference will continue, especially during tense political situations. As with every type of interference, we need to work together as an industry to reduce occurrences and minimise the effects. In the case of intentional interference, that involves a mixture of technology, organisational and political support.

Intentional interference will be one of the main topics during our workshop, hosted by Arabsat in Dubai on 20 March. **PRO**

For more information or to register, please visit http://satirg.org/irg-workshop-cabsat

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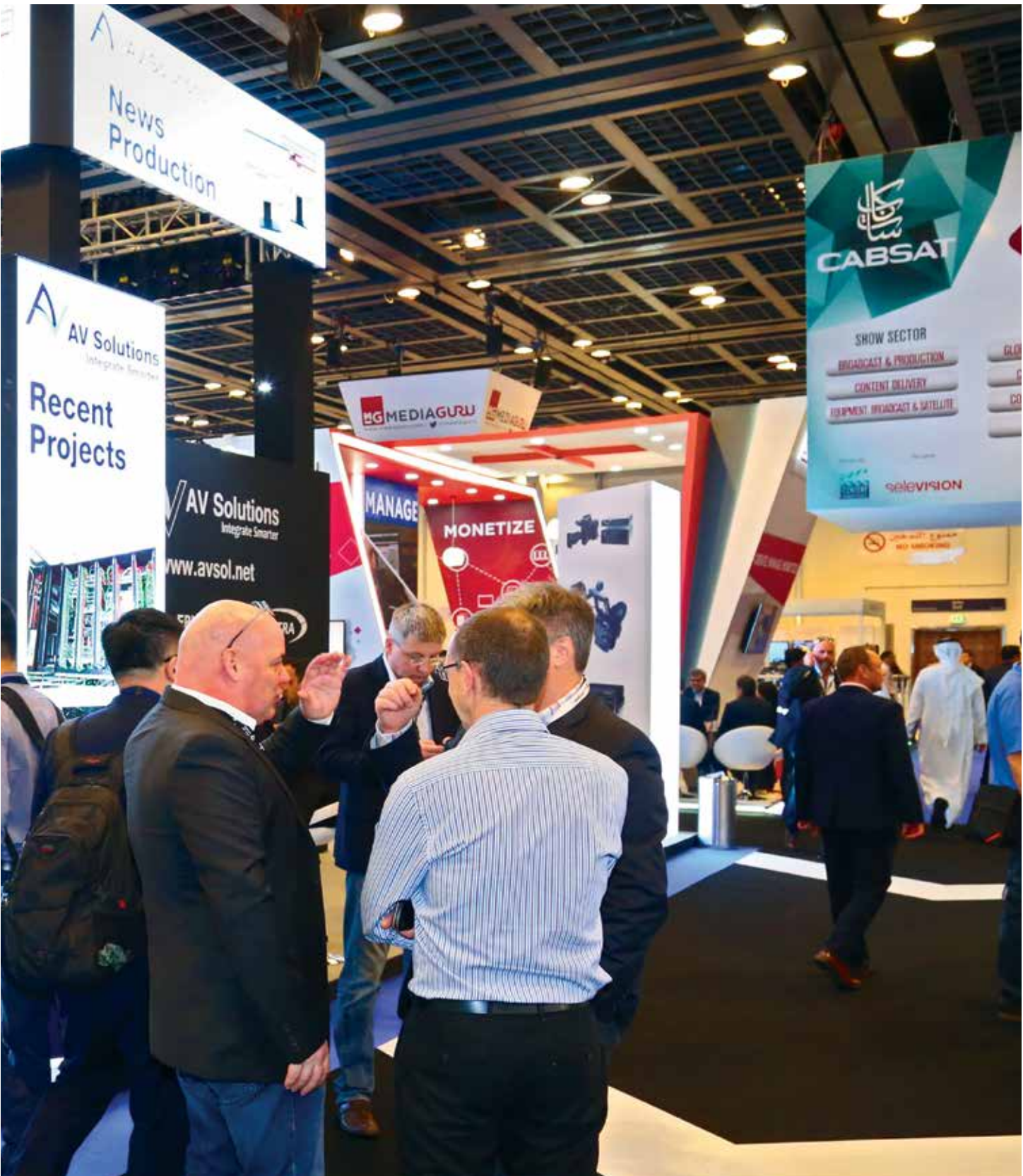

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Showstoppers

Martin Jarrold of GVF explains how the new SATEXPO is due to pan out at CABSAT 2017. Also, a look at what some of the top exhibitors will be showing this year

SATEXPO & the Satellite Hub:
Strategic Industry Dialogue at the CABSAT Core

By Martin Jarrold, Chief of International Programme Development, GVF
Chair, Satellite Hub Summit at CABSAT 2017 & SATEXPO

A panel discussion at the GVF Satellite Hub Summit at CASAT 2017.

In the previous issue of *SatellitePro ME*, I profiled the details of the programme of the GVF Satellite Hub Summit at CABSAT 2017, which on 22 and 23 March I have the pleasure of chairing. The Hub Summit is the product of a Dubai World Trade Centre (DWTC) and Global VSAT Forum (GVF) partnership agreement to bring a programme of strategic debate on key issues for the current satellite industry technology and service marketplace to CABSAT. While the event will again feature the Hub Summit on the second and third days, CABSAT will also feature the new SATEXPO conference on the first day, 21 March.

SATEXPO and the GVF Satellite Hub Summit will comprise mutually reinforcing programmes of satellite sector and satellite solutions end user perspectives, with a day one emphasis on strategic analysis of various user markets and a day two and day three focus on interactive panel sessions which will offer detailed examination of core themes in today's industry environment, such as satellite spectrum, high throughput satellite technologies, low earth orbit satellite constellations, the VSAT mobility market, satellite interference and cyber security.

The two events combined have attracted a wealth, indeed an A to Z, of

organisations, as well as an outstanding breadth of speaker experience at the very core of various aspects of commercial space – satellite communications, satellite broadcasting, earth observation, space exploration, academia, international organisations, analysts, government agencies, users and more. For example:

Laith Hamad, Director, MENA, Access Partnership; Atheer Abood, Teleport Operations Lead, Global Technology Services Directorate, Al Jazeera Media; Ibrahim Nassar, Manager of Teleport, Teleport Department, Global Technology Services Directorate, Technology & Network Operations Division,

Al Jazeera Networks; Bassil Zoubi, Head of Transmission, Arab States Broadcasting Union; Yasir Hassan, Director, Transmission Operations, ArabSat; Kumar Singarajah, Director, Regulatory Affairs & Business Development, Avanti Communications; Nigel Fry, Head of Distribution, BBC Global News; Drew Klein, Director of International Business Development, C-COM Satellite Systems; Marcelo Essado, CEO and System Engineer, EMSISTI Space Systems & Technology Ltda; Marcus Fritz, Executive Vice President, Commercial Development & Strategic Partnerships, Eutelsat; Mostafa Fathi Abdalazem Alazab Elkhouly, Research Fellow, Fraunhofer IIS; Anthony Baker, Director, Global Satellite Vu; Michele Scotto, Senior Vice President, Globecomm; Soheil Mehrabanzad, Vice President, Hughes Network Systems International; Majdi Atout, Vice President of Sales, Middle East, iDirect; Abdulaziz Al-Feel, Regional Director MENA, Enterprise Business Unit, Inmarsat; Daniel Cooper, Head of Media & Marketing, Inmarsat; Mohaned Juwad, Senior Manager, Spectrum Policy, Intelsat; Dongsik (Thomas) Kim, Senior Engineer, Space Systems Coordination Division, Space Services Department, Radiocommunication Bureau, ITU; Diederik Kelder, Senior Vice President, Corporate and Business Development, LeoSat; Mazen Nassar, Managing Director, MenaNets & GVF Master Trainer; Amer Mohammad Al Sayegh, Senior Director, Space Systems Development Department, Mohammed Bin Rashid Space Centre; Akshat Jain, Sales Director, MENA & India, ND SatCom; Patrick Kariningufu, Vice President, Middle East and Africa, OneWeb; Jon Godfrey, Technical Director, Paradigm Communication Systems; Paul Febvre, CTO, Satellite Applications Catapult; Gez Draycott, Vice President Mobility Solutions, SES; Patrick van Niftrik, Vice President, Spectrum Development, EMEA, SES; Jeff Winch, Senior Director, Fleet Development, SES; Erwin Greilinger, Product Line & Sales Manager for Satellite Monitoring Solutions, Siemens Convergence Creators; Martin Coleman, Executive Director, sIRG; Neale Faulkner, Manager, Strategy & Marketing Operations, MEA, SITAOnAir; Riyadh Al Adely, Managing Director, SkyStream; Jack Buechler, Vice President, Business Development, Talia; Julian Crudge, Managing Director UK, Telenor; Julian Kell, Director, Sales, EMEA, Telesat; Nile

Martin Jarrold, Chief of International Programme Development, GVF.

"The two events combined have attracted a wealth, indeed an A to Z, of organisations, and an outstanding breadth of speaker experience"

MARTIN JARROLD, Chief of International Programme Developent, GVF

Suwansiri, CCO, Thaicom; Christian Cull, Vice President, Marketing & Communications, Thuraya; Tariq Al Awadhi, Executive Director, Spectrum Affairs, TRA, UAE; Christian Bergan, Vice President, Sales & Marketing, TSAT; HE Dr. Mohammed Al Ahbabi, Director General, UAE Space Agency; and Thierry Balance, Sales & Marketing Manager, SDR Products, Zodiac.

Other speaking invitations, including for the following, are pending acceptance: Simon Gray, Vice President Humanitarian Affairs & Coordinator for the UN Emergency Response, Eutelsat & ITU Board Member for Sustainable Development; Julian Hewson, Director, Strategic Inflight Connectivity Accounts, Global Eagle Entertainment; Koen Willems, Market Director for Government & Defence, Newtec; Alexander Thomas, Head of International Relations & Communication, Télécoms Sans Frontières; and Alpha Bah, Chief, IT Emergency Preparedness & Response

Branch (RMTF), World Food Programme.

Discussion among the excellent speakers contributing to the GVF Satellite Hub Summit will be managed and moderated by a group of industry expert analysts and commentators: Stéphane Chenard, Senior Analyst, Euroconsult; Riaz Lamak, Lead, International Programmes, GVF; Virgil Labrador, Editor-in-Chief, Satellite Markets & Research; Torsten Kriening, Editor, SpaceWatch Middle East; and Kevin French, Publisher, talk Satellite.

In my previous column I probed the Hub Summit programme, and here I would like to provide a similar profile of the SATEXPO programme taking place on 21 March.

All CABSAT attendees with a professional interest in the government and military space, space and aviation, telecommunications and broadband, and broadcast media should make a note of the date of SATEXPO and increase the value of the CABSAT 2017 experience by joining in a high-level dialogue with leading figures from such organisations as the UAE Space Agency, the Mohammed Bin Rashid Space Centre, EMSISTI Space Systems & Technology, SES, Eutelsat, Inmarsat, BBC Global News, Al Jazeera Networks and the Fraunhofer Institute.

As chairman, I will have the pleasure of opening SATEXPO and the privilege of introducing the Keynote Address from the Director General of the UAE Space Agency, HE Dr Mohammed Al Ahbabi. Dr Al Ahbabi will examine policies, guidelines and best practices in remote monitoring in a connected world against the background of the successful launch of a UAE nanosatellite – Nayif-1 – which was developed by the Mohammad Bin Rashid Space Centre and the American University of Sharjah.

In the session The Entrepreneurs and Financiers of Satellite Start-ups: A Case Study – The successful partnership between government and small companies for the Brazilian Space Program, and its Small Satellite projects, Marcelo Essado, CEO and System Engineer with EMSISTI Space Systems & Technology Ltda will review Brazil's first scientific nanosatellite mission – NanosatC-BR1 – which was launched in June of 2014, is still operational and has demonstrated the importance of partnership between government and small companies, illustrating how entrepreneurship and collaboration

have grown the Brazilian national space programme. The presentation will cover developments like the use of small satellite businesses in Brazil for the agricultural and agro-business sector; the operation of NanosatC-BR1 and the follow-on mission development of NanosatC-BR2, with advances in on-board software and ground station design; the development of smallsats and cubesats for distance education purposes; and how the spirit of entrepreneurship can encourage students to contribute to the development of national aerospace sectors, with Brazil as an example.

Space & Enterprise Partnership Session: Exploring the importance of the relationship between commercial business enterprise and the space sector will explore the variety of competing and complementary technologies, and the associated challenges and opportunities they present in today's satellite industry, and applications in communications and broadcasting. Discussion will include Marcelo Essado and Amer Mohammad Al Sayegh, Senior Director, Space Systems Development Department, Mohammed Bin Rashid Space Centre.

As military operations today extend beyond war fighting roles to peacekeeping and emergency first response, Jeff Winch, Senior Director Fleet Development, SES, will reveal in Opportunities and challenges in using satellite communications for military operations how civil/commercial space assets contribute to the mission-critical communications needs of military first response, as well as to the imperatives of military comms in conflict environments.

Emirates, the airline of Dubai, provides a prime example of the way in which the passenger in-flight experience is undergoing radical change, change facilitated by rapid developments in satellite-communications-on-the-move (SOTM) technologies which are bringing new levels of connectivity to commercial airliner routes. In the Connectivity in the cabin & cockpit session, we will learn how regional and international airlines are investing in bringing connectivity to 40,000 feet to meet both passenger demand for internet anywhere and to enhance aircraft management and navigational operations. We will also hear how, in the context of the Internet of Things (IoT), satellite

Hannah Capstick, Conference Manager for SATEXPO

communications are being used to protect against the growing insecurity arising from cyber threats. In addition, we will hear from Mostafa Fathi Alazab, a Research Fellow at the Fraunhofer Institute of Germany, how advances in SOTM terminal testing protocols and procedures are expanding the market for the technologies and associated solutions which will grow the mobile satellite industry.

Turning to the broadcast media environment, the Satellite Broadcasting Panel Session: Ideas Swap and Regional Focus – What is the state of play in the MENA satellite broadcasting market? will be a discussion-focused platform exploring the major issues affecting the region's satellite broadcasting market, including satellite capacity availability

"Current and future growth of data traffic from mobile devices will impact both cellular and satellite networks – from scalable and flexible Mobile Backhaul Offload to Small Cell architectures"

MARTIN JARROLD, Chief of International Programme Developent, GVF

and costs, technological change, content gathering and challenges to broadcast integrity presented by deliberate satellite interference or jamming. The discussion will also focus on satellite broadcasting trends and innovative developments happening in other regions which may affect the MENA market. The panellists here will be Nigel Fry, Head of Distribution, BBC Global News; Marcus Fritz, Vice President, Eutelsat; Daniel Cooper, Head of Media & Marketing, Inmarsat; and Ibrahim Nassar, Manager of Teleport, Global Technology Services Directorate, Al Jazeera.

A presentation entitled Contribution and distribution challenges in the Middle East during crisis will be delivered by Atheer Abood, Teleport Operations Lead, Global Technology Services Directorate, Al Jazeera Media. Attendees will learn from this major news and current affairs broadcaster about the current challenges in feed reception from the field during a variety of crisis situations, and about related issues surrounding channel content delivery for audiences, using multiple platforms across the Middle East region. The presenter will profile the current usage map for satellite and IP platforms and the challenges involved in media content gathering in war zones, and will offer suggestions to improve media channel delivery.

The final SATEXPO session, The Satellite Synergy: Broadband telecoms for a mobile world, will examine the fact that accessing the internet whenever you want, wherever you are, wherever you're going to and however you're getting there, with fast broadband data speeds, is now universal in the service delivery goals and user expectations of today's communications marketplace. Current and future growth of data traffic from mobile devices will affect both cellular and satellite networks – from scalable and flexible mobile backhaul offload to small cell architectures, from HTS and LEO to latency mitigation and spectrum harmonisation for future 5G, the telecoms/broadband to satellite interface is a big place... and big business.

With this programme, SATEXPO will have set the stage for yet more dialogue, and the following two days will provide more opportunity for engagement with industry leaders at the GVF Satellite Hub Summit.

CAHORS DIGITAL to present **BIG SAT**

CAHORS DIGITAL will be presenting its offerings at CABSAT in the France Pavillon. Owing to the dynamic Middle-Eastern market, the company has decided to implement a development strategy with key players in the region.

The French company will present its BIG SAT antenna - the latest model in the SMC range. "This multisatellite antenna has been specifically developed to receive signals from six satellites at the same time. Thanks to new generation rear mounts, each satellite has the same reception quality", explains Christophe SCHNELL, International Sales Manager, EMEA Communication, Equipment and Solutions.

The BIG SAT's ease of assembly and its compact design, make it incredibly simple to install and use. This multisatellite antenna is made from a composite i.e. thermoplastic and fiber glass. It is also light and durable and is fitted with a rapid access LNB system. Adjustments and positioning only take ten minutes thanks to the QUICKSAT mobile positioning application.

Designed and built with the highest industry standards, all CAHORS DIGITAL SMC satellite dishes come with a 10-year guarantee.

For over 100 years, all over the world, the CAHORS Group helps transport energies and facilitate access to information. The group offers global solutions and equipment suited to the specificities of medium voltage and low voltage distribution networks, fluids and communication networks. CAHORS implements its considerable experience all around the world to find relevant and optimum solutions to clients.

ETL to demonstrate **64x64 Hurricane Matrix**

ETL Systems will be showcasing its newest RF switch matrix – the configurable 64 x 64 Hurricane Matrix – for the first time in the Middle East. Visitors to the ETL Stand will also be able to see our popular StingRay RF Over Fibre, **128x128 Vulcan Matrix, 16x16 Victor Matrix, Alto Amplifier and Dextra Splitter.**

The company looks forward to meeting with both existing and future customers to discuss their individual RF needs and help find a solution that is designed to fit their exact specifications.

The Middle East is a major market for ETL Systems and CABSAT is one of the most significant events for our industry in the region.

"We always look forward to CABSAT as we have numerous partners in the Middle East and hope to expand our footprint in the region even more. Our products are produced to the highest specification and we look forward to showing delegates what can be achieved through the use of ETL products.

"We have exhibited at CABSAT for over 10 years now as it is a great opportunity for us to showcase our products to the Middle East region," said Ian Hilditch, CEO at ETL Systems.

SES to showcase
Maritime+ at CABSAT

At CABSAT this year, SES will be showcasing its latest solution for the maritime sector, Maritime+

SES Maritime+ is a managed mobility service delivering seamless global two-way high speed connectivity for vessels traversing oceans. Through SES Maritime+, vessel crew would have internet access and be able to make voice calls over IP, while the head office would be able to monitor and track the vessels sailing across the oceans. Maritime+ is band agnostic and comprises the use of capacity in C, Ku and Ka frequency band.

The solution will enable maritime customers to have easy access to customisable bandwidth and coverage packages, ensuring satellite capacity is effectively utilised. Vessels traversing the oceans will be offered seamless roaming, leveraging SES's global fleet of over 50 satellites, extensive ground infrastructure of over 20 teleports and more than 6,000 points of presence.

In addition, another feature will be the possibility to combine SES's GEO and O3b's MEO capacity, offering ship owners access to the benefits of both orbits.

Hussein Oteifa, General Manager, Middle East, SES said: "CABSAT 2017 presents an especially exciting opportunity for us – to introduce our latest differentiated solutions and end-to-end offerings."

Asiasat to introduce
Asiasat-9 at the show

Asiasat has been exhibiting at CABSAT since 2012. It's theme for this year is "Reaching Further, Bringing You Closer"

Over 25 years of serving customers with unrivalled broadcast neighbourhood, penetration and service reliability, AsiaSat is committed to constantly improving on and exceeding our ability to develop relevant and custom-made solutions to meet changing market needs.

As Asia's satellite solution provider, AsiaSat will be showcasing its expanding fleet of high performance satellites and high quality satellite solutions to the broadcast and telecommunications industries. Highlights are AsiaSat's broadcast platforms which are amongst the world's most-watched. Operating at Asia's prime orbital locations, these platforms distribute 700 television and radio channels from the Middle East, Europe, South Asia, East Asia and International Networks, enabling broadcasters and channel providers to deliver premium content instantaneously to all major Asian broadcast networks and pay TV platforms, serving millions of viewers across the Asia-Pacific region.

AsiaSat will also take this opportunity to introduce its upcoming satellite AsiaSat 9, a high performance satellite that offers enhanced C-band coverage over Asia, Australasia and the Pacific region, as well as new Ku-band beams customised for markets such as Myanmar, Mongolia and Indonesia. AsiaSat 9 will be a replacement satellite for AsiaSat 4 where we have launched Asia's first true UHD/4K channel "4K-SAT" to promote UHD broadcasting via satellite. AsiaSat has been on the forefront of the innovative broadcast technology, and AsiaSat 9 is well positioned to capitalise on this future trend of satellite broadcasting.

Following the launches of two new satellites AsiaSat 6 and AsiaSat 8 in 2014, another new satellite AsiaSat 9 is planned for launch later this year, adding new capacity at 122 degrees East to meet the growing demand for DTH, VSAT and mobility service in the region.

The operator says it has had very good experience at CABSAT over the past years. CABSAT is the region's most important satellite and broadcast event that connects participants from around the world to the latest and most innovative technologies.

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Work Microwave to introduce **AX-60 modem**

At CABSAT 2017, WORK Microwave will demonstrate its comprehensive analog and digital satcom solutions approach for operators to increase flexibility, bandwidth, and margins while reducing their operational costs. Among other latest innovations, WORK Microwave will showcase its new compact IF converter design and A-Series all-IP platform for the first time to the Middle East market.

WORK Microwave devices have been deployed by operators worldwide to support a range of applications within the satellite broadcast and satellite communications markets, including SNG/contribution, direct-to-home, IP networking, teleport management, government, and more.

At CABSAT 2017, WORK Microwave will introduce its AX-60 IP Modem, AR-60 IP Demodulator, and AT-60 IP Modulator high-performance platforms for IP trunking and IP network infrastructure applications in the Middle East market.

Customizable and scalable, the A-Series can be adapted to any throughput, data analysis method, and other waveforms beyond DVB-S2X, making it perfect for

telecommunication companies, internet service providers, teleport operators, government and intelligence agencies, and operators of low Earth orbit (LEO) satellite constellations.

Using the A-Series, operators can transmit and receive DVB-S2X signals with the utmost efficiency and ease of operation. Optimal use cases include high-speed network links (i.e., 100, 200, or 300 Mbps) over satellite, IP-based satellite newsgathering, IP-based contribution and distribution links, connection to and from

LEO for Earth observation, and reception and analysis of satellite communication. By providing operators with a future-proof and flexible platform for both standardized DVB-S2X and customized satellite communication, the A-Series simplifies the transition toward an all-IP environment.

Compact 8:1 Redundancy System

WORK Microwave's Redundancy Switch RSCC-8 system features a competitive price-to-performance ratio and compact 8:1 design that can be used for L-Band.

NOORSAT explains trends at CABSAT

NOORSAT, the largest private satellite service provider in the Arab World, is taking part in CABSAT 2017, to be held at the Dubai World Trade Centre from 21-23 March. As the pivotal professional broadcast, satellite and digital media event in the Arab World, CABSAT is exciting and interactive. It gives visitors and exhibitors the opportunity to understand trends in audience demand, to find solutions to accelerate business growth, to discover the latest innovations in this creative industry and to meet industry peers.

NOORSAT has amassed over a decade of business achievements and has grown to become a premier satellite service provider serving large, medium, government and private enterprises across the Arab World. The Company has achieved an impressive

rate of growth since its establishment as a small operation in Bahrain and has grown alongside the demand for satellite services across the region.

Today, NOORSAT carries over 350 TV and radio channels from the 7/8°West and 25.5°-26.0° East orbital positions; the only two hotspots that serve the Arab World, through Badr Al Nile® (NOORSAT 7 and NOORSAT 7B satellites) and Badr Al Arab® (NOORSAT 1 satellite). NOORSAT also offers capacities for data and telecom services, enabling service providers to offer broadband access, data applications, VoIP, GSM backhauling, IPTV streaming and VSAT services for private and governmental networks. This is all reinforced by elite customer service.

NorthTelecom to show its
maritime services at CABSAT

NorthTelecom will once again be participating at CABSAT, to showcase its products and solutions in Internet over Satellite, Broadcast and most importantly its Maritime Services.

"We feel CABSAT is the main platform for local, regional and international Broadcasters as well as Satellite operators and service providers in the MENA region. We at NorthTelecom consider CABSAT as B2B event. We usually exhibit at CABSAT to meet our existing partners, but we can't also deny that CABSAT offers great networking opportunities," said Hadi Nazari, CEO, NorthTelecom

Having NorthTelecom with its Headquarters in Dubai, CABSAT is the main satellite event in the region, NorthTelecom sees a lot of value to participate at CABSAT every year. This is the company's seventh year at CABSAT. In addition to this NorthTelecom will celebrate its 10th Anniversary this year.

"We believe 2017 should be named a year of partnership, we all including satellite manufacturers, satellite operators and whomever are in the supply chain need to work hand in hand to overcome the oversupply and demand creation issues. I also take the opportunity here and invite venture capitalist, financial institutions, Private equities and whomever could help this segment financially to invest in this niche emerging segment.

"Due to the fact that the satellite industry is very niche segment and was more a government focused service previously, the commercial usage of satellite has not been introduced and implemented efficiently in place and this could be a role for those financial institutions to come and invest together with service providers and system integrators for demand creations," said Nazari

NorthTelecom is one of the fast growing companies in the satellite communication segment. During the past few years NorthTelecom has invested in offices and teleports across the globe.

The growth of the company was and will be in line with its corporate vision and mission "communication all over the world". In line with its corporate strategy and vision, NorthTelecom has started its new growth plan in early 2016 and entered into Mergers & Acquisition with key players globally.

Santander Teleport comes back to CABSAT

Santander Teleport will be present at CABSAT again this year and was been selected as one of the World Teleport Association's (WTA) Top Teleport Operators of 2016.

Each year, WTA publishes the world's only rankings of companies that operate teleports for commercial purposes, including independents, satellite carriers, fiber carriers and technology providers. Rankings are based on total revenue from all sources and on year-over-year growth. They recognize that, to some extent, every teleport operator competes in the same marketplace – the biggest with the smallest – but that like all marketplaces, the teleport sector has segments in which even the smallest players can compete effectively and achieve strong growth.

Santander Teleport appears strong in the list of The Fast Twenty, which is based on year-over-year revenue growth in their most recent complete fiscal years, and includes all operators.

"Santander Teleport is pleased to appear once more in this prestigious list, competing in the same league as some of the largest companies in the satellite industry and showing a healthy growth year-on-year. This past year 2016 has been an exciting year for us and we expect to achieve even better results next year" said Carlos Raba, Managing Director of Santander Teleport.
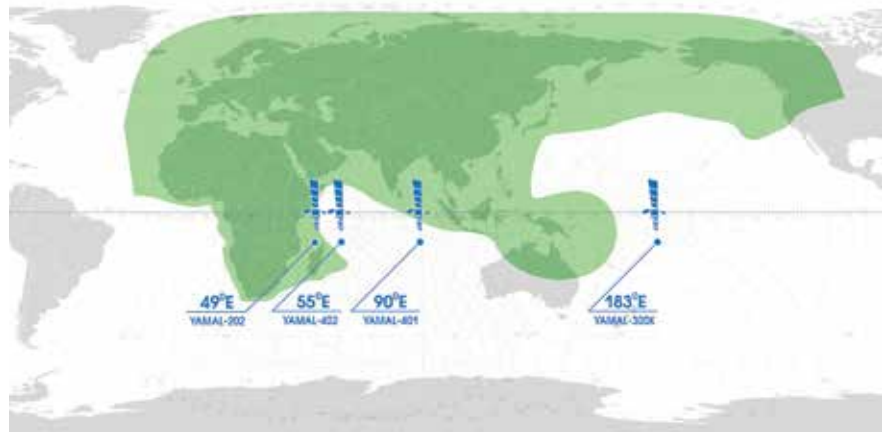
Gazprom to promote **Yamal satellites**

Joint Stock Company Gazprom Space Systems is one of the two Russian national satellite operators which holds 30% of the satellite capacity market in Russia.

The Company operates Yamal Satellite Communication System (four Yamal Satellites, state-of-the-art telecommunication center and VSAT networks in Russian regions) and provides the users with satellite capacity worldwide and satellite services in Russia. Yamal satellite capacity amounts to 248 equivalent transponders of 36MHz and a third of it is concentrated in beams pointed over territories outside Russia.

Gazprom Space Systems is participating in CABSAT for the 11th time with the new exposition (booth #E7-30) proposing Yamal satellites capacity.

C-band payload of Yamal-202 (49E) has a good semi global coverage (Europe, Middle East, North Africa, South and South-East Asia) and is mainly dedicated to arrange trunks between the information resources centers (mostly in Europe) and the centers of these resources consumption, TV channels distribution, arranging point-to-point connection and VSAT networks.

Yamal-402 (55E) satellite provides Ku-band coverage over Russia, CIS countries, Europe, part of Middle East and Africa to the south of Sahara. Satellite antennas form 4 fixed beams: Russian, Northern, European, Southern, and one steerable beam.

It is used to provide communications services to operators of pay TV, corporate sector, governmental structures and NGOs. Around a half of hundred VSAT-networks of diverse technologies and scale operate via this satellite in EMEA region.

The steerable beam currently covers Sub-Saharan Africa to strengthen GSS' position in the region.

Yamal-401 (90E) is equipped with C- and Ku-band payloads and dedicated mainly for the Russian market.

Gulfsat to showcase its **satellite capabilities**

As always, Gulfsat is returning to CABSAT to try to establish its presence as a premier broadcaster and satellite service provider in the MENA region.

Gulfsat says while the show is mainly intended at connecting with existing customers, vendors and partners, there have been umpteen occasions wherein the operator has established promising contacts with potential customers and partners and they believe that this year shall be no different.

CABSAT is the premier show for satellite operators, integrators, service providers and technology partners in the ME region and possibly in the MENA region as well. All such enterprises operating in the MENA market must be present at CABSAT and that is the reason why Gulfsat is there as well. Gulfsat has been coming to CABSAT for the past 12 years. Gulfsat is a solution provider rather than product and services providers. Gulfsat execute solutions on ground and in space having the ownership of the network on ground and the platform control in space.

Gulfsat's services range from infrastructure to the last mile and enjoy the upper hand on all stages till the customer satisfaction. The 24/7 process and monitoring is another security offered to our clients.

Gulfsat is active in the fields of TV broadcasting, Oil and Gas, Government & Defence, Telco's, Banking, Shipping & Logistics and GSM Backhauling.

Trends in **Satellite**

John Brophy, Group CFO of NorthTelecom Group speaks about trends in the satellite sector including a reduction in demand in the oil and gas sector

The satellite sector, a niche segment within the telecommunications industry has seen a great deal of change in its relatively short life. In the early days the satellite sector was dominated by its links with non-commercial organisations such as governments and government agencies. In recent years this has changed significantly with the space industry assets and technology being in the domain of commercial organisations too.

This development continues with new technologies on satellites with more efficient usage of spectrum as well as new ground technologies. These are exciting times but at the same time the sector has experienced a period of turbulence.

There are several key trends that can be witnessed in the satellite communications sector: Firstly, the impact of the oil price fall on the oil and gas sector has had a major impact on the demand from previously big users in the sector. This of course could be temporary and any upward movement in the oil price will bring many of these players back into the market. Secondly, on the supply side, there has been a big upturn in capacity (for the reasons outlined above) which has had a major impact on prices. The third trend in the sector has been of a period of consolidation with mergers and acquisitions taking centre stage as a result of the difficult trading conditions many companies have experienced.

So, what of the future? There needs to be real emphasis on demand creation, as there are numerous untapped areas which could benefit significantly from the kind of services available through satellite. Such sectors include education in rural and remote areas. There is also scope for further demand creation in the areas of disaster recovery and aerospace to name but a few. Service providers and system integrators who are major

players in this market can play a big role with respect to demand creation.

The vision of the future in the satellite sector is one in which the business model may be more focused on partnerships and collaboration between the key players in the market. There are also interesting and exciting opportunities for venture capitalists and private equity firms within the sector. Such developments in the market will lead to a bright future indeed.

Brophy comes to NorthTelecom from a strong background in finance and accounting which will be of great value to the company, as NorthTelecom Group continues to grow.

He originally studied economics at the London School of Economics before working in the city of London for 10 years with Bank of America and Unibank. He has a long standing business consultancy relationship with Manchester Business School, UK and has worked with other business schools in the UK and abroad.

Present in 12 international points of presence and seven teleport operations as well as serving more than 100 partners globally, NorthTelecom enables businesses to be reached worldwide, leveraging the most recent and updated ICT concepts to deliver reliable and efficient services and solutions to key industries

NorthTelecom has global reach with offices in Dubai, Germany and Singapore and have operations and teleports in South Korea, Singapore, Dubai, Greece, Spain, UK and Cyprus.

Combining the strengths of its core professional team, the company offers a plethora of services to their partners and customers the world over, with a 24/7 networking operation centre and a presence in all the continents thereby offering flexibility in aid and assistance to clients. **PRO**

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>
> JOHN BROPHY, Group CFO, NorthTelecom

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