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A New Era in Space

With this issue, we've officially marched into the second half of 2015. It's been an exciting six months, and I'm glad to have met so many lovely people within the industry. The space and satellite sphere has witnessed a lot of growth, both at home and abroad. There was the launch of the UAE Space Agency, announcement of the Hope probe to Mars, numerous satellite launches, and new companies that have entered the Middle East market.

The buzz that all this has created is positively impacting the industry. Satellite players will need to evolve and quick, for now is the time to act if you want to go down in history as being part of the first space mission launched in an Arab country. There will be a lot more jobs created for talented individuals, and knowing Dubai, the space agency and the Mars mission will be on booster rockets.

In other news, CommuicAsia is at the doorstep, and I'm excited to see how satellite operators and suppliers work in the Asia Pacific region. The four day show will draw in a host of visitors from all over the world, and the organisers estimate there to be 160 exhibitors in SatComm 2015 alone. Moreover, this would definitely be a perfect opportunity to listen to world-class speakers at the conferences that run throughout the show. With my pent-up excitement, it's hardly necessary for me to tell you that this is surely a show not to be missed. If you do end up coming to Singapore, please drop me an email, and I would love to meet some new faces.

Finally, I'd like to end with wishing you all a peaceful and fruitful holy month of Ramadan. Let this time be one of reflection and filled with charity, and may all your prayers be answered.

As always I'd love to hear your feedback and comments on this issue of the magazine. Please send me an email or call on the number in the panel to your left.

Clayton Vallabhan
Editor

In this edition:

"One of the foremost goals of the UAE Space Agency is to directly engage with students, to inspire them to think about space and technology."
Dr. Ahbabi, DG, UAE Space Agency
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"SNG trucks are downsizing to camera cars, due to further integration and miniaturisation of products and components."
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"Most TV signals delivered to oil rigs come from satellite sources, which our system ingests and turns into IP streams to facilitate the distribution of high quality video."
Eleuterio Fernandes, Sales Director, Exterity
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"We are experienced in working in some of the most challenging places in the world and that's what makes us different from other companies."
Osama Oulabi, Business Unit Manager, Speedcast ME
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Today Sky Stream has established itself as a leading provider of managed and turnkey VSAT solutions across the Middle East, North Africa and South-West Asia for customers engaged in the Marine, Military and Oil and Gas sectors. Sky Stream provides flexible solutions to meet the ever changing demands of its customers, including the design, build and operation of networks. Its state-of-the-art control centre and hubs are complemented by a highly qualified and experienced team of engineers, project managers and customer service personnel.

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SatComm2015

CommunicAsia2015

UAE Space Agency and Airbus introduce workshops

The UAE Space Agency and Airbus Group join forces to roll-out the first series of Airbus Little Engineer Space workshops for the first time in the Middle East.

The inaugural workshop will challenge some 100 students between 15 and 17 years old to carry out a simulation of a launch mission to space. The Airbus Little Engineer Space workshop focuses on introducing students to the world of space exploration and enhancing their understanding of both the benefits and applications of space technology. Over the course of four hours, students will assemble and launch a rocket, set up a base and establish communications.

In addition to its direct STEM applications, Airbus Little Engineer Space workshops will help students practice soft skills including teamwork, communication, critical thinking, public speaking and creativity.

The event coincided with the strategy launch of the UAE Space Agency on the 25 May 2015, where the Agency shared with international stakeholders its vision, mission and strategic plan, as well as highlight the importance of the Space industry for the UAE.

Dr. Al Ahbabi, DG, UAE Space Agency.

Airbus Little Engineer initiative aim at instilling a passion for science at an early age and encouraging students to enter Science, Technology, Engineering and Mathematics (STEM) fields through a series of exciting, hands-on workshops.

The workshops was offered as part of the Global Space & Satellite Forum from 26-27 May 2015, which is officially hosted by the UAE Space Agency.

His Excellency Dr. Mohammed Al Ahbabi, Director General of the UAE Space Agency, said: "One of the foremost goals of the UAE Space Agency is to directly engage with students, to inspire them to think about space, technology, and their role in building the future of our nation. We're extremely pleased to be working with Airbus Group to deliver such an exciting series of workshops to students that will encourage the next generation of scientists, engineers, physicists, and mathematicians who will make the UAE a world leader in STEM related industries."

+ www.airbusgroup.com

+ www.space.gov.ae

ARABSAT PARTNERS WITH ASBU FOR RADIO AND TV FESTIVAL

Arabsat partnered with Arab States Broadcasting Union "ASBU" in organising and sponsoring the 16th edition of Arab Festival for Radio and Television which took place from 11th to 16th May 2015 in Hammamet – Tunisia. Attended by more than 600 media figures from all over the Arab world.

Khalid bin Ahmed Balkheyour President and CEO of Arabsat said: "Arabsat enjoys a strong and historical relationship with ASBU for more than 30 years, we are commercially involved with them in many projects, as the global Arabic bouquet which is considered one of the most successful joint Arab project in the field of radio and television for its technical, economical and practical benefits."

Balkheyour added: "The Arab Festival for Radio and Television is a remarkable media gathering in the Arab World where we can meet our customers and get acquainted with their needs, aspirations and their future expectations."

+ www.arabsat.com

HERMES DATACOMMS EXPANDS PRESENCE IN IRAQ

Hermes Datacomms, a global provider of managed networks for the upstream oil and gas industry, part of the SpeedCast Group, has announced the opening of its newest office in Erbil, Iraq.

The new facility is in direct response to increasing demand for services from the oil and gas sector in Iraq.

Osama Oulabi, Business Unit Manager, Middle East, said, "With the opening of the company's newest office in Erbil, we are well-positioned for growth in the region."

+ www.speedcast.com

ESA AND AIRBUS DEFENCE & SPACE BAG COPERNICUS CONTRACT

ESA and Airbus Defence and Space have signed a €177 million contract to develop the Jason-CS / Sentinel-6A Satellite mission for Europe's Copernicus programme.

The mission will use a radar altimeter to observe changes in sea-surface topography with centimetre precision, providing insights into global sea levels, the speed and direction of ocean currents and ocean heat storage.

These continuous measurements are vital for modelling the oceans and predicting rises in sea levels. With the signing of today's contract, the satellite is foreseen to be launched in 2020.

Jason-CS / Sentinel-6 will ensure the continuation of ocean surface topography measurements from its Jason-3 predecessor, planned for launch this summer.

The satellite will also carry on measurements from CryoSat.

+ www.esa.int

+ airbusdefenceandspace.com

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Picture from ABS Subic Bay MCR

IRG to host workshop at Eutelsat HQ

The Satellite Interference Reduction Group (IRG) will be holding its next workshop at the Eutelsat Headquarters in Paris on 25th and 26th June.

This latest workshop will once again outline the major initiatives aimed at mitigating satellite interference, educating the audience about recent developments, as well as giving case study examples of interference resolution.

This European workshop will follow on from the event held in Washington D.C. earlier this year, and continue a number of important discussions relating to solving VSAT interference, better educating the user with regard to Carrier ID, and turning BIG Data principles into an effective mitigation tool for Satellite Operators, amongst other topics.

"We are pleased to be hosting the latest Satellite Interference Reduction Group Workshop," commented Mark Rawlins, Director of Communication System Operations, Eutelsat, and Chairman, the Space Data Association. "Satellite Interference continues to be a challenge for our industry and, although a great deal of progress has been made, it is crucial that we keep that momentum going."

Martin Coleman, Executive Director, IRG.

"Eutelsat has been extremely active in the various interference reduction initiatives, including making its GSM Demodulation Tool development available to IRG members," commented Martin Coleman, Executive Director, IRG.

+ satirg.org

STN BEGINS PLAYOUT SERVICES FOR IROKO'S CHANNELS

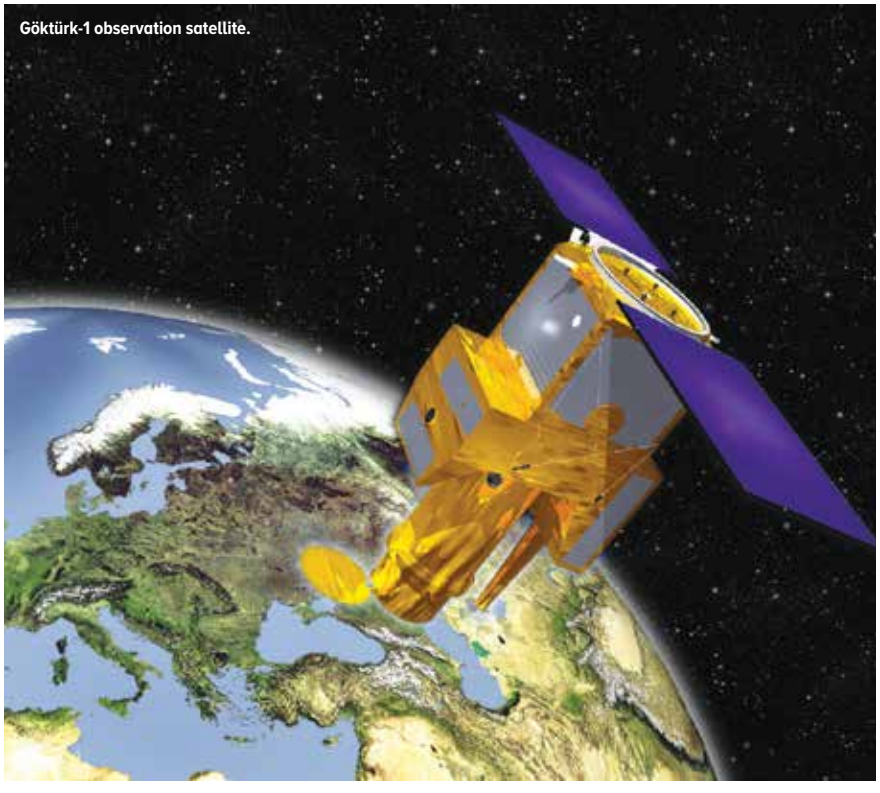
STN has begun playout and distribution services for iROKO's Nollywood entertainment channels via Eutelsat 5WA satellite with wide beam coverage over Africa.

iROKO Play and iROKO PLUS are newly-launched linear TV channels from Africa's leading Nollywood distributor, iROKOtv. The channels are now available to viewers over DTT (direct to terrestrial television) all over Africa.

STN performs fully redundant playout services, with advanced graphics and scheduling options for both channels. Management and staff from both companies were communicating live at the time of launch.

"It's all part of the STN's professional and personal touch and it was our pleasure to be part of the first phase of iROKO's new content distribution strategy", said Janja Lovsin, Operations Manager, STN.

+ www.stn.eu



Göktürk-1 observation satellite.

GÖKTÜRK-1 OBSERVATION SATELLITE SHIPPED TO ANKARA

Thales Alenia Space, Telespazio and SSM, announced that the Göktürk-1 observation satellite for the Turkish Ministry of Defence has been shipped to Ankara AIT centre to start environmental tests. The global contract, signed by Telespazio as the prime contractor and the Turkey's Ministry of National Defence comprises an Earth observation satellite equipped with a high-resolution optical sensor, a satellite integration and test center to be built in Turkey, and the complete ground segment, in charge of mission control, in-orbit operation, data acquisition and processing. Local industrial partners include TAI, Aselsan, Tübitak UEKAE, Roketsan and TR Teknoloji.

Thales Alenia Space has built the satellite and has developed the integration and test center in Turkey. Telespazio is the Prime Contractor and system integrator and, in addition is responsible for the ground segment.

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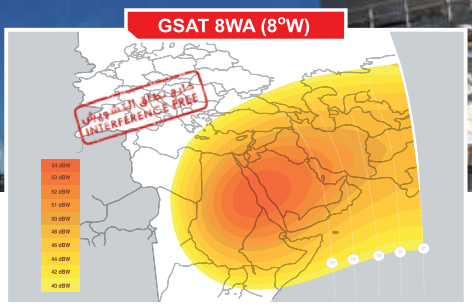

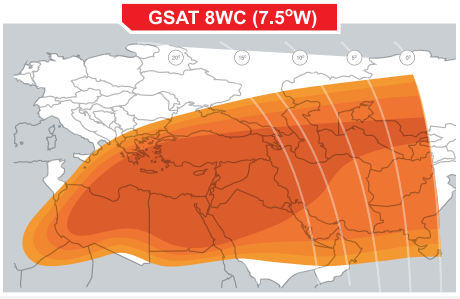

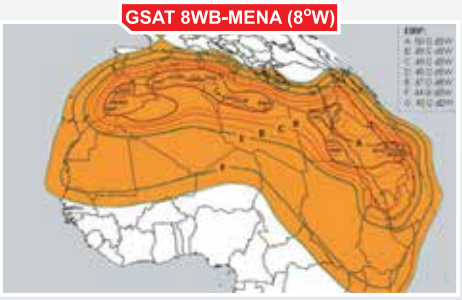

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Intelsat donates sat solutions for relief efforts in Nepal

The 25 April 7.8 magnitude earthquake in Nepal and subsequent aftershocks have disrupted last mile communications to communities with millions of people needing medical and other relief support. Intelsat has donated its satellite services to two organisations making a difference in the region: the American Red Cross working in partnership with the International Federation of Red Cross & Red Crescent Societies (IFRC), and Team Rubicon. These organizations are deploying satellite-based broadband networks to support critical medical and logistical operations in the region.

The Red Cross network is utilising capacity on Intelsat 906 located at 64° E, linking via the IntelsatOne® terrestrial network at Intelsat's Fuchsstadt, Germany Teleport to support internet and Voice over Internet Phone (VoIP) service to


Red Cross using Intelsat's services in Nepal.

remote hospitals in Nepal, providing field aid workers with connectivity that improves safety, morale and peace of mind in the wake of the disaster.

"With the connectivity provided by Intelsat, the global Red Cross and Red Crescent network is better able to deliver relief to tens of thousands of people dealing with the effects of the earthquake that killed thousands and injured many more in Nepal," said David Meltzer, General Counsel and Chief International Officer at the American Red Cross. "Communications are key to the global relief effort underway and being able to provide voice and data connectivity between Nepal and the rest of the world is a critical tool in our disaster relief work."

Separately, Intelsat is also supporting a network established by Team Rubicon, a disaster response organization that unites the skills and experiences of military veterans with first responders to deploy emergency response teams, to further aid in their relief efforts. Team Rubicon brought medical supplies and sent several teams to aid the Nepalese people.

+ www.intelsat.com

TALIA APPOINTS VICE PRESIDENT OF BUSINESS DEVELOPMENT

Talia has announced that Jack Buechler has joined the executive team as Vice President of Business Development, reporting to Alan Afrasiab, Chief Executive Officer. Buechler brings many years of experience in sales, marketing and business development within the VSAT market across EMEA and North American and will lead the expansion of Talia's sales and commercial interests.

Prior to joining Talia, Buechler served as Regional Sales Director for Advantech Wireless, a Canadian OEM equipment manufacturer. He previously served at Kingston inmedia as head of sales data services responsible for VSAT sales and hosting of services for large customers. Prior to this he served at BT (British Telecom) in Satellite Services and Loral Cyberstar as VP Sales EMEA for Internet services, an early provider of trunked VSAT services to large carriers and VSAT providers.

During his tenure at Loral Cyberstar, he was instrumental in the original idea of creating an industry body, the Global VSAT Forum (www.gvf.org), a single non-profit organisation that could act without commercial or technical bias for all its members. Today, GVF has more than 300 member companies representing hundreds of thousands of people involved in the VSAT business.

"I am delighted to be a joining Talia, such a forward-thinking and progressive company, focused on delivering quality services and market leading capabilities," said Jack Buechler.

+ www.talia.net

ETL'S RF EQUIPMENT USED BY BAE

ETL Systems, a global designer and manufacturer of Radio Frequency (RF) distribution equipment for satellite communications, has provided BAE Systems Australia, the largest defence contractor in Australia, with customised amplifier units.

These amplifiers have been designed for X-band and KA-band antennas for a Ground Station in outback Australia that will receive signals from the Wideband Global SATCOM system. Graeme Bent, BAE Systems Australia's Director – Land and Integrated Systems said: "The amplifiers form part of a new Ground Station that will give the Australian Defence Force the ability to communicate globally with its deployed units. The ETL equipment is designed for use in the harsh environment and performs to specification with high input power."

ETL's new model is IP 65 rated with a 25dB monitoring port, is inline powered, offers 20dBm/ 1dB gain compression point and has a low noise level of 10dB. It also compensates for passive splitters and combiners and is supplied with waterproof N-type connectors.

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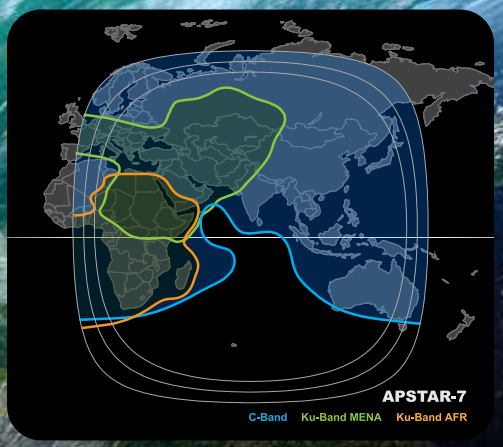

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Reporting **from the field**

With the size of terminals reducing, and data rates rapidly rising, Satellite News Gathering is becoming both a reasonable solution for broadcasters, as well as a failsafe option for critical situational reporting

Large broadcasters, news agencies or broadcast unions are looking to automate workflows in order to reduce mainly OPEX in many ways. At the same time, automation on a converged IP network allows users to lay out workflows end to end on hybrid networks.

"As delivering content in new ways to multiple devices and in different formats is incredibly complex, and upgrading legacy networking systems can be a costly undertaking, media companies are also interested in purchasing a managed service from satellite service providers or satellite operators. This also provides the advantage of being able to access a network via the service provider or satellite operator. Another trend we see is the requirement for occasional use setup of IP trunks between truck and studio," says Hans Massart, Market Director Broadcast at Newtec.

Ali Zarkesh, VP Product Management at Vislink agrees and adds that he sees a trend in the move towards smaller news vehicles that include bonded satellite and cellular transmission capabilities. He thinks the correct equipment, together with improved technology, offers the ability to combine both methods of data transport to achieve the necessary data rates to transmit HD video.

Roger Franklin, CEO of Crystal says: "The size of equipment will continue to decrease, while automation will increase, which will compensate for any potential human error and make the process of SNG more efficient, and greatly reduce errors, such as those that cause satellite interference."

He sees the road ahead as being paved with major developments for antenna technology, alleviating the need for the news gathering team to point the antenna.

"We already see innovation from companies such as Kymeta, but we may see the same technology deployed on Low Earth Orbit satellites first, giving easy connectivity to just about anyone, anywhere in the world. Eventually all news gathering video will be transmitted in IP format and will travel the best path possible: terrestrial, GEO satellites, or LEO satellites," comments Franklin.

SNG equipment is typically used in

environments where traditional resources for video transmission are not available, such as microwave link, fibre, and IP-based backhaul. Or it can be used when the connection isn't strong enough to transmit video over the cellular network.

A mobile uplink is deployed to a remote location as a means to transport video, audio or data via satellite to a downlink site. There are SNG trucks dedicated to networks to gather news and there are mobile uplink companies that lease their services for broadcast specific events.

Zarkesh says: "SNG is used to transmit video from a remote location. Typically, this is for live event coverage, such as a forest fire. However, it can also be used to distribute video to multiple networks for re-broadcast, such as a World Cup soccer game.

"SNG also has two-way voice and data capabilities, letting the user receive communications from the studio. This can offer an extension to the remote satellite, as if it was part of the existing LAN architecture," adds Zarkesh.

Massart thinks there is a direct influence on the equipment used, ranging from the cheapest, most often terrestrial 3G/4G based Fast News Gathering (FNG) single contribution, to the highest quality, with UHDTV grade encoders and full chain redundancy under control of an automation system for, for example, F1 racing events.

Zarkesh explains that besides broadcasters, organisations focused on disaster recovery and military forces are avid users of SNG.

"For broadcasters, as they never know where a story will break, it's important to have maximum flexibility in terms of transmission methods to ensure a story can be relayed live from the field to the newsroom. It's for this reason satellite is the go-to solution for remote coverage, where the cellular network is unable to support video throughput."

Expanding further on the role of SNG, Franklin explains that SNG is invaluable during natural disasters, particularly when the terrestrial network is unreliable. Another use of SNG can be during long-term news events, such as a criminal or civil trial where local connectivity is not easy to come by. Furthermore, SNG can also be used extensively during major events, such as the Olympics, where it can serve as a backup in case of terrestrial connectivity issues.

Ali Zarkesh, VP Product Management at Vislink.

"In terms of equipment, every SNG truck needs a certain amount of basic equipment including a video encoder, quality control equipment, modulator, transmitting satellite encoder, and either an up converter and amplifier or transceiver. A video file server is often included, as is a receiver, enabling the reporters to watch their own uplink and ensure data connectivity back to headquarters.

"Some news trucks, such as CNN, have data modems on board, allowing them to extend the internal phone system to the SNG truck allowing directors to communicate with the truck as if they are in the studio next door," says Franklin.

SNG equipment is continuously upgraded, with the aim of being more portable, easy to deploy and effective in various environments.

Massart says: "If 3G/4G networks are available they are probably more cost-effective. However, in remote areas, bandwidth/coverage may be unavailable for certain events, for example, if everybody starts using 3G/4G, overbooking will occur. In such cases, satellite is the only viable alternative.

"SNG trucks are downsizing to camera cars, due to further integration and miniaturization of products and components but also due to, for example, the advent of Ka-band. A journalist and cameraman plan are enough to handle the event coverage but for large events, which are well planned in advance, SNG vans may well be accompanied by OB vans to allow

Martin Coleman,
Executive Director, IRG.

Roger Franklin,
CEO, Crystal.

"The size of equipment will continue to decrease, while automation will increase, which will compensate for any potential human error and make the process of SNG more efficient, and greatly reduce errors, such as those that cause satellite interference"

ROGER FRANKLIN, CEO, Crystal Solutions

full production. Security reasons and even weather conditions will also make sure not all SNG vans will become camera cars."

Meanwhile, the need for supporting both linear and non-linear, tapeless workflows has triggered a dramatic increase in the capabilities and subsequent complexity of a modern SNG broadcast network.

Challenges and Solutions

Operating these SNGs has become increasingly challenging. Flexible SNG transmission equipment is therefore key for successfully bringing breaking news to the studio.

"Newtec's satellite broadcast modems deliver the complex features today's broadcasters need, while also ensuring user-friendly and hassle-free operations. In this respect, Newtec's broadcast modems support DSNG profiles, according to the WBU-ISOG working group. This set of pre-configurations will ease line-up, shorten time-to-deployment and limit transmission errors," adds Massart.

Abdullah Battah, CTO of ABS Network, one of the largest broadcast services companies in the Middle East and North Africa, says that throughout the years, technology is allowing SNG equipment to become compact and portable.

"New technology of broadcast such as HD, MPEG-4, DVB-S2 has been added and created and today we see that more bands are created to enhance the performance and utilise the satellite bandwidth.

"In some countries, tackling regulations and permissions is a challenge. The equipment, as it is highly specialised, is expensive to purchase as well as to

Hans Massart, Market Director Broadcast Newtec.

Abdullah R. Battah, CTO, ABS Network.

operate since it requires specially trained staff. This also means that sometimes SNG solutions require a long time to deploy. Due to the power consumption, it is always necessary to have an efficient high power electric power supply, and since the equipment is typically deployed in the field and is so specialised, it is unlikely that in the event of any failure, you would have spare parts available. Finally, to effectively transmit the signal to the satellite might require an open space and line of sight to be maintained which is not always easy to accomplish," says Battah.

Other challenges involve condensing the size of the equipment and ensuring pointing accuracy of the antenna. If this is inaccurate, it is much more likely to cause problems such as adjacent satellite interference.

"Because the equipment is small and portable, it is easy for the "powers that be" to make an assumption that an engineer doesn't need to go. This may work if the SNG is equipped with the right antenna pointing software, but if something goes wrong, the news gathering team may not know how to solve the problem. The cameraman and reporter may not understand that a stable platform and clear look angle are required during transmission. This leads to mistakes, such as pointing the antenna through power lines, or jostling or moving the antenna during transmission," adds Franklin.

"For broadcasters it's important to have maximum flexibility in terms of transmission methods to ensure a story can be relayed live from the field to the newsroom. Satellite is the go-to solution for remote coverage, where the cellular network is unable to support video throughput"

ALI ZARKESH, Vice President, Product Management, Vislink

The good part is these challenges can easily be overcome by addressing personnel, equipment quality and technology through global initiatives.

Martin Coleman, Executive Director, IRG explains: "Often the people operating the


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SNG equipment are not engineers, and they do not fully understand the systems they are using. Our End Users Initiative Advisory Committee has established a specific SNG training course with the Global VSAT Forum (GVF), which aims to address that. If we can train the SNG operators, they will be able to maintain the equipment appropriately, ensure the right conditions and clear angle for transmission and troubleshoot any problems they may experience. The challenge is overcoming the assumption that SNG is just about pressing a few buttons to ensure that SNG operators are getting appropriately trained.

"Secondly, equipment quality, through GVF quality and type approval initiatives to ensure that all equipment meets global set of accepted requirements. Finally, using technology, which is a main focus for IRG through a variety of initiatives. The most common form of technology solutions for this type of system is auto-deployment and automatic scheduling of transmissions. This is where the user is purely there to monitor progress and concentrate on the content transmitted," concludes Coleman. PRO

"SNG trucks are downsizing to camera cars, due to further integration and miniaturization of products and components but also due to, for example, the advent of Ka-band. A journalist and cameraman plan are enough to handle the event coverage but for large events, which are well planned in advance, SNG vans may well be accompanied by OB vans to allow full production"

HANS MASSART, Market Director Broadcast, Newtec

With SNG antennae becoming more portable, SNG cars are taking over previous generation trucks.

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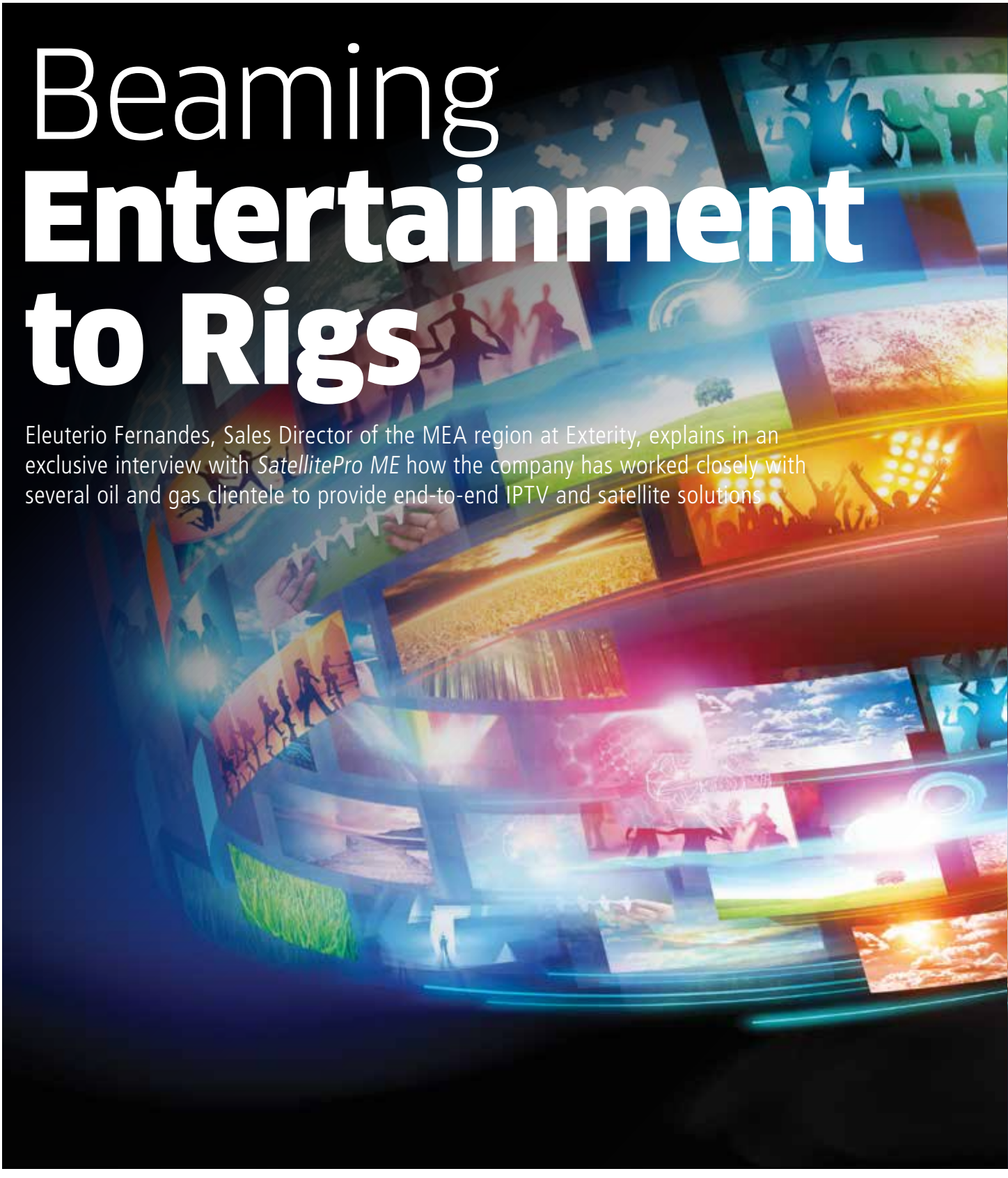
Beaming **Entertainment to Rigs**

Eleuterio Fernandes, Sales Director of the MEA region at Exterity, explains in an exclusive interview with *SatellitePro ME* how the company has worked closely with several oil and gas clientele to provide end-to-end IPTV and satellite solutions



Offshore oil rigs require complex satellite solutions that need to be robust, always online and work to perform a slew of different operations. Besides communications, oil rigs need to provide entertainment to their staff. This can be delivered through customised solutions, where TV and radio signals not only boost crew morale, but help them feel connected with the world on shore.

Exterity provides enterprise IPTV technologies for the secure distribution of live, on-demand and recorded video over IP. It also works organisations in a wide range of industries, including broadcast and media; corporate and finance; government and military; healthcare; higher education; hospitality; oil and gas; transport, and venues and stadia.

Exterity has offices in the UK, Dubai, Johannesburg, France, Germany and the US in order to be closer to its customers.

Some of Exterity's clients include Dubai Airport, King Abdulla Sports City in Jeddah, Jumeriah Group and New York University. Furthermore, it is involved in multiple installations in oil & gas facilities, where its solutions are used as the entertainment system for the on- and offshore teams, to transmit offshore streams to the onshore platform over VSAT and secured links beyond the LAN to remote petrol stations and more.

Eleuterio Fernandes, Sales Director at Exterity says: "Our professional IP video systems are also integrated with Building Management System (BMS) to deliver reports and messages directly on the BMS interface, control systems, digital signage and the fire alarm systems. The low power consumption of our system enables it to be deployed in any environment."

Oil rigs are usually remote, which impacts the quality of the network and means that satellite is often the only available option. Satellite communications help identify the exact location of a rig, a prerequisite in case of any accident offshore, and can receive communications from satellite content suppliers and deliver it by VSAT communications to transmit the client's proprietary content. This can include CCTV camera footage or messaging via small dish antennas.

Eleuterio Fernandes, Sales Director, Exterity.

Satellite communications are also widely used to deliver TV and radio to staff in an easy, secure and reliable way.

"In our experience, most TV signals delivered to oil rigs come from satellite sources, which our system ingests and turns into IP streams to facilitate the distribution of high quality video around the offshore installation. Re-encoding all content to IP enables us to deliver a larger number of streams directly over the IP network used for email communications and digital signage, ensuring that cabling requirements are kept to a minimum as shipping cables to an oil rig in the middle of the ocean can prove difficult," says Fernandes.

While satellite plays a key role in enabling communications offshore, it is usually combined with IP to ensure the fast delivery of any type of content to the displays around the rig.

Increased emphasis on enforcing health and safety measures in rigs has also forced offshore installation managers and operations team leaders to find solutions to keep staff up to date with the latest rules and regulations on current drilling

Consoles on board an offshore oil rig.

zones. Digital signage provides an ideal solution to this challenge as it can deliver live information for crane operators and ballast control operators, whose work must be safe and efficient to avoid impacting other members of the on-site workforce.

According to Fernandes: "Ease of setup and operation is a prime factor for any AV installation deployed in such an environment, which is why professional IP video solutions have become commonplace in this market. A powerful AV system integrating a wide choice of live TV channels and other video services ensures that crews stay connected to the outside world with news and entertainment, while enabling operators to leverage video to deliver notices and training to staff."

"Ease of setup and operation is a prime factor for any AV installation deployed in such an environment, which is why professional IP video solutions have become commonplace"

ELEUTERIO FERNANDES, Sales Director, Exterity

Professional IPTV is becoming more and more commonplace as it easily complements satellite communications to ensure that staff are informed, educated and entertained in real-time, enabling oil and gas camps to run smoothly.

Oil and gas companies are increasingly looking for a full end-to-end IPTV system that is reliable, scalable, secure, robust and based on open protocols to facilitate

integration, regardless of the size and specific requirements of the installation.

Fernandes adds: "Increasingly, customers also want the system to integrate with additional AV components such as digital signage in order to distribute video and information messages to any end point. Recently, our customers have also started requesting a professional IP video system that integrates with mobile devices including smartphones and tablets connected over LAN, WAN, Wi-Fi or the Internet, which enables the oil and gas company to deliver live channels, alarm messages, training materials and corporate information to the employee's portable device."

In addition, the extreme temperatures that oil rigs suffer from can really affect employees' motivation. By providing video entertainment to their teams, oil and gas companies can improve camp morale and minimise employee turnover.

"Professional IP video systems can provide a single solution to the challenges that oil and gas team leaders face. Easy to deploy, they sit on top of the existing IP network, making them perfectly suited to supply vessels, crew accommodation and drilling platforms, where space and structural integrity are at a premium.

There are end-to-end IPTV systems, including TVgateways, which capture streams from satellite dish receivers, setup box receivers and beyond. These solutions enable delivery of quality video to any end point, whether a monitor, a smartphone, a tablet or any other screen available.

IPTV utilises existing wired infrastructure and hence is quick to deploy as network operators can integrate an IPTV layer directly with any existing IP network, avoiding additional operations that could disrupt the distribution of data or cause delay in video delivery.

Deployments in oil and gas have shown that these systems can be deployed throughout oil and gas camps and provide visitors and staff with easily accessible entertainment, even in highly remote locations. The IPTV solutions support a large number of international and regional channels and an unlimited number of end points, whether monitor, PCs or mobile devices ensuring people can access content across the base on all devices.

"Our professional IP video system are being used in multiple installations in the oil and gas market, such as BP camps in Azerbaijan and Iraq, Saudi Aramco Yanbu Refinery, Kuwait Gulf Oil company and Saudi Chevron. The Exterity professional IP video system is used to stream live TV channels, including PayTV, training videos delivered to the displays around the oil rig and the onshore offices, as well as CCTV camera footage and to deliver real-time information via digital signage," concludes Fernandes. PRO

"Customers have also started requesting a professional IP video system that integrates with mobile devices including smartphones and tablets connected over LAN, WAN, Wi-Fi or the Internet"

ELEUTERIO FERNANDES, Sales Director, Exterity

Workers on oil rigs need to be entertained in order to maintain crew morale.

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The Best of **CommunicAsia 2015**

CommunicAsia is presenting a host of veteran and new technology setups within the satellite sphere. The show will bring new insight to the Asia-Paciifc market, and will introduce a slew of technology including Big Data, Business Analytics, Cloud technologies, IoT and Zigbe


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ETL Systems demonstrates RF over fibre at the show

ETL Systems has expanded its RF over fibre product range addressing outdoor applications with its new weatherproof, outdoor unit (ODU).

Following significant orders for matrices from Grus TV in Hong Kong, splitters from Precision Technologies in Singapore, StingRay Fibre system expansions from Paradise Communications in Indonesia and component units from a Thai satellite operator, ETL will bring an extensive range of RF products to this year's CommunicAsia.

This will include ETL's StingRay RF over Fibre indoor and outdoor units, with hot-swap RF over fibre modules, for short distance links (up to 10km) between satellite dishes and the teleport.

The new outdoor enclosure boasts increased reliability and resilience in order to function effectively outdoors, with an IP65 weatherproof enclosure.

Also on display is the Dextra series of L-band splitters and combiners, which are available in four, eight and 16 way

configurations. The Dextra range offers excellent resilience with dual PSU's and a dual amplifier option, as well as extensive remote control and monitoring facilities.

The extremely compact, 16U high, 128x128 Vulcan switch matrix/router, offers hot-swap capabilities for reliability in service and continuous monitoring, and Alto variable gain line amplifiers, which feature variable slope compensation and redundancy options, will also be available to view.

With 25 years' experience in designing award-winning equipment, ETL is recognised internationally for its superior quality and professional one-to-one service offering. Dedicated in-house engineers specialise in originating innovative RF design concepts, and enhancing existing products.

ETL Systems' StingRay Fibre Solution - Building on existing RF expertise, the new range provides a unique design for high isolation applications.

"This is the most compact unit of its kind on the market, capable of fitting the greatest number of hot-swap transmit and receive fibre modules in the smallest space," said Dr Esen Bayar, Technical Director of ETL Systems. "We have focused on excellent module to module isolation and this StingRay fibre chassis helps satellite teleports with transition distances up to 10km."

A new range of web-enabled professional splitters and combiners to cover the L-band frequency range is available on view at CommunicAsia.

ND SatCom launches SKYWAN 5G at CommunicAsia

ND SatCom's SKYWAN 5G will transform the way communication networks are created and behave by converging VSAT & comprehensive IT capabilities into ONE single hardware device. SKYWAN 5G enables the most flexible, scalable and reliable VSAT networks in history. The all-in-ONE unit fits all topologies, plays any network role, like hub, remote or integrated in Manpaks or Fly-Aways, and allows stacking of units to further boost performance of the network. Never before has a ONE rack unit VSAT hub been so powerful!

SKYWAN 5G includes an MF-TDMA modem with integrated DVB-S2 receiver and is capable of achieving significant data rates. Designed as an all-in-ONE device with high network redundancy and a wide range of IP support, the ONE device allows data to be transmitted in single-hop directly from their origin to their destination,

thereby avoiding double hops and extra delays. Bandwidth is dynamically allocated as required, which brings substantial savings on satellite capacity cost.

No matter if a star, multistar, hybrid or full mesh network is needed, the unique hardware design of SKYWAN 5G reliably fits all topologies within the VSAT world. Following the approach of a single hardware unit for all purposes, each SKYWAN 5G has the full functionality on board. ONE small hardware for all network roles simplifies logistics and customs' handling and unprecedented scalability enables the gradual growth of the network.

"We are very proud to present the new member of the SKYWAN Family, the SKYWAN 5G, at the CommunicAsia. We are certain that this platform will become a game-changer in the VSAT market thanks to its powerful performance, yet extremely compact design.

We invite everyone to stop by at our booth and have a look at its extraordinary capabilities," says ND SatCom's CEO, Andreas Bernhardt.

Telestream showcases video transcode solutions

Telestream will demonstrate the potential that its software platform offers to generate significant new revenue streams and increase operating efficiency. Forming the centerpiece of its technology showcase, Telestream's Vantage® media processing platform is the foundation for a broad range of enterprise-class software products that allow content owners, producers, and distributors to quickly, easily and efficiently ingest, edit, transform, package, monetise and distribute their media.

The Vantage platform is based on a flexible service-oriented architecture that is made up of discrete services and connectors that combine to create powerful automated workflows – all under unified system control. Vantage services provide transcoding, media capture, metadata processing, media analysis, and content assembly. Vantage connectors enable seamless, API-level integration with third-party systems.

Built on Vantage, Tempo is a new time adjustment solution for re-timing file-based content and intelligently adjusting the running time of shows and segments. It utilises new time compression algorithms that deliver superior quality and faster turn-around times. Running on the Vantage media-processing platform and new Lightspeed K80 Server, Tempo is easy to use and offers all of the benefits of the industry's leading workflow management and transcoding system.

Tempo is a product that returns a substantial ROI by providing the ability to increase advertising avails throughout the day. Tempo will be particularly interesting for companies who are working with content from other regions of the world where the ad timing is different than their current format.

As today's file-based workflows expand to accommodate new processes and delivery to multiple platforms such as traditional TV, Web and mobile devices, they inevitably require additional processing power. The new Lightspeed K80 Server offers significant speed and productivity improvements over previous Lightspeed® Servers for products built on the Vantage media processing platform. The latest GPU/CPU acceleration technologies are utilised to boost video processing and H.264 encoding speeds. This means fewer nodes are required to process more files in less time – allowing users to save time and be more productive. Housed in a high-density 1 RU (rack unit) server, the Lightspeed K80 also reduces space, electrical and thermal requirements.

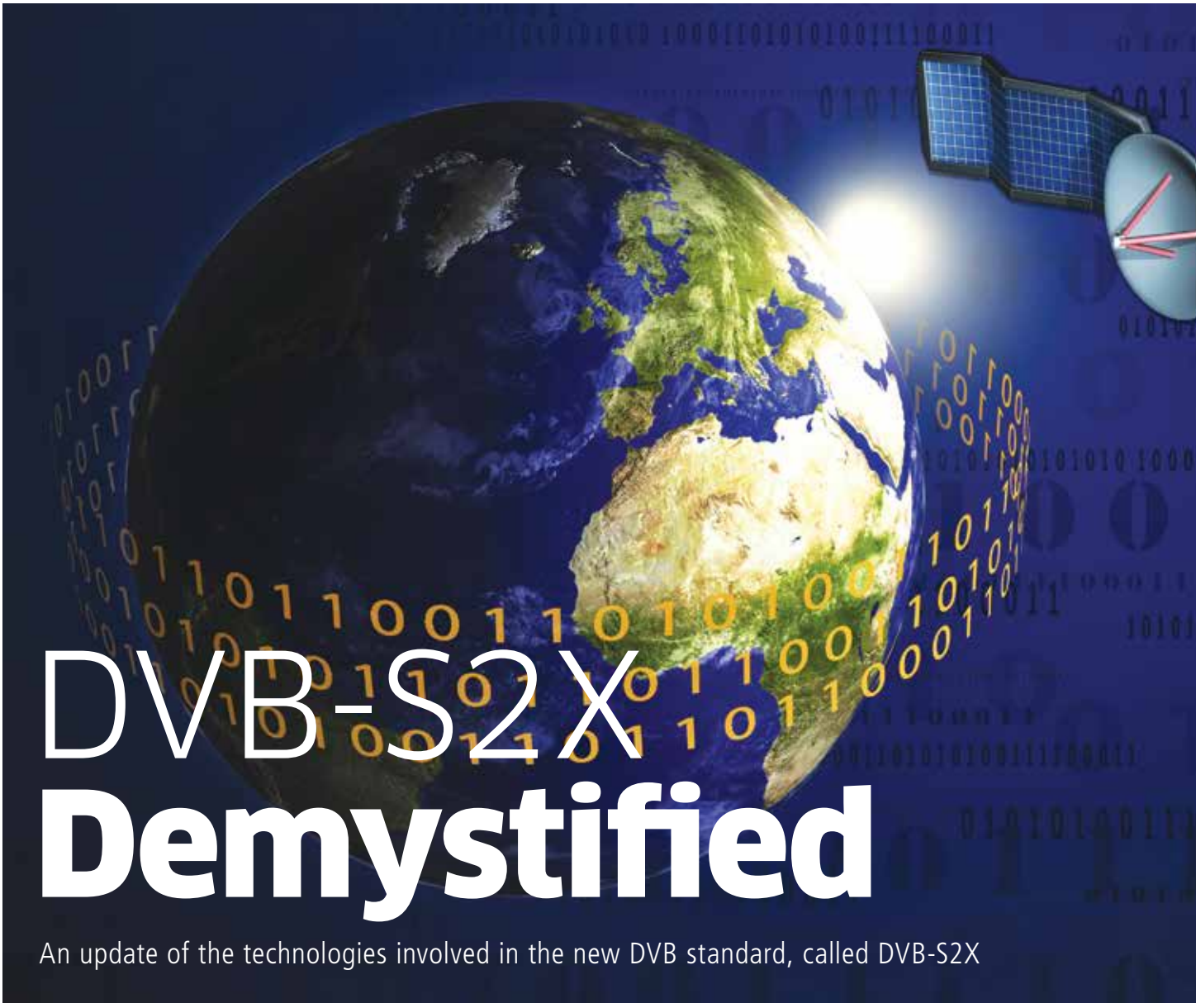
Work Microwave presents its full range at the show

At CommunicAsia2015, WORK Microwave is showcasing its range of DVB-S/S2/S2X equipment that provides satellite operators with increased flexibility, bandwidth, and margins while reducing their amplifier power, operating costs, and antenna sizes.

WORK Microwave platforms have been deployed all around the world to support a range of applications within the broadcast, satellite, and telco markets, including SNG, direct-to-home, IP trunking and backhaul, teleport, remote location, and more.

A key highlight will be WORK Microwave's DVB-S2X Broadcast Modulator, the ideal solution for DTH broadcast, video contribution, and distribution applications over satellite. The DVB-S2X Broadcast Modulator is one of the industry's only solutions that comes predistortion-ready for automatic group delay and nonlinearity compensation. This allows operators to mitigate the negative effects in satellite filters and amplifiers, while reducing power and increasing beam coverage, throughput, and availability. Other innovative features include DVB-S2 multistream, TSoIP, wideband up to 80Mbaud, and carrier ID. By supporting all DVB-S2X extensions, WORK Microwave's DVB-S2X Broadcast Modulator provides operators with a future-proof platform that offers smaller roll-offs, advanced filtering, and higher modulation schemes, enabling operators to achieve sizeable efficiency gains compared with proprietary systems.

Powered by a combination of video and IP technologies, WORK Microwave's DVB-S2 IP Modem includes a variety of sophisticated functionalities, such as DaVid technology, carrier ID, predistortion, and OptiACM, which optimise throughput and increase network bandwidth for service providers, corporate networks, and telcos. During a live demonstration, visitors can experience first-hand the ACM functionality of the IP modem by viewing an interactive test setup that shows how it compensates for disturbances in the satellite link caused by physical conditions such as humidity and atmospheric precipitation. PRO



DVB-S2X Demystified

An update of the technologies involved in the new DVB standard, called DVB-S2X

DVB-S2 is the most accepted and widely spread standard in the satellite market. The standard has a deep market penetration in Sports and News Contribution, Professional Video Distribution solutions, IP trunking and Cellular backhauling, Broadband VSAT solutions up to Government and Defense networks over satellite.

In a fast moving satellite world new technologies (HTS, HEVC, UHDTV) emerge, data rates increase at an accelerated pace and end-users expect to get connectivity anywhere anytime. Within applications such as Contribution and IP Trunking the efficiency requirements are already testing the limits of the DVB-S2 standard. The risk for a massive take-over by proprietary technologies with better performance is realistic. A proprietary scenario would disperse the satellite industry, increase the cost of satellite communications as well as prevent interoperability and result in vendor lock-in.

The new DVB standard, called DVB-S2X (or extension to DVB-S2), with improved efficiency will give the satellite industry more breathing space to increase profitability and allow for business growth throughout all applications, from High Speed IP to Broadcast to VSAT.

The efficiency technologies contributed by Newtec to the new DVB standard boost the satellite link up to 20% in Direct-To-Home networks and 51% in other professional applications compared to DVB-S2. These gains already exceed the results by proprietary systems in the market today.

"The biggest demand for the extensions to the DVB-S2 standard comes from video contribution and high-speed IP services, as these services are affected the most by the increased data rates"

INTRODUCTION

Kick-started by Newtec in the course of 2012, key players in the satellite industry are calling for a new satellite transmission standard, specifically for professional satellite contribution links, which would extend the existing DVB-S2 standard.

The satellite world has changed a lot since DVB-S2 was first published in 2005. Higher speeds, more efficient satellite communication technology and wider transponders are required to support the exchange of large and increasing volumes in data, video and voice over satellite. Moreover end-users expect to receive connectivity anywhere anytime they travel, live or work. The biggest demand for the extensions to the DVB-S2 standard comes from video contribution and high-speed IP services, as these services are affected the most by the increased data rates.

In the long run more throughput will be required for Direct-to-Home applications as well with the rise of Ultra- High Definition TV (UHDTV) and the High Efficiency Video Coding (HEVC) video compression standard to support the request of higher quality images by the market. Ultimately, for satellite businesses, the creation and adoption of these extensions will translate to higher efficiency, higher speed, more mobility and greater service robustness to increase business and therefore revenues.

The combination of technologies incorporated in the new standard results in a gain of up to 20% for DTH networks and 51% for other professional applications compared to DVB-S2.

Many vendors, operators and satellite specialists within the industry did agree with DVB and have worked towards the new standard.

Finally in February 2014 the new standard, called DVBS2X will be launched officially towards the satellite communication market.

THE MARKET IS IN (R)EVOLUTION

SATELLITE'S CHALLENGE AGAINST FIBRE

Changes have never occurred so rapidly in the satellite industry as today. The increasing penetration of terrestrial communication alternatives has put satellite under pressure.

A common misconception is that fibre will entirely replace satellite sooner or later. Use cases, economic considerations and new technologies prove that satellite still has value for years to come. Terrestrial and satellite communications are more likely to cohabitate in network structures and will be selected depending on the application.

BREAKTHROUGH TECHNOLOGIES CHANGE THE GAME

High Throughput Satellites (HTS) and efficiency technologies have changed the game. More bandwidth capacity will become available and prices per megabit will drop. Both HTS and efficiency technologies blow oxygen into satellite service provider's profitability and growth.

Efficiency technologies allow for more throughput in the same bandwidth or to save on OPEX. In technical terms, efficiency technologies push more bits through the same Hertz.

What can be done with these extra megabits? Examples throughout different applications demonstrate the benefits:

- In a VSAT environment more users can be added to the network resulting in extra revenue. Higher SLA's become possible increasing the user experience.
- Broadcasters can add more TV channels to their offering and increase the quality of the image.
- Extra revenues can be achieved by adding services in a multiservice context.

The impact of efficiency technologies and HTS is so big in the satellite market; that the standardisation of these technologies cannot be delayed.

IMPACT OF STANDARDS

WHY STANDARDS?

In the satellite industry there will always be a field of tension between open standards and proprietary technologies. Although in the short term proprietary technologies might be the best option to acquire quick revenues, in the long run the availability of open standards will benefit the entire satellite industry for the following reasons:

- Open standards create an eco-system that spurs companies to develop new solutions based on common building blocks
- Open standards reduce the barrier for entry for companies to develop new solutions for satellite communications
- Open standards create an economy of scale that allows a reduction in the cost of equipment and increases the profitability of the industry
- Open standards avoid vendor lock-in and allow multiple vendors to enter the network, lowering the overall risk of high pricing, companies going bankrupt or non-availability of spare parts
- Open standards increase the quality of products as the technical implementation is supported by multiple organisations.
- Open Standards allow for interoperability

between different government, NGOs and commercial organisations increasing the effectiveness of operations in the field.

The impact of standardisation increases the quality of life in both developed and developing countries. Standards for satellite communications allows people to connect all over the world to the information highway to give them better access to education, to (welfare) services, to economical, political and social involvement.

WHICH MARKETS WILL QUICKLY ADAPT TO DVB-S2X?

The satellite industry has come to a consensus that a successor to the DVB-S2 standard is required to accommodate for increased profitability, interoperability and growth in the professional satellite communications market.

Newtec has taken the lead and teamed up with other DVBmembers in order to define and develop the update on the DVB-S2 standards. The current DVB-S2 standard has served the industry well, but it is now close to 10 years old.

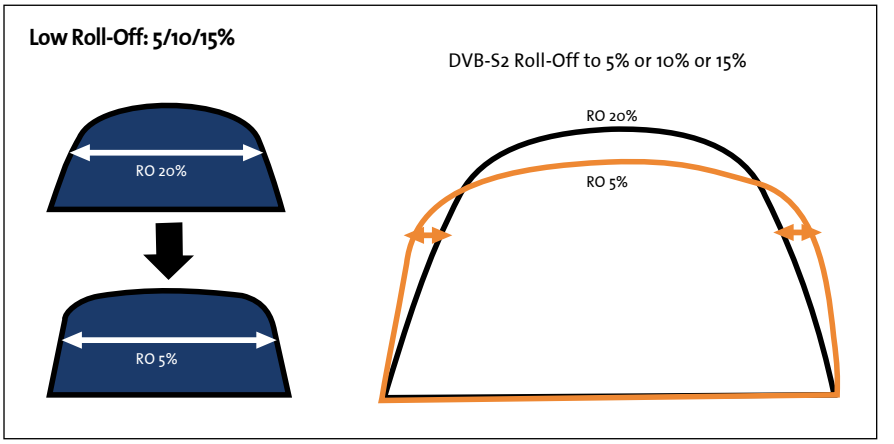
The satellite industry will benefit from an extended standard in line with today's technological advances. Through the new standard (DVB-S2X) better efficiencies and throughputs over satellite will be obtained.

Up until now the DVB-S2 standard has been the solution for a wide scope of applications over satellite including distribution applications such as Direct-to-Home (DTH). For distribution activities broadcasters are likely to continue to use the existing DVB-S2 standard for some time. But with the new higher resolution technologies like ultra high definition TV (UDHTV) and High Efficiency Video Coding (HEVC) video compression about to hit the market, and the drive for more content, in the longer term the new S2 Extensions will be adopted for DTH networks as well.

We are likely to see an immediate take-up in applications that require high throughput over satellite for professional use and in applications that suffer for bandwidth or need better margins to remain profitable.

The applications that will adapt quickly to the DVB-S2X are:

- IP Trunking & IP/Telecom Backbones
- Broadcast Contribution and Exchange
- IP Backhauling & Professional IP Access
- Government High SpeedCommunications & Disaster Recovery
- Multiservice networks over satellite



THE INNOVATIONS BEHIND DVB-S2X

The successor to the DVB-S2 standard is a combination of innovative technologies that improve overall efficiency over satellite links.

The technologies involved in DVB-S2X are:

- Low roll off, smaller carrier spacing and advanced filter technologies
- MODCOD and FEC upgrades (more granularity, adding 64, 128 and 256APSK, improving FECs & MODCODs and differentiating linear & non-linear MODCODs)
- Wideband implementation.
- Very Low SNR MODCODs to support mobile (land, sea, air) applications
- Bonding of TV streams
- Additional standard scrambling sequences

These technologies and their intrinsic benefits will be described in more detail in the following sections.

SMALLER ROLL-OFFS AND ADVANCED FILTERING TECHNOLOGIES

The new DVB-S2X includes a combination of smaller rolloffs (5%, 10%, 15%) and introduces advanced filtering technologies to allow optimal carrier spacing. Compared to DVB-S2 the combination brings efficiency gains up to 15%.

Improvement 1: Smaller Roll-Offs

A first innovation inside the new standard implements a smaller Roll-Off (RO) percentage than currently used in the DVB-S2 standard.

In the DVB-S2 standard the 20% and 25% Roll-Off percentages are common and are an integral part of the modulated carrier (i.e. symbol rate plus Roll-Off). Reducing Roll-Offs to 5%, 10% and 15% results in a direct gain in bandwidth. Looking at the spectral image when implementing smaller Roll-Offs the slope of the carrier becomes steeper compared to DVB-S2 but still fits nicely in the allocated bandwidth.

The efficiency gain by implementing smaller roll-offs can go up to 15%. When implementing smaller roll-offs every network and/or link needs to be checked individually as immediately switching towards 5% roll-off does not always bring the best efficiency. In some cases 10% roll-off will give better results.

Improvement 2: Advanced Filtering Technologies for Improved Carrier Spacing

The second innovation deals with noise levels (side lobes) on both sides of the carrier. These side lobes prevent putting satellite carriers close to each other.

Applying advanced filter solutions has an immediate effect on bandwidth savings as the spacing between carriers can be put as close as 1.05 times their symbol rates (or even closer in some specific use cases).

It is important to note that even with 35%, 25% and 20% Rolloffs better filtering results are obtained. The improvement has the best effect when the ground station High Power Amplifier (HPA) is driven close to saturation. The spectral regrowth at a frequency offset (= symbol rate) will be lower with the better filtering. Meaning, at saturation the result

will have a much cleaner signal spectrum.

Improvement 3: Supporting Different Network Configurations

The Roll-Off and filtering innovations within the new standard can be applied in satellite links with single carriers (mainly Roll-Off effect), multiple carriers (Filtering and Roll-Off effects) or carriers sharing the same transponder with other providers. In the latter case DVB-S2X carriers can easily co-exist with adjacent carriers from other operators within the same transponder. The improved roll-offs and filtering technologies are only applied on the allocated carriers. Neighboring carriers will not be affected and do not notice any form of interference.

S2 EXTENSIONS MODCOD AND FEC UPGRADES

Improvement 4: Increased Granularity in MODCODs

As a next step the DVB-S2X standard increase the modulation and coding (MODCOD) schemes and Forward Error Correction (FEC) choices compared to DVB-S2.

By introducing an increased granularity the highest resolution for optimal modulation in all circumstances can be provided. The current DVB-S2 quantisation steps are quite far apart. By adding granularity in the upcoming standard the service provider can further optimise the satellite link depending on the application. In combination with Adaptive Coding and Modulation (ACM), where the highest MODCOD is selected automatically, full efficiency can be gained. The amount of MODCODs has grown from 28 in DVB-S2 up to 112 in DVB-S2X bringing efficiency as close to the theoretical Shannon limit as possible.

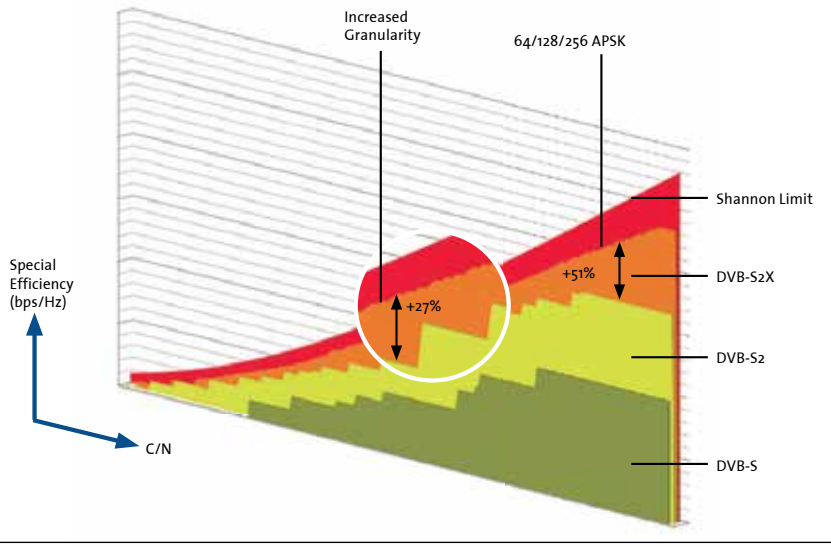
"The new DVB-S2X includes a combination of smaller rolloffs (5%, 10%, 15%) and introduces advanced filtering technologies to allow optimal carrier spacing"

Improvement 5: Higher Modulation Schemes up to 256APSK

Adding higher modulation schemes such as 256APSK proves to be useful considering the professional applications that work with improved link budgets provided by, for example, bigger antennas (more powerful satellites that become available). Newtec sees the 32APSK boundary being reached frequently with its auto-adaptive FlexACM® technology during clear weather conditions. In these situations having higher modulation schemes as 64, 128 and 256APSK is highly beneficial.

When combining the increased granularity (MODCODs and FECs) and higher order modulation immediate efficiency gains up to 51% can be achieved compared to DVB-S2 (see figure below).

DVB-S2X compared to DVB-S2 (64/128/256APSK & increased granularity)



Improvement 6: Very Low SNR for Mobile Applications

DVB has added 9 extra MODCODs to the DVB-S2X standard in the QPSK and BPSK range in order for satellite networks to deal with heavy atmospheric fading and to enable the usage of smaller antennas for applications onthe- move (land, sea, air). These Very Low Signal-to-Noise Ratio (VL SNR) MODCODs will increase the robustness and availability of the satellite link.

Some BSPK MODCODs in the new standard use spread spectrum technology. The term 'spread spectrum' refers to the deliberate expansion of the signal bandwidth by several orders of magnitude (factor 2 in DVB-S2X). The power is equally spread over a wider occupied bandwidth resulting in a lower carrier's spectral density (dBW/Hz). By reducing the spectral density levels smaller antennas can be used (for mobile applications on land sea and air) while overcoming adjacent satellite interference. Moreover the link security and availability can be increased.

In addition the header of the VL SNR MODCODs has been modified (with an extended Physical Layer Header) with better error-correcting capabilities for operations with signal-to-noise ratio values as low as -10dB.

Improvement 7: Different Classes for linear and non-linear MODCODs

Different to DVB-S2, the MODCODs in DVB-S2X have two different classes for linear and non-linear MODCODs. Since the DVB-S2 MODCODs are focused on DTH, the constellations are well suited for distribution applications with quasi-saturated transponders. For high-speed data and contribution applications other constellations can be considered where the performance gain is larger than 0.2dB. Although the MODCODs might use the same code/ name, the linear and non-linear MODCODs

are not interchangeable. Additionally the MODCODs and FECs themselves have been improved compared to the DVB-S2 standard to achieve even better efficiency levels.

WIDEBAND

Improvement 8: Wideband Support

The DVB-S2X standard supports technology for typical wideband transponders that become/are available today hosting high-speed data links.

The wideband implementation in DVB-S2X typically addresses satellite transponders with bandwidths from 72 MHz (typically C-band) up to several hundred MHz (Ka-band, HTS). In principle it would be possible to allocate several narrower channels inside the wideband transponders, but this would require the operation of the satellite transponder with reduced downlink power and therefore at sub-optimal efficiency. The DVB-S2X demodulator will receive the complete wideband signal up to for example 72 Mbaud resulting in a very high data rate. The introduction of the wideband technology adds extra 20% efficiency gain.

IMPROVEMENTS FOR THE DIRECT TO HOME TRANSMISSIONS

Improvement 9: Channel Bonding

The channel bonding feature inside the DVB-S2X standard finds its main implementation in the Direct-to-Home application and is a direct response to the increase in rates with the introduction of Ultra High Definition Television (UHDTV) transmission over satellite. The size of a UHDTV channel requires four times the transmission capacity of a High Definition Television (HDTV) channel. With the introduction of improved encoding technologies such as HEVC (High Efficiency Video Coding - H.265) the compression efficiency can be doubled compared to AVC (Advanced Video Coding - H.264). Below some typical rates for HDTV and UHDTV in DTH.

- HDTV with AVC coding = 10 Mbps
- UHDTV with AVC coding = 40 Mbps
- UHDTV with HEVC coding = 20 Mbps

In a traditional 36 MHz transponder it was possible to transmit 6 HDTV channels or 60 Mbps. The amount of channels could even be increased to 7 when taking a 20% statistical multiplexing gain into account. For UHDTV however only 3 channels can be provided over the same 36 MHz transponder. The gain from statistical multiplexing has been reduced to 12% and as such no extra program can be added in this context.

DVB-S2X introduces channel bonding specifically to increase the statistical multiplexing for UHDTV transmissions. With this feature a single big transport stream is sent over several different transponders at the same time. The capacity of these transponders is merged and will provide extra gain (extra 12% for 3 bonded channels). The accumulated gain will allow in the end to accommodate an extra UHDV channel in the big Transport Stream by using the spare capacity of the individual transponders.

Improvement 10: Additional Standard Scrambling Sequences

With the increase of data traffic, rich media and TV channels over satellite resulting in a steady growth of DTH services, HTS and multi-spot beam satellite payloads the topic of co-channel interference (CCI) could no longer be ignored when the new DVB-S2X standard was being developed. The new standard today has a mechanism to mitigate CCI by providing a better differentiation between neighboring services.

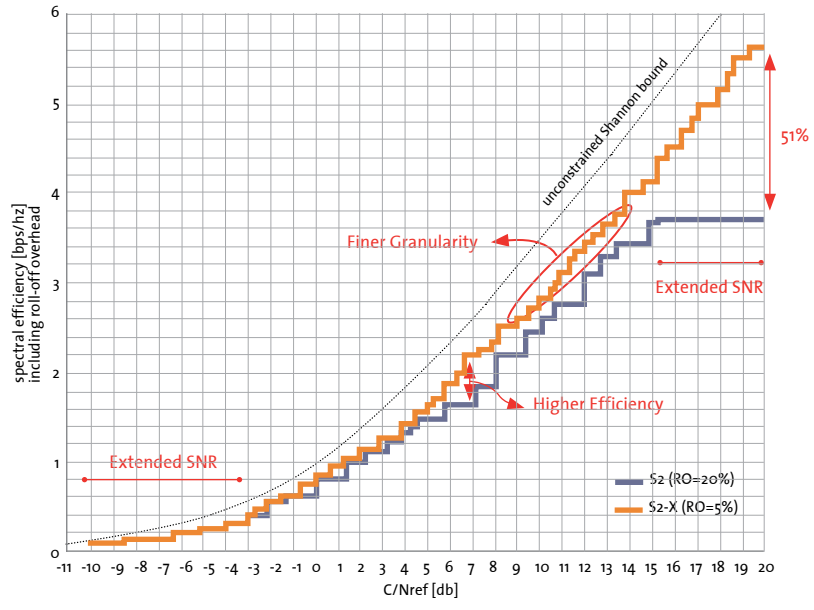
The differentiation between these services is based on the addition of physical layer (PL) scrambling sequences within DVB-S2X. Whereas DVB-S2 only had one default code (PL scrambling sequence number 0) another six codes have been defined for the new standard. On the reception of a scrambled signal a typical DVB-S2X receiver will firstly try the default code and only afterwards cycle though the the new codes to de-scramble the signal.

DVB-S2X TECHNOLOGY RESULTS

When comparing the current DVB-S2 standard against the full implementation of S2 Extensions (activating smaller Roll-Offs, advanced filtering and 256APSK) staggering efficiency gains up to 51% can be achieved for professional applications over satellite. By implementing Wideband an extra 20% gain can be added to the equation. For DTH networks up to 20% efficiency increase can be obtained. These gains already exceed the results by proprietary systems in the market today.

In the figure below, DVB-S2 with 20% roll-off is compared with DVB-S2X and 5% roll-off. The main efficiencies are located in the higher MODCODs. Herein resides the reason why the DVB-S2X standard first targets data rate hungry applications such as Broadcast contribution and exchange,

DVB-S2X with RO 5% compared to DVB-S2 with RO 20%



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NEWTEC IMPLEMENTATION OF THE NEW STANDARD

Newtec has a big hand in the new DVB-S2X standard as the majority of developments inside the new standard are based on Newtec technology. The smaller Roll- Offs and advanced filtering technologies were already introduced by Newtec as early as September 2011 as a first step towards the new DVB-S2X standard through Newtec's Clean Channel Technology®.

Clean Channel Technology is available on Newtec's professional equipment. Both as a software field upgrade for installed based equipment as well as new Newtec equipment.

In the meantime Newtec has invested a lot in its innovative technology to add to the new S2 Extensions standard. Today, Newtec's contribution to the new standard comes in two flavors. On one hand the pre-standard technology candidates called S2 Extensions (with Clean Channel Technology, 64APSK, increased granularity and 72 Mbaud wideband) to support existing installations and satellite networks that prefer to remain 'closed'. On the other hand the official brand new DVB-S2X standard as defined by the DVB organisation. Both flavors are already implemented on the Newtec professional equipment.

- Newtec MDM6100 Broadcast Satellite Modem
- Newtec M6100 Broadcast Satellite Modulator
- Newtec MDM6000 Satellite Modem
- Newtec HUB6000 Satellite Hub

On top of the DVB-S2X the MDM6000 modem can be used in combination with technologies such as Adaptive Coding & Modulation (ACM), Pre-distortion, bandwidth cancellation, network optimisation software and cross-layer-optimisation to bring the efficiency of the satellite link to the highest level at maximum service availability.

HOW TO INCREASE EFFICIENCY AND AVAILABILITY OF A SATELLITE LINK ON TOP OF DVB-S2X

When adding technologies such as Adaptive Coding & Modulation (ACM), bandwidth cancellation, predistortion, network optimisation software and cross-layer optimisation to the DVB-S2X innovations, the final bits can be squeezed through the available bandwidth, bringing the satellite link to full optimisation.

ADAPTIVE CODING & MODULATION

Adaptive Coding and Modulation (ACM) auto-adaptively sets modulation parameters to the optimal point to overcome fading or interference conditions and allows for the best possible throughput.

Newtec's implementation of ACM, called FlexACM® combines the adaptive modulation with noise and distortion estimation technology (NoDE) and predictive technology on upcoming variation (ThIMM) to get as close to the zero margin limit as possible allowing the full use of the satellite link at maximum service availability.

PRE-DISTORTION TECHNOLOGY

Pre-distortion technologies are typically designed to compensate for the effects of imperfections in the filters and amplifiers of the satellite.

Newtec's implementation of pre-distortion technology, Automated Equalink®, improves the performance of the end-to-end satellite communication channel by a typical 2 dB and allows the use of higher modulation schemes such as 16/32APSK or 64/128/256APSK on carriers occupying a full transponder.

Newtec's Equalink® brings up to 10% bandwidth efficiency gain even in saturated non-linear transponders (which is the use case for very high speed links). Moreover a better Quality-of-Service (QoS) can be achieved.

Bandwidth Cancellation

Bandwidth Cancellation Technology combines the forward and return transmissions in the same satellite bandwidth opening up extra capacity (up to 33%) for the service provider. This extra capacity gives room for considerable OPEX savings or deployment expansions by adding services within the same available bandwidth.

CROSS-LAYER OPTIMISATION™

Cross-Layer-Optimisation™ is the technology that allows the satellite modulation equipment to be in continuous interaction with Acceleration, Compression, Bandwidth Management and IP Shaping technology. As soon as a satellite link condition changes the link will be auto optimised following Quality-of-Service and Priority Settings without the loss of data or link.

CONCLUSION

The satellite industry has come to a consensus that a successor to the DVB-S2 standard is required to accommodate for increased profitability, interoperability and growth in the professional satellite communications market. Newtec has taken the lead and teamed up with other DVB-members in order to define and develop the update on the DVB-S2 standard.

Applications such as Sports and News Contribution, IP trunking and Cellular backhauling up to Broadband VSAT solutions will immediately benefit from the gains achieved by the new standard. As soon as Ultra High Definition TV hits town and more content is required by the market, the Professional Video Distribution and Direct-to-Home applications will quickly follow.

Newtec's contribution to the new standard DVB-S2X consists of a number of efficiency technologies, such as:

- smaller Roll-Offs
- advanced filter technologies
- increased granularity in MODCODs
- higher Modulation (64/128/256APSK)
- Wideband
- Very Low SNR MODCODs to support mobile (land, sea, air) applications
- Bonding of TV streams
- Additional standard scrambling sequences

By combining these technologies an efficiency optimisation up to 51% can be obtained in a professional satellite link. Wideband adds an extra 20% gain to the equation. For DTH networks the average gain will be around 20%.

The Newtec 6000 series Satellite modems and hubs integrate the DVB-S2X technologies combined with Newtec efficiency technologies (FlexACM®, Equalink®, Bandwidth Cancellation and Cross-Layer-OptimisationTM) and guarantees the best performance with barrier breaking throughputs at optimal service. PRO

Whitepaper wriiten by Koen Willems, Market Director at Newtec.

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Connecting Rigs

Atlantic Marine Services were looking for an end-to-end solution for satellite connectivity across five of its oil rigs. EMC-Corp and Alphatron Marine Services stepped in and installed networks that provided communications, redundancy and 24/7 customer service

Atlantic Marine Services (AMS) is an offshore support service contractor, providing accommodation and drilling rigs to major operators in the oil and gas industry, including governmental operators. Currently they manage and operate five accommodation rigs and three drilling rigs. AMS has a long and successful track record in operating and upgrading offshore assets and has a solid reputation with a recognised name within the offshore oil and gas industry.

AMS is strategically positioned in Amsterdam, Singapore, Ciudad del Carmen Mexico and Esbjerg/Denmark, situated throughout the main oil and gas areas in the world (Gulf of Mexico, Asia and the North Sea).

Scope of work

EMC, in partnership Alphatron Marine, was asked to successfully manage the complete process of the network plan. The service called for an end-to-end solution based on the highest standards, providing full support, from the design of the networks through installation and complete with 24/7 customer service.

The solution

EMC provided VSAT communications to three drilling platforms operating in the Gulf of Mexico and two accommodation vessels – one in the North Sea and the other in Asia-Myanmar. This agreement included satellite communication services for a total of five rigs, with the option of adding the service for two more rigs.

The accommodation vessels provide first class service for the crew with a capacity for up to more than 150 crew members.

Alphatron Marine Services' office.

Rigs like the Atlantic Tiburon II and Atlantic London operate for some of the world's most important petroleum companies; like Pemex (Mexican state-owned petroleum company) and Total (French multinational integrated oil & gas company).

These platforms are located in different areas, therefore the coverage beams used to fulfil AMS' requirements are different. For the rigs operating in the Gulf of Mexico (Atlantic Tiburon I, II and III) EMC chose to use T11N USA. The Atlantic London operates in Asia, in Myanmar, and uses the IS22. EMC covers the needs of the Atlantic Amsterdam with the T11N EUR, as it operates in the North Sea.

The satellite communication services required for the rigs use EMC´s SatLink technology and enable high speed Internet and VoIP, supported by the 24x7 Global Operations Center (GOC). The Internet bit rates delivered are different for each rig, for example, for the Atlantic Tiburon 1, 2 and 3 the bit rates are 768/768 1:1 connection shared over the three rigs with a guaranteed CIR of 256/256 per rig. The service received at the Atlantic Amsterdam is the lowest, which is 128/128 1:1. The Atlantic London is the rig with the highest service with 2MB/2MB 1:1. EMC will provide SatLink 2900 modem commissioning and configuration, as well as the information needed to configure the VoIP.

The antenna used for these rigs is the Intellian V130. This model of Intellian is capable of withstanding the most demanding sea conditions to provide high quality, continual broadband communications on all vessels. These platforms operate in the most demanding seas, such as the North Sea, therefore the V130 model meets all of the needs this platform may experience.

The services offered are Internet and VoIP, with up to eight different numbers postpaid and prepaid numbers.

One of the main challenges solved was to offer DIDs (telephone numbers) in Indonesia, a country in which providers rarely offer them and where they are extremely complicated to acquire. In the AMS case, EMC was able to provide a solution by forging an agreement with Alphatron, a local provider of DIDs.

Coverage of T11N North America.

Coverage of T11N Europe.

Satellite communications on board an offshore oil rig.

The results

EMC and Alphatron worked together to successfully deliver a professional and customised service, completing all the stages of the process, from the design of the network to installation.

EMC's customer support delivers a customised service for AMS. One of the key features is the 24x7 customer service, providing fast and professional support. The fact that EMC has a worldwide distribution of local engineers, has also been a very important aspect of this project, because the service has to be delivered in different areas, based on the region throughout the world.

"EMC's customer support delivers a customised service for AMS. One of the key features is the 24x7 customer service, providing fast and professional support. The fact that EMC has a worldwide distribution of local engineers, has also been a very important aspect"

Prior to coming to an agreement, EMC worked to provide personalised solutions, to differentiate themselves from competitors. One example is an alarm that EMC put in place to alert AMS every time the service goes down. Once the alarm goes off, it directly alerts the GOC system which warns the support team, who will then find the issue and work to solve it. As soon as the support engineers have solved the issue, another alarm is initiated to warn Alphatron´s support team that the problem has been resolved.

AMS' entire system has been designed by EMC engineers to ensure the best and most productive service is offered. PRO

In the Eye of the Storm

Osama Oulabi of SpeedCast ME, speaks about how the company sees the opportunity to flourish in danger zones and how its recent investment in local teams is helping the company to expand within the region

As manager for the Middle East, my task is to increase our presence in our existing locations, get closer to our customers locally and reach out to new ones.

We provide bespoke data and voice communication solutions to all oil & gas customers by VSAT (dedicated and shared), terrestrial fibre and last mile wireless solutions. In addition, we also have our own points of presence in London and Houston which helps us to collect and terminate traffic back to the internet, PSTN and/or customers headquarters across the globe.

We connect some well-known operators in Iraq, both in Erbil and Basra. For example we connect operator Gulf Keystone from their office in Erbil and out to their field at Shaikan. In addition to this we have also undertaken some fibre trenching work for the company's new production facilities.

With a well-established office and team in Basra, we also wanted to set up an office in Erbil in order to serve Gulf Keystone and other well-known operators in the region and to provide a base to reach out to new operators.

It is not the easiest region to set up business but we are experienced in working in some of the most challenging places in the world and that's what makes us different from other companies because we want to do the work ourselves rather than rely on subcontractors.

As we operate in the regions with local staff, we can react to our customers' requests very quickly; there is no middle-man between us and the customer. We have our own storage facility and equipment in country, hence we are ready to deploy whenever needed. We pride ourselves on being an OHSAS 18001 certified company that follows the health & safety standards that are expected from oil & gas companies and we take the necessary precautions to keep our staff safe. Our in Country Manager in Iraq helps to arrange movements of our engineers to the oil camps safely on every deployment, which is a major benefit to our customers.

"With a well-established office and team in Basra, we also wanted to set up an office in Erbil in order to serve Gulf Keystone and other well-known operators in the region"

OSAMA OULABI, Speedcast, ME

SpeedCast has offices in more than 20 countries, customers in more than 60 countries and over 4,000 connections worldwide. As part of the SpeedCast Group we can leverage our combined technical expertise, teleport locations and relationships with satellite providers to deliver enhanced service to our customers.

We have just launched our High Throughput Service in Iraq providing oil & gas companies with high throughput services using VSAT which is both reliable and affordable. This has allowed us to offer a very effective solution over Iraq with bandwidth ranging from 20Mbps up 300Mbps. Moreover, the solution is dedicated and can be rapidly deployed with minimal equipment involving just a single dish and modem at the customer location. With our High Throughput Service, we can customise solutions for the company, with superior link availability.

Our technical development and skilled engineers have enabled us to operate as the superior choice for telecoms provision in Iraq.

SpeedCast is a global network and satellite communications service provider offering high-quality managed networks services in over 60 countries; and a global maritime network serving customers worldwide. Headquartered in Hong Kong, with 18 international sales & support offices and 30 teleport operations, With over 4,000 links on land and at sea supporting mission critical applications, SpeedCast has distinguished itself with a strong operational expertise and a highly efficient support organisation. PRO

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TV & Radio Broadcasting

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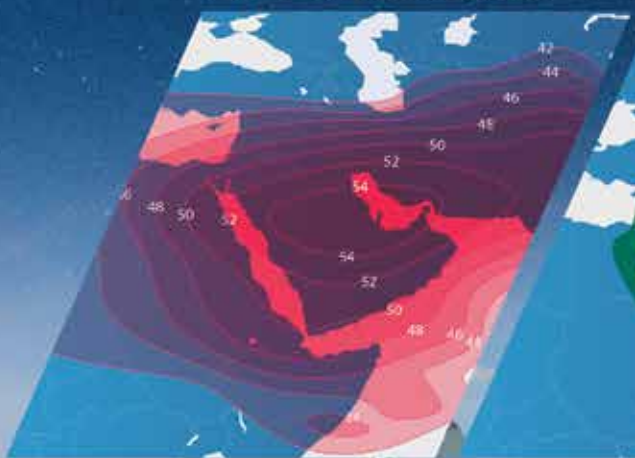
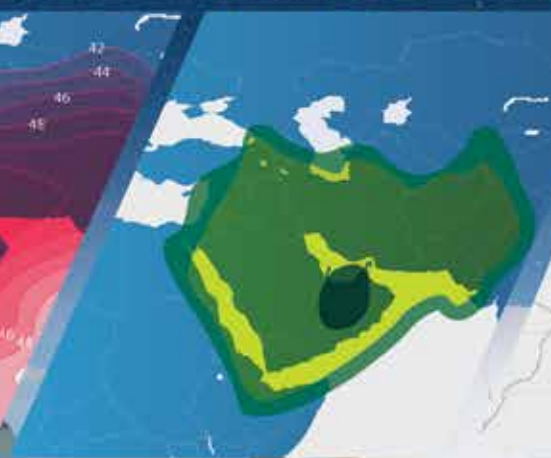


Yahsat KU East Beam



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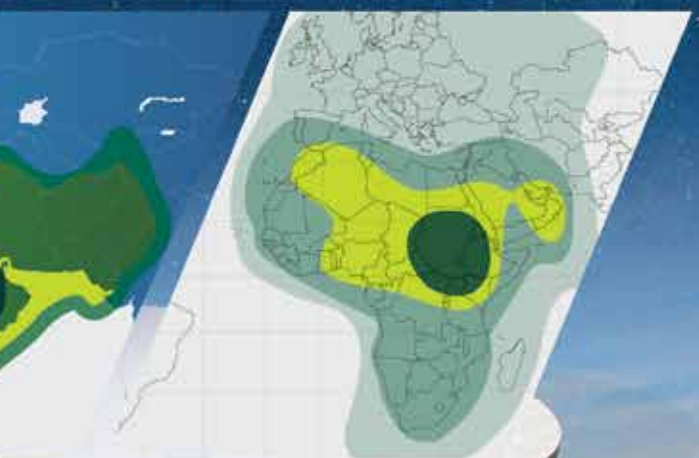

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