TELETIMES MEDIA LLC.

INTERNATIONAL teletimes

Issue 162
June
2019

The latest in Telecom, ICT and SatCom sectors of the Middle East, Asia and Africa

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How Satellite Technology is supporting emerging markets in Asia and beyond

"Do not underestimate our strength"

Ren Zhengfei, Huawei Founder

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Vol: 14 Issue: 06 June 2019 ABC Certified

14th year of publication

Recipient of
"International Arch of Europe Award for Quality"
"Teradata ICT Execellence Award for Media"

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TELETIMES MEDIA LLC.
P.O. Box 239031,
Dubai - UAE

Media Partner to:

	US$	AED	SAR	PKR	€	GBP
Price per copy	8	25	25	300	7	5
One year	80	250	250	3600	70	50

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Printer: Khursheed Printers (Pvt) Ltd.

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Contents

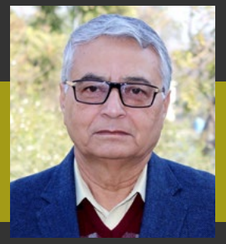
Interviews

Satellite Communications

EVENTS

ICT & Telecom

Editor's Note



Dear Readers,

Welcome to the latest edition of Teletimes International.

I hope you have all experienced a peaceful and blessed month of Ramadan and wish you all a very happy Eid Mubarak in advance!

This edition features some very interesting interviews and articles. Top of the highlights is Huawei Founder, Ren Zhengfei's latest meeting with the media where he reiterated that the company is in a strong position to move ahead despite recent political actions in the United States. In addition to that, you will find exclusive interviews with some of the leading players in the ICT and satellite space including AITI, Thaicom, LEOSAT, Fortinet and ISOC ME.

Amongst my recommended reads from this edition are "How satellite technology is supporting emerging markets in Asia and beyond" by Sjoerd De Clerck, "Collaboration and interoperability needed for a 'smart' maritime industry" by Rob O'Dwyer and "AI in cybersecurity – friend or foe?" by Tabrez Surve.

As always, you will find the latest news and insights from all the major players in this edition of Teletimes International.

Your feedback is welcome on info@teletimesinternational.com

Enjoy Reading!

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Innovating Together:

Connectivity that matters at ITU Telecom World 2019

What's the difference between connectivity and connectivity that matters? How can technological innovation increase the well-being of people throughout the world – including the very poorest without access to running water, electricity or education? And why is international collaboration the kingpin of development?

These are some of the questions raised by the theme of this year's ITU Telecom World, four days of exhibition, conference and networking organized by the UN agency for technology, ITU. The event offers a unique platform to bring together the right stakeholders from government and industry, emerging and developed markets to address fundamental tech-related issues – and work together to ensure meaningful technology improves lives everywhere.

Connectivity is key

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Connectivity is the key to social and economic development throughout the world. Whether fixed, mobile or hybrid, broadband networks kick-start growth, producing a direct, positive and measurable impact on economies. Broadband improves efficiency, communications and the circulation of goods and services, creating new markets, innovations and access to the knowledge economy. And it has the power to benefit lives across almost every sector of industry or society, from education to health, agriculture, transport, logistics, government, entertainment and beyond.

The ITU is committed to connecting all the world's people, wherever they live and whatever their means. The ICT sector is working towards an ambitious long-term goal of connecting the next 1.5 billion citizens by 2020. This will require enormous investment in networks and other infrastructure, of course, as well as – critically – significant political commitment. And this is where innovation has such an important role to play.

Innovation throughout the ecosystem

Innovation in connectivity solutions, including hybrid technologies mixing fixed, wireless, satellite networks such as high throughput (HTS), non-GSO and High Altitude Platform Satellites (HAPS) as well as drones and balloons. But also innovation in financing and deployment, which might include new cross-sector partnerships, new regulatory approaches and new funding mechanisms, whether with international or developmental banks, private sector stakeholders or government initiatives in taxation, licencing, spectrum and the application of Universal Service Funds.
Given the indisputably central role of government in driving connectivity, innovation in the public sector is paramount, be it direct government subsidies and programmes, new alignments between and across ministries, or incentives aimed at creating a positive investment environment. With the advent of 5G and the growth of smart solutions based on the Internet of Things, finding new models to grow access to broadband is essential – along with the political will to implement those models.

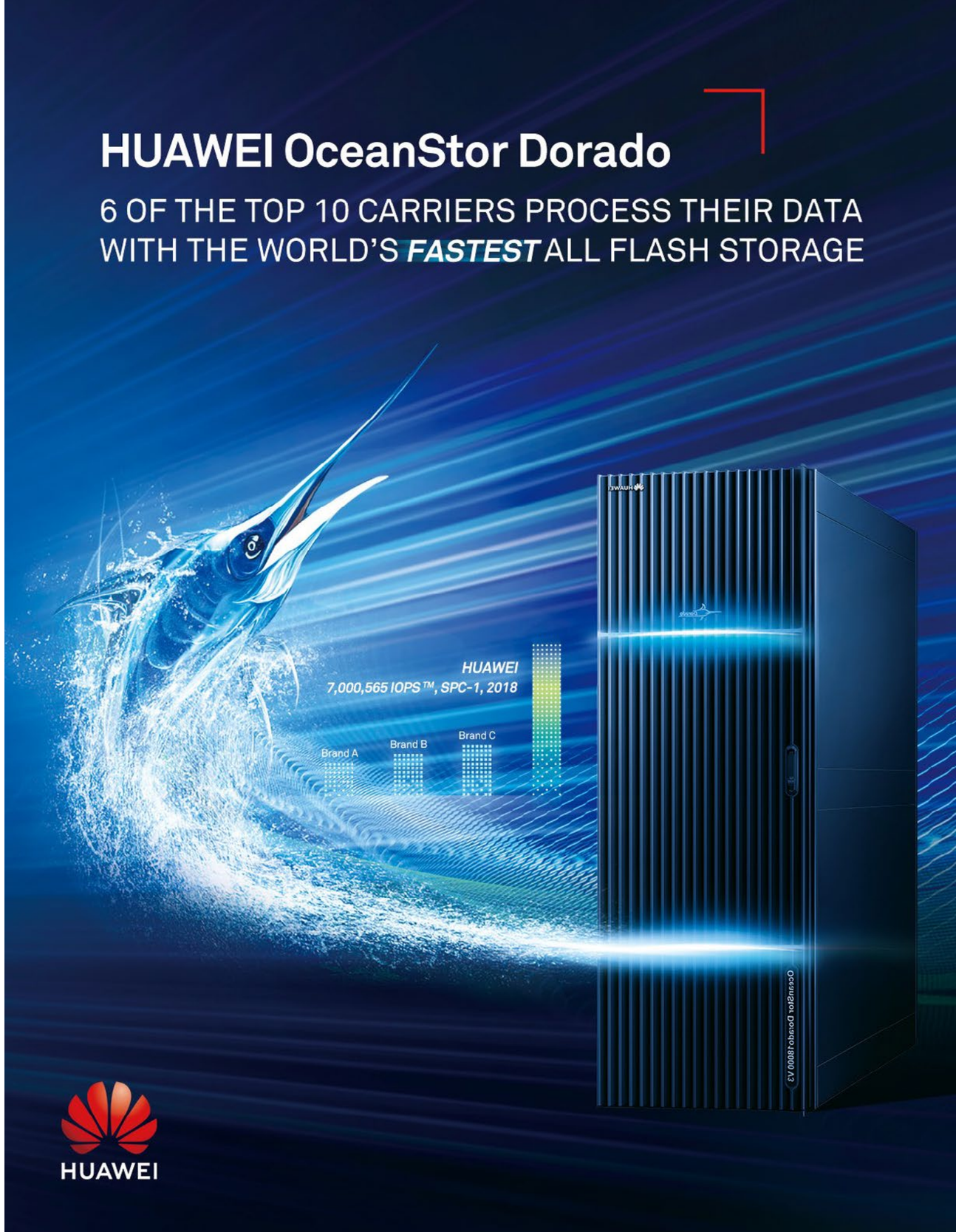
Connectivity that matters

Connectivity alone, however, is not enough. According to recent estimates, around 80% of the world's population is covered by at least 2G or 3G services – yet adoption remains at barely 50%. Infrastructure needs to be accompanied by affordable services and equipment, and by a range of demand-side measures. What use is there, after all, in offering connectivity if no one knows it is there, or how to use it? Or if no one can understand the language it is in, or see the point in using the services and applications it offers?

So connectivity needs to matter: to be relevant, fit-for-purpose, interoperable and affordable. This means local content in local languages appropriate for local contexts. It means creating awareness of the potential it offers, and then training and educating people to be able to use and benefit from it, perhaps then to add to and increase it. Because digital literacy and digital skills are crucial for connectivity to be meaningful.

International collaboration – international inspiration

Exploring the innovations in technology, policy and strategy driving meaningful connectivity – and the international and inter-sectoral collaboration needed to make it happen – is at the heart of ITU Telecom World 2019. Held at HungExpo in Budapest, Hungary, from 9 – 12 September, the event will feature an international exhibition of tech solutions and projects, a world-class forum of interactive, expert-led debates, a networking programme connecting organizations, nations, individuals and ideas, and an acclaimed Awards Programme recognizing innovative tech-based solutions with real social impact. T



AITI

striving to grow the ICT sector to diversify economic growth

Pengiran Haji Md Zain bin Pengiran Hj Abd Razak, Chief Executive of AITI talks to Teletimes ahead of CommunicAsia 2019

Interview: Imran ul Haq & Nordiana Mohiddin

Q: Please provide a brief background on AITI and its main mandate.

A: The formation of AITI was part of an effort to create a more conducive environment for ICT industry development. This led to the establishment of AITI on 1 January 2003, by the AITI Order 2001 as a statutory body to perform regulatory functions with respect to telecommunication systems and services, to effectively manage the national radio frequency spectrum, to protect consumer's interest by promoting competitive pricing and ensuring quality of services, as well to develop the ICT industry.

From a regulatory perspective, AITI continues to uphold its roles by facilitating the smooth deployment of Smart Nation infrastructure and promote a competitive and vibrant telecommunications sector, while actively spearheading user adoption through the development of applications and contents to enrich consumer's lives and society as a whole.

In pursuit of the agenda of ICT development in the country, AITI continues to strive and grow the local ICT sector to diversify economic growth through an array of programs and initiatives that would provide new business opportunities and growth for the ICT sector.

Q: Can you give us an overview of the Brunei ICT market and how the landscape has evolved over the past years?

A: In recent years, Brunei Darussalam has entered into the next wave of development for economic expansion. In realizing the National Vision, known as Wawasan Brunei 2035 to build a dynamic and sustainable economy, earnest efforts have been in place to diversify the economy beyond the oil and gas industry through a number of industry clusters including ICT. ICT, as an integral element to support all industry sectors, has given rise to the introduction of innovative business models for the new businesses to compete with established ones in a wide range of industries.

One of the significant milestones in Brunei Darussalam's ICT transformational journey is the integration of all network infrastructures previously provided by all telecommunication operators, Telekom Brunei Berhad (TelBru), Datastream Technology Sdn Bhd (DST), Progresif Cellular Sdn Bhd (Progresif) and Brunei International Gateway Sdn Bhd (BIG).

The move emphasized the importance of creating state-of-the-art, fixed and mobile convergent networks to continue building foundations for economic diversification and employment.

Brunei Darussalam, as its counterparts in the region, is also preparing for the inevitable arrival of 5G technology which is already in the horizon. By using 5G, more devices can be connected simultaneously and move data at a greater speed. This will pave the way for the emergence of technological advances including more IoT applications, autonomous cars, improvements in healthcare as well as efficient operations of heavy equipment using remote sensors. In this regard, AITI has commissioned a study on 5G Market Readiness to assess the readiness of Brunei Darussalam to support the implementation of future IMT (5G) networks.

In terms of ICT usage, Bruneians are becoming progressively more connected with a very high penetration of Internet. As of 2018, the fixed broadband rate was 48.7%, mobile broadband penetration 131.9% and mobile penetration at 133%.

> **"Bruneians are becoming progressively more connected with a very high penetration of Internet. As of 2018, the fixed broadband rate was 48.7%, mobile broadband penetration 131.9% and mobile penetration at 133%"**

Q: The arrival of various internet delivered systems and digital content has affected broadcasting. How do you think broadcasting will further evolve over the coming years?

A: The increase in the number of devices capable of supporting digital media along with increasing internet access speed, has provided consumers with an option to access media content of choice be it information, entertainment or social activity anytime, anywhere.

Online media consumption has shown tremendous growth over the past few years.

With improved networks and better access to the Internet, more and more media content consumption would happen on digital platforms.

Over-the-top (OTT) service providers have also acted as a catalyst in the growth of audio and video data streaming. OTT applications actively use the telcos' infrastructure to provide their services.
The obvious impact of OTT applications for telcos are consumers opting for their alternative offerings, such as using messaging apps like WhatsApp over SMS. As the number of people using OTT services increases, the data traffic will also increase resulting in an overall strain on the network.

Ultimately OTT services are being driven by consumer demand and consumers are key in this equation. The network service providers will need to determine how to adapt to the development of OTT services to ensure their sustainability in the market.

Q: What regulatory measures are in place within Brunei to ensure fair competition among all the service providers?

A: One of AITI's key functions is to promote and maintain fair and efficient market conduct and effective competition in Brunei Darussalam's telecommunications sector. To rationalise the sector, AITI issued regulatory Direction on designation of market players with Significant Market Power ("SMP") and their obligations which will lower entry barriers and give smaller or newer players the opportunity to attain a better competitive position in the sector.

Market players with SMP generally are not affected by competitive market forces but can make a big impact to the market prices by raising the market price or restricting output. As such,

additional regulatory requirements are imposed to these players to ensure the services they provide are anti-competitive and non-discriminatory in nature. Examples of additional regulatory requirements are such as obligations to provide infrastructure or services to customers or other market players in the relevant industry on reasonably competitive prices and to offer any infrastructure or services on a wholesale basis unless exempted or waived by AITI.

It should be noted as well that designation

> **AITI facilitates the smooth deployment of Smart Nation infrastructure and promote a competitive and vibrant telecommunications sector"**

and classification of SMP to market players are not permanent and will be reviewed by AITI from time to time based on the market structure and conditions.

Q: How important is ICT for achieving the "Sustainable Development Goals" (SDGs) of the United Nations and what role is AITI playing in this?

A: AITI has embarked on several programs that supports United Nation's call for action to improve health and education, reduce inequality, and spur economic growth. For instance, on SDG no.5, which is to achieve gender equality and empower all women and girls, AITI has actively promoted capacity building programs that enable access to technologies through the ICT Savviness, Hackathon for Teens and TechKids Camp.

All these programs offer equal opportunities for girls' and women's empowerment and participation in the ICT activities. Hence, we can see that our younger generation of women and girls in Brunei Darussalam have thoroughly embraced the use of ICT and are very much on par with their male counterparts in terms of its usage in their everyday lives.

The next SDG that I can relate to AITI's vision is SDG no.9, which is commitment towards building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation.

This is directly linked to AITI's vision to provide a conducive ICT environment to promote innovative and vibrant ICT industry as well as enriching quality of life and moving the nation forward. AITI does this by ensuring that telecommunication services are reasonably accessible to all people, and are supplied efficiently and economically at performance standards that reasonably meet the social, industrial and commercial needs of Brunei Darussalam.

With regards to the issue of bridging the digital gap, legal provisions in the Telecommunications Order 2001 has allowed AITI to legislate the Universal Service Provision program. The Universal Service Provision program will facilitate the achievement of national policy goals towards universal access and services to ICTs in rural, un-served and under-served areas. AITI is currently developing the necessary mechanisms and policies to implement this program for Brunei Darussalam.

In its drive to increase access to ICT and provide affordable access to the Internet, AITI will introduce a Tariff Regulation Framework. The Tariff Code of Practice, as part of this Framework,

aims to ensure that tariffs charged within the industry are not anti-competitive and exorbitant. AITI is committed to ensure that tariffs charged to end-users are reasonable so there will be take- up to services such as broadband subscriptions while ensuring sustainability of the service providers.

Brunei Darussalam is regularly and presently active at the ASEAN level through the ASEAN Telecommunications and IT Senior Officials Meeting (TELSOM) and the Telecommunications and IT Ministers Meeting (TELMIN). At the international level, Brunei Darussalam commonly cooperates and coordinates with APEC through the Senior Officials and Ministerial meetings. Furthermore, we are also committed to support ITU initiatives, where we work closely with them in the drafting of guidelines and policy recommendations for Brunei's telecommunications environment.

Q: What initiatives are AITI taking to improve the digital socio-economic society?

A: In recent years, AITI has primarily focused on ICT capacity building among school children, youths and general public. AITI has launched its ICT Savviness Program that aimed to educate the general public and small entrepreneurs on the benefits of using ICT in their business and daily lives to improve work productivity and enhance market outreach.

Tech Kids Camp, on the other hand, was created for primary school students to generate passion in ICT at an early age, to provide them an opportunity to experience ICT in a practical and fun way as well as to prepare the youngsters with relevant ICT skills for the future of digitalization.

For youths, AITI is organizing a program called Hackathon for Teens targeting secondary school students. The program aims to introduce the students to the fundamentals of coding and computational thinking which are vital skills for the future.

To impart confidence in e-Commerce use, AITI has launched a month-long CyberShop Fair last February to encourage consumers shop online from local online vendors. It provided the local online businesses an avenue to showcase their products and services to potential customers. Furthermore, banks and vendors had the opportunity to work together in providing cashless transactions.

Meanwhile, the increasing use of the Internet makes it incredibly important for everyone to understand cyber safety and why is it important to stay safe online. One of the biggest and most vulnerable group of online users are the young generation. In this regard, AITI with the support the Ministry of Education has published a social media learning package which aims to educate the students as well as teachers on how to use social media in a smart, ethical, safe and responsible manner.

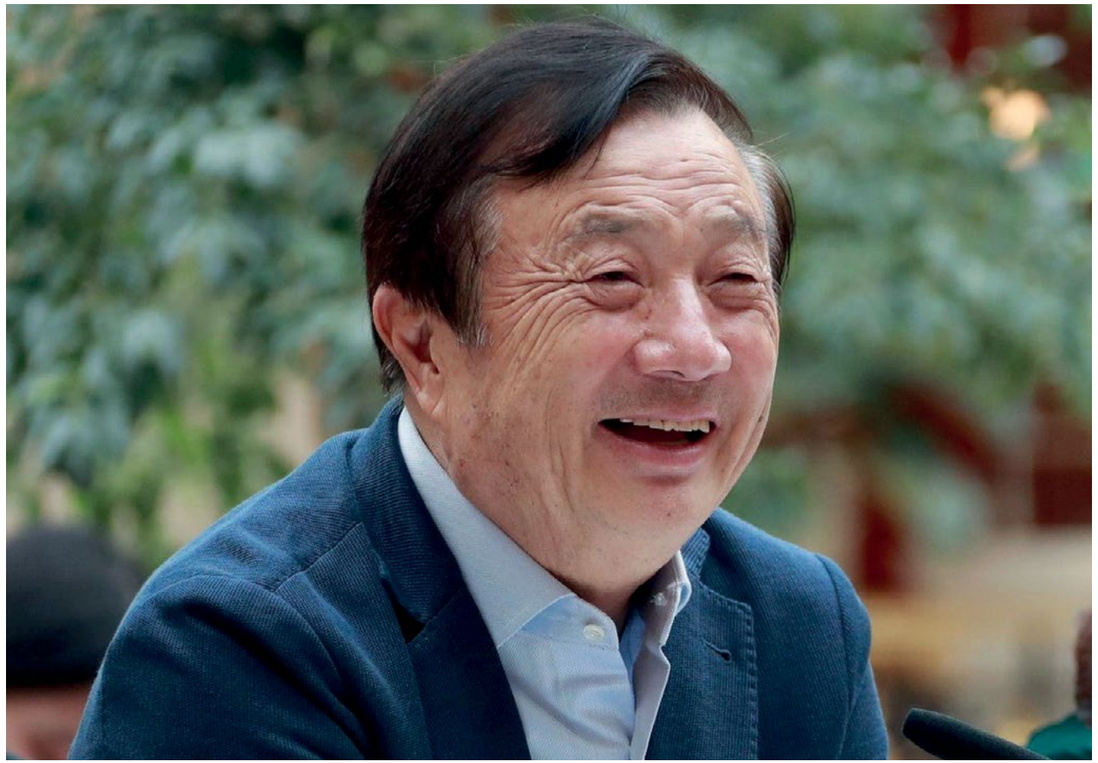
AITI believes that all the above initiatives are essential as the underlying factors that contribute to the improvement of digital socio-economic society in Brunei Darussalam.

Q: What will be your focus and goals for the year 2019?

A: In the drive towards preparing Brunei Darussalam as a Smart Nation, AITI needs to ensure that the appropriate building blocks are in place in order to support such development. This includes the infrastructure that the Smart Nation technologies will ride on. At the same time, AITI will also need to look into the regulatory implications of new

technologies including AI, Data Analytics and IoT and how these technologies can be properly implemented and integrated into society while at the same time maintaining the appropriate level of regulation so as to protect the local consumers and the sustainability of the market players.

From an industry point of view, the priority within the immediate future will be to continue to help local businesses build up their capacity and capabilities to ensure that they can play a bigger role in the development of the ICT industry, and towards the economic diversification of the country as a whole. We shall also continue to expand our efforts for the development of capacity building among our children, youth and society in general. T



Do not underestimate our strength, Ren Zhengfei tells US

In his latest meeting with the media, Huawei founder Mr. Ren Zhengfei has reiterated that the company is in a strong position to move ahead despite recent political actions in the United States.

Addressing questions about the impact of the White House's recent executive order, Ren noted: "What the US will do is out of our control. To us, the most important thing is to do our job well. I would like to take this opportunity to express my gratitude to the US companies that we work with. Over these 30 years, they have helped us to grow into what we are today. They have made many contributions to us. As you know, most of the companies that provide consulting services to Huawei are based in the US, including dozens of companies like IBM and Accenture. In the face of the recent crisis, I can feel these companies' sense of justice and sympathy towards us."

> **"Our relationships with US companies won't be destroyed by a piece of paper"**

The Huawei founder then went into greater detail about its relationships with US companies. "The US is a country ruled by law. US companies must abide by the laws, and so must the real economy. The media should understand that these US companies and Huawei share the same fate. We are both players in the market economy. Our close relationships with US companies are the result of several decades of effort on both sides. These relationships won't be destroyed by a piece of paper from the US government."

The supply of products to Huawei from international partners was also discussed. "Our company will not end up with an extreme supply shortage. We have got well prepared. Even if there is an insufficient supply from our partners, we will face no problems. This is because we can manufacture all the high-end chips we need ourselves," said Ren.

As long as these companies can obtain approval from Washington, Ren commented that Huawei will continue to buy in large volumes from them. "It may be the case that they cannot obtain approval quickly. We have ways to go through this transition period.

Once approval is granted, we will maintain our normal trade with these US companies and work together to build an information society for humanity. We don't want to work alone."

In an answer to a direct question about why the US is targeting Huawei, Ren responded: "I don't know exactly what [those US] politicians are thinking. I think we should not be the target of US-led campaigns just because we are ahead of the US."

The Huawei founder also responded to questions about overall disruptions to the international ICT market. "Europe will not follow in the footsteps of the US, and the majority of US companies are communicating closely with us. We will certainly be able to continue serving our customers. Our mass production capacity is huge, and adding Huawei to the Entity List won't have a huge impact on us. We are making progress in bidding worldwide."

With regards to Huawei's own business outlook for 2019, Ren added: "Our growth will slow down, though not by as much as everyone imagines. In the first quarter of this year, our revenue grew 39% over the same period last year. This rate decreased to 25% in April, and may continue decreasing towards the end of this year. But the US ban will not lead to negative growth or harm the development of our industry."

In sectors where Huawei have the most advanced technologies, at least in the 5G sector, Ren added that there "won't be much impact". Not just that, but Huawei competitors won't be able to catch up with it within two to three years. 5G standards are widely considered to have a huge impact on society, added Ren. The company appears to be well prepared for the future in terms of technology innovation and R&D. Huawei has 26 centers of expertise for R&D globally, over 700 mathematicians, 800 physicists, and 120 chemists working at Huawei, according to Ren. He further noted that Huawei have the most 5G standard-essential patents in the world – about 27% of the total.

Meng Wanzhou, CFO of Huawei. (Daughter of Ren Zhengfei)

> **"Our company will not end up with an extreme supply shortage. We have got well prepared"**

"We have an Institute of Strategic Research, which provides a large amount of funding to well-known professors at top universities around the world. We don't expect return on this investment. The way we sponsor research is similar to how investment works according to the US Bayh-Dole Act. It's the universities that benefit from the investment. By doing so, we will work with more scientists researching technologies at different stages," says Ren.

As for its three business groups, when asked about where revenue will come from over the long term, Ren doesn't take the view that the most profitable one is necessarily the most important. "Only the department that is responsible for building network connections will be able to become number one in the world. It is the very department that has come under attacks from the US. I have compared it to a badly damaged aircraft. Actually, we have realized that this department does not face as many difficulties as others because it has been preparing for a long time. Our 5G, optical transmission, and core network technologies are free from the pressure that is being put on this department, and these technologies will be the world leaders for many years to come."

In addressing its latest reputational challenges, Ren concluded that: "We do not seek to solve our reputation issues outside of China through media campaigns. I think we will ultimately need to solve these issues by providing excellent services to our customers. We are very advanced, and our customers will realize this if they start using our services." T

Government must encourage 5G rollout

Eng. Yousuf Al Balushi, VP for Spectrum Affairs TRA Oman addresses SAMENA Leaders' Summit

Governments must encourage 5G rollout at the earliest by supporting the telecom sector. Several factors could be considered to accelerate the 5G deployment in the region. These include:

1- Availability of enough spectrum

Spectrum will be a key issue for the success of 5G deployment. It will be important that the frequency bands needed for 5G should be made available in good time for mobile operators to deploy. The regulators need to start to offer the 5G spectrum as the main building block for kicking off the 5G deployment. It is important to provide the spectrum that satisfied the need to deliver whatever expected from 5G from the operators or other key verticals such as transport and health. For example, mobile operators will require around 100 MHz of contiguous spectrum each from the C-band, to deliver 5G Connectivity, Services and Data Speeds better than current 4G networks.

2- Reasonable spectrum price

Governments can help in giving more spectrum at a reasonable price by taking into account the 5G deployment cost and ensure that the society will benefit from the 5G service at low prices. Regulators may also support exempted trials for a period of time.

3- Convergence and technology neutral basis

Allowing fixed wireless access (FWA) will represent gigabit bandwidth to homes using wireless mobile network technology, particularly in rural areas where fiber will not be available. Operators must use the spectrum resources in a higher efficient manner and utilize Multi Technology Spectrum Sharing.

4- Co-operation with the related government entities

The coordination & cooperation between the regulators, operators and the related government entities are very important to facilitate the procedures of getting the required approvals and permissions.

The current regulations and rules may not be suitable and therefore, there is a need to modify the regulations or prepare a new one that continue beside the developments in the telecom sector.

The design of 5G networks requires the erection of hundreds of telecom towers and using the infrastructure of lighting poles, advertisement boards and any suitable existing and future structures to provide full coverage and high capacities to connect various devices, services and applications with the main telecommunications networks. So it is very important to allow the use of the available infrastructure owned by the government entities.

As 5G network requires thousands of base stations, industry need to send a re-assurance message to the public regarding human health and environment by carrying out studies and researches.

In Oman, TRA established a national team for 5G comprising of TRA and the government entities besides the mobile operators in Oman to create a roadmap to introduce 5G services in the Sultanate at the earliest, in addition to the preparation of comprehensive plans for all relevant issues. T

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ARTICLE

How satellite technology is supporting emerging markets in Asia and beyond

Sjoerd De Clerck, Vice President Asia, at Newtec

As connectivity demands across the globe continue to surge, Internet service providers and governments throughout Asia Pacific are desperately looking for ways to affordably deliver high-speed broadband to connect underserved populations across the region. However, in a region as geographically vast as Asia, there is no doubt that this brings connectivity challenges, with terrestrial technologies often not fit for the job.

High Throughput Satellites (HTS) are emerging as the solution to fulfil demands well into the future, creating new opportunities and capabilities across a wide range of markets. This is especially true for areas such as mobility and maritime, as the need for data to be delivered everywhere at any given time is further fuelling the growth of Communications on the Move (COTM).

These are significant growth-drivers of the satellite industry across the region and in light of this, Newtec is expanding its teams and technologies across India, Indonesia and the North East Asia region, as well as growing its certified partner network with new members in The Philippines, Korea and Australia.

Bridging the digital divide

In regions such as Asia Pacific, access to high-speed, reliable broadband connectivity can significantly impact the quality of life and the economy. Connectivity has the power to stimulate socio-economic activity throughout the region, providing access to high demand applications, such as community Internet access and mobile backhaul. This includes public institutions which will also significantly benefit from dedicated services including healthcare, education and civil defense.

To serve these underserved areas, Universal Service Obligation (USO) projects are being introduced across the continent to bridge the digital divide. However, the majority of these areas are often beyond the economical reach of terrestrial infrastructures. This can present challenges in the provision of Internet connectivity as terrestrial technologies cannot reach remote islands and are cost-prohibitive to install. What the region needs is a way to ensure connectivity can be deployed as fast as consumer habits and trends are evolving – and satellite technology is proving to be the savior.

Satellite has a major part to play in terms of delivering these services to regions such as Asia with limited or no terrestrial infrastructure. For instance, Newtec recently provided a Newtec Dialog® hub system to SATSOL, a teleport and Internet Service Provider (ISP) on the Solomon Islands, which will be deployed at remote sites across its six major islands and more than 900 smaller islands in Oceania. Overcoming terrestrial network-related challenges, Newtec Dialog has enabled SATSOL to optimize its bandwidth usage to transform user experience on the Islands, this includes the education system, which will also benefit as the improved provincial network will be extended to secondary schools.

The Newtec Dialog VSAT multiservice platform will also be deployed by Kacific to support its first HTS Kacific1. Demonstrating the highest performance and ability to offer the very high link efficiencies and availabilities required for its Ka-band spot beam system, the Newtec Dialog multiservice platform will enable Kacific to bring new and additional affordable connectivity in Ka-band over Indonesia, the Philippines and the Pacific.

Evolving habits

However, in today's ever-changing and competitive broadband market, satellite operators are tasked with providing more than merely average connectivity. With the emergence of Ultra-High-Definition TV and video comes significantly increased bandwidth demands.

Video is no stranger to the constantly evolving broadband landscape. Linear TV is giving way to new Over-the-Top (OTT) services and as consumer preferences change, old business models are under threat. For forward-looking broadcasters, this is a formidable opportunity for them to enter the multi-service play, offering their customers a combination of linear and OTT rather than one or the other.

With billions of connected devices such as phones and tablets at people's fingertips, it is no wonder that users are turning to new ways to consume content: anytime, anywhere and on any device. For service providers, this means that it is essential that they can offer content that is ready to be viewed on consumer devices.

To further add fuel to the fire, it is also imperative that they can do this while keeping costs under control. Converting as much unicast transmission as possible to multicast transmission avoids sending multiple copies of the same content across the network, thus saving a huge amount of bandwidth. This is where satellite steps in, providing the ideal solution for OTT services due to its, scalability, cost-effectiveness and ability to distribute content over vast geographical areas, including hard-to-reach and remote locations. In addition, broadcasters can benefit from the new revenue generating opportunities the two-way communication OTT offers.

While OTT may be opening new doors in the market, Direct-to-Home (DTH) television is far from dead and in some territories is still expanding. Dish TV in India is a prime example of that and, via its certified partners Horizon Broadcast (HBE) and Mediakind, Dish has selected Newtec's modulators for the significantly higher efficiency and bandwidth savings they bring – making Dish TV one of the best equipped broadcasters in the region.

Emerging markets

In the midst of all these emerging trends across the region, the fastest growing segment is indisputably mobility.

This is especially the case when it comes to In-Flight Connectivity, which has seen Newtec's work within the commercial aviation industry expand significantly. In light of our strong partnership with Panasonic Avionics, a leader in IFC, Panasonic now has 350 aircraft flying with its Gen 3 Newtec modem providing in-air broadband and plans to have 1,000 completed later this year. Offering Panasonic's aero customers up to 20 times the bandwidth of its original solution, Newtec's modem can facilitate the increasing bandwidth coming on stream as HTS and Extreme-Throughput Satellite (XTS) services continue to be layered over Panasonic's existing global network.

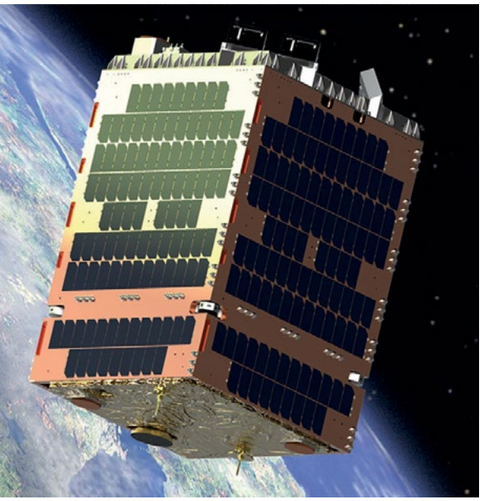
Further reiterating the importance of HTS, Panasonic's network is built on its HTS service, which covers all dense mobility traffic areas around the globe with high throughput spot beams and wide overlay beams that support its global inflight television service. Along with the Newtec modem, this supports the provision of in-flight services such as fast Internet, video streaming, VoIP applications, improved TV picture quality and a broader channel choice, the capability to offer 3G phone services, and greater bandwidth for crew applications.

Mobility in maritime is another market which is emerging at speed and is a key sector for Newtec. Further afield, Newtec recently deployed a solution designed to allow ultra-high throughput, beam switching, intelligent bandwidth allocation to the maritime market for Telenor Satellite, enabling it to deliver high throughput maritime services on its THOR 7 HTS. With nine out of ten of the largest container ports in the world located in Asia, Newtec is confident that this market segment will also expand in Asia.

As satellite continues to play a noteworthy role in enabling mobile connectivity, cellular backhaul is also an increasingly important segment in Asia – with mobile network operators using satellite for cellular backhaul when delivering 2G, 3G and 4G services.

And as 5G begins to roll-out across Asia, satellites are expected to play an even bigger role than they have played in previous generations of mobile networks. At Newtec, we are looking forward to growing our presence across all of these market segments, enabling the efficient, scalable and cost-effective connectivity which can bridge the digital divide in Asia and beyond. T

Newtec equipment enables world's first 5G backhaul LEO satellite demonstration



Newtec has played a key role in the world's first demonstration of 5G backhaul over a Low Earth Orbit (LEO) satellite with global satellite operator Telesat, a tier 1 European mobile operator and the University of Surrey. The successful tests confirmed that LEO satellites will provide effective backhaul transport, including for future 5G networks.

The live test connected the University of Surrey's 5G Test bed network within its 5G Innovation Centre to Telesat's Phase 1 LEO satellite.

Video chat sessions, simultaneous 8K streaming and Internet browsing were tested within stringent Quality of Service (QoS) and slicing parameters. A 4K video was also transferred to the edge of the 5G network representing a future 5G use case. Out of the technologies tested, Newtec modems demonstrated higher modulation, efficiency and throughput performances, and the ability to deliver 8K videos with superior Quality of Experience (QoE). This paves the way for increasingly bandwidth-hungry applications over 5G for the maritime, aero, connected car and broadband markets which have not previously been possible.

"We are amazed at the opportunities this test opens up," said **Jo De Loor, VP Market Development at Newtec.** "The seamless and very high-performance connectivity provided by Newtec technology validates the use cases for many new 5G applications in the strategic market verticals where Newtec is positioned. The work carried out is a guideline for future multi-orbit deployments and highlights the benefits of the unique combination of LEO constellations and 5G."

Newtec's excellence in aviation recognized with MSUA AWARD

Newtec a specialist in designing, developing and manufacturing equipment and technologies for satellite communications was awarded the Mobile Satellite Users Association (MSUA)'s Top Infrastructure Award.

Presented at an exclusive ceremony taking place as part of SATELLITE 2019, the accolade was given to highlight the flexible merits of Newtec's ability to deliver and enhance in-flight connectivity. As revenues associated with global connectivity to aircraft continue to increase, the Newtec Dialog VSAT platform, introduced in 2016 in partnership with Panasonic Avionics, has now been installed in more than 800 aircraft.

"To win this award means so much to us," said **Thomas Van den Driessche, CEO at Newtec.** "Not only are we fulfilling our commitment to our partners in the service we provide but we are also taking our mobility capabilities to the next level, by offering a scalable and highly efficient service. This award proves that our Newtec Dialog VSAT platform can effectively cater for the evolving needs of both airlines and passengers for years to come, even as numbers of High Throughput Satellites (HTS) and Extreme Throughput Satellites (XTS™) continue to rise. In addition, our recent successful 5G test over Telesat LEO reaffirms our commitment to delivering seamless 5G integration whether on land, sea, or air."

Alongside its ability to support in-flight services on a global scale, delivering applications ranging from fast Internet access to video streaming, Voice over Internet Protocol (VoIP) applications and enhanced TV functions, Newtec Dialog also enables 3G phone services and dramatically

enhanced bandwidth for crew applications. "Newtec Dialog is now managing more than 100 beams and more than 25 gateways for this network and as we accept this award today, we will start the next chapter in taking our in-flight technology to a higher level of continued and accelerated expansion for applications in the air and on the move," added **Van den Driessche.**

teletimes INTERNATIONAL

ST Engineering announces Q1 2019 revenues

ST Engineering has achieved higher year-on-year (y-o-y) revenue and profits for its first quarter ended 31 March 2019 (1Q2019). Compared to a year ago, Group revenue increased 5% to $1.73b from $1.65b, and Profit before tax (PBT) of $159.9m was 11% higher from $144.0m and Profit attributable to shareholders (Net Profit) was $131.1m, up 11% from $117.7m.

At the business sector level, revenue for the Aerospace sector increased 4% y-o-y to $622m from $599m, and Net Profit was up 6% y-o-y to $62.7m from $59.2m. Revenue for the Electronics sector was $563m, down 7% from its high base a year ago in 1Q2018 which was a strong quarter with 22% y-o-y growth. Notwithstanding the lower revenue, its Net Profit was up 8% y-o-y to $43.4m from $40.3m due to favourable sales mix.
Revenue for the Land Systems sector was up 34% to $377m from $281m the year before, driven by broad-based growth across its business groups, and its Net Profit dropped 3% y-o-y to $15.2m from $15.6m mainly due to the absence of a favourable tax finalisation adjustment. The Marine sector's revenue was flat at $149m and its Net Profit grew 38% y-o-y to $12.0m from $8.7m largely due to improved U.S. shipbuilding performance.

Vincent Chong, President & CEO, ST Engineering said: "We had a good start to the year and our recent contract wins have increased our order book to a high of $14.1b. Our focus remains on strengthening our core businesses and pursuing growth in Smart City and in the international defence business.
On the M&A front, we have agreed to acquire Newtec Group , which operates in the high-tech satellite communications industry driving connectivity. This acquisition is expected to complete in 2H2019, and when combined with our existing satellite communications businesses, will further enhance our value proposition for Smart City."

Revenue split between Commercial and Defence sales for 1Q2019 was 70%:30%. The Group ended the quarter with $0.6b cash and cash equivalents.

New Order Book Record and Contracts Wins in 1Q2019

As at 31 March 2019, the Group's order book stood at a high of $14.1b, of which $4.2b is expected to be delivered in the remaining months of 2019.

The Group announced a combined value of $2.1b new contracts for the Aerospace and Electronics sectors. $1.3b was from the Aerospace sector for services ranging from a 10-year heavy maintenance support for a major North American operator's entire fleet of A300s and Boeing 757 and component support for new African and European airline customers.

The Electronics sector received $818m worth of contracts from global customers for its mobility, satellite communications, Internet of Things, cybersecurity, public safety and security, and defence solutions.

In addition to the above new wins, the Land Systems sector hit a major milestone with its first seaport contract to supply 80 automated guided vehicles to Singapore's container port operator, PSA Corporation. The Marine sector was selected by Naval Sea Systems Command for a Phase One Preliminary/ Contract design for the National Oceanic and Atmospheric Administration AGOR Variant, and the U.S. Navy exercised the option for the first of four Auxiliary Personnel Lighter (APL(S)) berthing barges, bringing the total number of APL(S) berthing barges to be constructed at the Group's U.S. shipyard to three.

Etisalat makes landmark announcement for subscribers to experience the first 5G network in MENA

First Operator in the region to offer 5G smartphone and service to all customers

Etisalat has made a landmark announcement giving their subscribers an opportunity to be the first in the MENA region to experience the new super-fast 5G network on 5G smartphones.

Starting today Etisalat customers can enjoy 5G access on ZTE Axon 10 Pro, the first available 5G device from Etisalat. Etisalat subscribers can now enjoy the blazing speed of the 5G network up to 1Gbps and lower latency around 1 millisecond.

This launch is the first in line of 5G devices from leading global smartphone brands expected to be unveiled this year from Etisalat.

The breakthrough achievement in 5G will enable subscribers to enjoy and unleash highly connected technologies blending physical and digital realms from AR and VR to IoT, AI, autonomous vehicles, 3D printing, wearable technology and more.

At around 20 times faster than 4G and with ultra-low latency, 5G service will allow users to stream live 4K resolution video anywhere at any time, with virtually no lag.

Etisalat customers now have the opportunity to experience 5G and purchase ZTE Axon 10 Pro from Marina mall in Abu Dhabi and Dubai Mall. Additionally, customers may also opt to buy with flexible Smart Pay plans on a 12, 18 or 24-month contract starting from only AED 241.

5G network will be available for all Etisalat postpaid, prepaid, consumer and business customers using 5G devices. All customers will be able to use existing data packs on the 5G network. T

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We believe in a growth strategy fueled by cooperation and partnership

Anant Kaewruamvongs, CEO of Thaicom

Interview: Khalid Athar

Khalid Athar: The overall business and competitive landscape in the satellite industry is rather challenging at the moment. What is the long-term enterprise strategy of Thaicom?

Anant Kaewruamvongs: As we head further into 2019, we continue to work hard on our three long-term strategies.

Firstly, in order to sustain our satellite core business, we have made good progress in forming new industry alliances and joint investments with other regional satellite operators. In the meantime, we are open to discuss various forms of project collaboration with the Thai government to enhance Thailand's public-private partnership model for the country's satellite industry to move forward. We want to strengthen our satellite core business by not only relying on Thailand's licensing and concession regulatory framework and policies, but also consider international satellite licenses that are more cost-effective. In a nutshell, we intend to utilize next generation satellite technology together with joint investment with our international partners to reduce investment risk and reliance on Thailand's concession scheme.

Secondly, we have continued to leverage our marketing and technical strengths to develop businesses that are adjacent to the satellite business, for example in the area of satellite consultancy services, teleport services, as well as system integration of satellite and related communication networks. We have also made good progress in providing connectivity and services for commercial vessels and ships with Nava, our new maritime broadband platform.

Thirdly, we have embarked on venturing into new business areas with a focus on digital and future technologies to diversify the Company's portfolio and reliance on the satellite business.

KA: What is Thaicom's growth strategy?

AK: We believe in a growth strategy fueled by cooperation and partnership. In response to our fast-changing industry that is driven by big investment, big global operators, and more and more big multi-national companies entering the satellite industry, we believe partnership business models are the key for us Asian operators to remain competitive and independent in the future. More cooperation among Asian operators is required in response to the new global satellite playing field of new constellations and the aggressive market expansion of the big global operators into Asia. Thaicom is the only satellite-enabled end-to-end solutions provider among the Asian satellite operators. We aim to deliver sustained and profitable growth through a differentiated growth strategy and partnership business model, focusing on the improvement and expansion of our broadcast and broadband services that we think will generate a positive return on our investment in the future. In addition, we have invested in the maritime satellite market. Nava—our new maritime broadband service platform that we launched in early 2018—is one of the fastest growing in Asia.

KA: What investments are going to be made in new GEO satellites? And what role does LEO play in your strategy?

AK: We believe in the co-existence of GEO and LEO which have different strengths that complement each other and cater to different markets and applications. We will, therefore, continue to invest in new GEO satellites but at the same time consider next generation satellite technology in cooperation with our partners to reduce investment risk and reliance on Thailand's concession scheme. Drawing from our profound experience as the company that launched the world's first high-throughput satellite IPSTAR, we intend to support the deployment of LEO-enabled broadband services on the ground. We have come a long way since the launch of IPSTAR and this experience makes us a potential partner for the deployment and marketing of LEO-enabled broadband services. Speaking from our vast experience as HTS pioneer, I can say that a lot of effort goes into the acquisition of landing rights and into building partnerships. This will be challenging for the global LEO players—but herein lies our strength. If and when LEO happens, Thaicom will look to participate in part of the LEO value chain due to our vast experience in deploying broadband services

in APAC.

KA: Thaicom recently announced to use "Space Drone" technology to extend the service life of Thaicom 5. How do you think this decision is going to affect the market?

AK: Following a corporate strategy review, we have revaluated our plan to launch new satellites in the near future. We concluded that the reutilization of one or several of our satellites is the most sustainable solution from cost and risk management perspectives. We consider the reutilization a sound value proposition for our customers as it guarantees service continuity while allowing for flexibility to take advantage of the benefits of changing technology within our industry. The reutilization mission will allow us sufficient time to take advantage of anticipated advances in satellite technology for the replacement of our satellites.

I am particularly proud of the fact that Thaicom is the first regional satellite operator worldwide to embark on an on-orbit satellite life extension mission. We plan to extend the service life of other satellites in our fleet as well, such as IPSTAR, which is subject to the outcome of the public-private partnership that was recently announced by the Thai Government as Thailand's model for its satellite industry to move forward. It is our mission to boost market confidence and guarantee service continuity beyond end of satellite service life and our concession in 2021.

KA: What do you feel about the satellite market in Bangladesh and how is the consultancy project with Bangladesh Communication Satellite Company Limited (BCSCL) going?

AK: Satellite can play an important role in ensuring uninterrupted telecommunication services in Bangladesh, particularly during natural disasters like floods, earthquakes and cyclones. It will also play a bigger role in telemedicine, e-learning, research and DTH services. The remote areas of the country including its coastal areas will have much better internet connectivity to alleviate the digital divide.
Thaicom's professional and consulting service supports the development and implementation of state-owned operator BCSCL's business and market development activities for the Bangabandhu Satellite-1, specifically, to expand broadcasting and telecommunication services to previously unserved and underserved areas of Bangladesh.

KA: According to you, what trends and challenges will impact the development and sizing of the satellite transponder market in the near future?

AK: The worldwide satellite revenues from video markets may still be continuing to erode. But in Asia we are experiencing signs of market stabilization. And so from 2017 to 2018 the number of TV channels on our broadcast platform did increase slightly by 2% but of course at lower yields due to the declining transponder price. However, in the long term we will see revenues shift from conventional DTH services to more data-generated traffic which is supported by emerging small HTS and VHTS systems and broadband capacity. We believe that the growing data demand and requirement for video distribution will eventually offset the eroding transponder market and drive revenue growth in Asian markets and elsewhere.

KA: Can you tell our readers about your partnership with True Visions and how this partnership is going to impact broadcasting services in Thailand?

AK: True Visions is one of Asia's leading pay TV providers. We have been partners with True Visions for more than ten years. The long-term transponder capacity contract we recently signed with them supports their mission to providing premium pay TV broadcasting services to their subscribers in Thailand. It also proves that satellite technology remains a strong value proposition for broadcast expansion in Thailand in the foreseeable future. The capacity agreement with True Visions is focused on the reliable delivery of one of the best entertainment and sports television platforms in Southeast Asia at Thaicom's 78.5 degrees east prime orbital position. The new Thaicom-8 satellite represents a total solution for broadcast and data clients in Asia with excellent Ku-band coverage. It supports the high demand for capacity of the broadcasting industry as it transitions from standard definition to high-definition and ultra-high definition.

KA: How is the African market responding to broadcasting services in general and how is your partnership with Mediavision going?

AK: Through our partnership with Mediavision, we are able to provide integrated, end-to-end broadcast solutions to our African customers. Our African C-band Multi-Channel per Carrier (MCPC) platform via the Thaicom 6 satellite is a cost-effective distribution solution and ideal for broadcasters to enter the African market. We are providing integrated solutions for linear and non-linear content distribution including Internet Protocol TV (IPTV). In addition to that we are also offering global distribution services around the world to some of our African customers. Last but not least, we have successfully extended our services in North-Africa by providing contribution and distribution links to some of the broadcaster there.

KA: What is your opinion regarding the growth of the nanosatellite and microsatellite market in the future?

AK: Without a doubt, nanosatellites and microsatellites are opening space to a wider audience. They represent a new space economy as they can be developed and launched by small and medium-sized companies, universities and start-ups in developing economies due to much lower economic barriers than larger satellites. Small satellites offer an attractive value proposition as they combine very low development and launch costs with a high success rate of launching them into low-earth orbits. There are now many startup launching platforms around the world also in Asia Pacific that help propel this business which is growing at a very fast rate. The decreasing costs of launching these satellites has led to the emergence of many startups to invest in space technology. Main applications for nanosatellites and microsatellites are earth observation for military and commercial use, with more big data applications being supported by small satellites in the future. In Thailand, for example, several high-ranking educational institutions have been involved in developing nanosatellites for research and earth observation applications for security, agriculture, military and research applications. Allow me to say that small satellites could be a viable alternative to 'big' satellites for operators in the future as they become more and more capable for commercial applications—especially in the emerging economies of Asia where governments and satellite operators pursue higher degrees of financial and technological autonomy. T

Flash technology - major pillar in accelerating storage systems development

An Jian, President of Carrier Networks Business Group, Huawei Middle East

The information industry, driven by innovative technologies transforming everything from the support system to the production system, stands at the center of socio-economic development across the globe.

In particular, the storage systems that allow businesses to house, share and safeguard data plays a major role in information lifecycle management; and it is also experiencing tremendous change. The past decade has seen the rapid rise of flash media, and the incredible capacity expansion of a single device from hundreds of GBs to tens of TBs.

Over the past few years though, we have witnessed the rise of all-flash array (AFA) storage systems. As the price of flash storage continues to decline, we can expect AFA to continuously expand its share in data centers.

Currently, more and more carriers have invested in AFA Storage to support their core IT applications.

Long-term Efforts for Harnessing Flash

Huawei believes that today's storage vendors must still make long-term efforts in order to provide the best possible flash capabilities, and there is now a clear path for moving forward.

For one, performance of the array is key focus area, and the response time (latency), stability and efficiency also play vital roles. A great leap in performance is now possible through tight integration between homegrown controller chips (Hi

Silicon) in SSDs, intelligent controllers, and the operating code. The outstanding performance benchmarking results for Huawei's Hi Silicon chips of over 7 Million IOPs—done by vendor neutral agency 'Storage Performance Council'—shows our commitment to customers and the advancements that are possible today.

In addition, Huawei was the first in the industry to offer NVMe over all series of all-flash array models, reducing the latency to 0.3 milliseconds. The new generation of our Storage Class Memory (SCM) will reduce the media latency even further to within a few microseconds.

The stability of the array is also a concern. This is particularly evident in high capacity SSD scenarios where the tolerance of dual disks failure is not adequate to protect one's business data. This is why many organizations are turning to Triple Parity RAID technology from Huawei (RAID TP), which can withstand simultaneous three disks failures with the fastest data rebuilding techniques in the industry.

We also recognize that a six nines (99.9999) availability is a requirement to run business critical workloads nowadays. The simplified gateway and free active-active solution capability of Huawei storage systems helps our customers to achieve this balance of the workload across two data centers.

Closely related to this is the need for improved data protection techniques. Many innovations have been made in this area. For example, Cloud Backup/DR ensures lower costs with the help of cloud, and the Copy Data Management (CDM) emphasizes the management, migration and reuse of data copies, improving traditional backup system capabilities. Ultra-high density snapshots (completed in seconds) can also now compress intervals and increase the number of snapshots to provide improved levels of data protection.

Huawei is proud to have worked with Orange Jordan in 2018 to build a LBS (location-based service) which greatly improved the end users experience in the Kingdome. Muhannad Abu Maizer, CIO of Orange Jordan said: "Huawei all-flash Storage helps Orange meet future service development requirements and achieve efficient services, we believe that our cooperation with Huawei will be a big success."

Integrating Flash with AI, Blockchain

In addition to the aforementioned innovations on flash storage, there are new technical developments in Artificial Intelligence (AI) and blockchain that may affect the future of data storage.

AI has been a hot topic in the industry in recent years, and storage is also making use of AI.

Multiple vendors, including Huawei, have deployed AI-based storage O&M systems to predict faults, locate problems, analyze performance and capacity trends, and provide the system health status, greatly reducing O&M costs.

However, this is just the beginning. AI will be further applied to storage, such as for intelligent identification service workloads and the dynamic adjustment of storage system parameters such as cache prefetch, disk selection algorithms, and deduplication algorithms providing optimal system capabilities.

Compared with AI, the deployment of blockchain in storage is still in the very early stages. Blockchain is characterized by non-repudiation, and therefore a possible application mode is to use this technology to implement trusted storage systems, where all user logs, operation records, and even data are verified and traceable.

Bearing in mind all of these technological advancements, Huawei is committed to evolving in step with our customers. Our storage solutions will continue to uphold our belief in "Data on Demand" and provide customers higher-quality and advanced storage systems with easy data management capabilities in this new era. T

avia
ASIA VIDEO INDUSTRY ASSOCIATION

AVIA presents the 19TH edition of the Satellite Industry Forum

The Asia Video Industry Association (AVIA) will be hosting its annual Satellite Industry Forum (SIF) at the Four Seasons Hotel, Singapore on 17 June 2019.

This year, we welcome Steve Collar, President and CEO of SES. Presenting this yeat at the Satellite Industry Forum, hear him live as he gives a keynote presentation and shares his views about spectrum war.

"It's a hugely exciting time in our industry with more change, disruption and innovation going on than at any time I can remember," Steve Collar, President and CEO, SES. "The greatest challenge — not just for SES but for the industry – is to change the perception of what satellite can do, to broaden the market and do a better job at communicating the increasingly valuable role that satellite can play in a cloud-scale world."

Over the past year, we have witnessed profound change in the satellite industry.

Evolving customer needs and requirements have led to fast-paced innovation from manufacturers and operators alike. Growth fundamentals for satellite will remain strong in the Asia Pacific region for the coming year and developments point to sustained growth in the medium-term as well.

As 2019 progresses, it will be of interest to many to find out what trends the satellite industry will see play out this year, and what the key drivers of growth will be for both operators and customers.

Join us at the Satellite Industry Forum 2019 on 17 June at Four Seasons Hotel Singapore, as we discuss key highlights including:

- **What is at stake for the satellite industry?**
- **WRC-19 updates**
- **Spectrum wars?**
- **The NGSO revolution – what's holding it up?**
- **New players on the block** T

ARTICLE

Road to 5G:
IP Transport Network is the top priority for Telecom Operators

By: Suraj Godse, Sr. Research Analyst and Saurabh Verma, Associate Director, Digital Transformation, Frost & Sullivan

Introduction

5G is moving at a pace where every week the numbers of global 5G deployments are changing. As per latest reports, around 150 telecom operators in 56 countries have committed investments, begun implementing or trialing their respective 5G networks. Out of which 20 operators have deployed 5G networks in 294 locations across the globe. Some of the leading countries in the 5G race are South Korea, Japan, China, the USA, the UK, Switzerland, the UAE, Saudi Arabia, Kuwait, and Qatar amongst a few others. Asian countries are outspending the US in building and investing in 5G infrastructure. In the Middle East region, 15 countries plan to launch 5G mobile services between 2019 and 2025. Six MENA (Middle East and North Africa) countries launched 4G commercial services during 2009-2011 compared to eight countries launching 5G during 2019-2021.

5G IP Transport Network

5G will have a wider wireless spectrum, with a higher frequency band; the bandwidth for 5G networks can even reach tens of Gbps. The peak bandwidth and user experience bandwidth of 5G networks is expected to be 10 times higher. 5G comes with its own benefits, but it also imposes some challenges on the existing telecom transport network.

Existing technical infrastructure including the equipment and the network architectures does not fulfill the requirements of deploying a 5G network.

While addressing these challenges it is also important that an optimal cost solution is considered for successful deployment and rollout of commercial 5G services to meet consumer demands at the same time securing market leadership with sustainable growth. How can this be achieved, is a question most of the telecom operators are prioritising and trying to address with their 5G deployment plans.

IP backbone, metro and mobile backhaul are the three main aspects of a Carrier IP network. Improving the network efficiency by leveraging new technologies such as SDN, NFC and SA, has become of utmost importance. Telecom operators today are looking for network operators who can provide an IP transport network, which is capable of building future-oriented ultra-broadband, and high-quality, multi-service bearing network to help operators reduce investment and operation costs, improve end-user experience, and support rapid business development.

The routers and service intelligence gateways are the most important while building an IP network. Vendors like Huawei have their Router & Carrier Ethernet product lines that cover the backbone, metro, and mobile backhaul networks. In the backbone network domain, Huawei's core routers are at the forefront of industry development. Its all-service routers and multi-service control gateways dominate in metro network domain. While, in the mobile backhaul network domain the company is leading in terms of its global market share. Service intelligence gateway (SIG) systems use high-performance hardware and patented service awareness technologies to analyze and process network data packets. They can be deployed on fixed, wireless, or converged networks to provide functions such as traffic

analysis, bandwidth management, and network security defense.

For an optimal cost per bit solution, and an affordable upgrade of the IP transport network, vendors usually propose solutions, which are classified into these two phases:

- **The 5G Migration phase** focusing on enhanced mobile broadband (eMBB) services.
- **The 5G Deployment phase** focusing on three types of services: eMBB, ultra-reliable and low-latency communications (URLLC), and massive machine-type communications (mMTC).

The 5G Migration Phase:

In this stage, innovative energy-saving technologies are applied, achieving the lowest single-bit power consumption in the industry. Huawei offers an industry-leading super cooling solution, which consumes 30% less power than the industry average by adopting the phase-change heat dissipation technology and introducing the industry's first mixed-flow fans. eMBB aims to support enhanced high-bandwidth applications, including video applications such as 4K, 8K, and AR/VR.

On the access side of base stations, PAM4 a branch of the pulse amplitude modulation (PAM) technology, which plays a key role in multi-order modulation, is widely used in high-speed signal interconnection. PAM4 is an efficient modulation technology that improves bandwidth utilisation. In the cost structure of devices on a mobile network, optical modules account for an ever-increasing percentage. Decreasing the costs of optical modules is critical in cutting the overall costs. Building on the 50G PAM4 per lane technology, 400GE/200GE/50GE interfaces can meet the cost and performance requirements of 5G mobile networks to construct an optimal solution covering the access network, aggregation network, and core network. An end to end 400GE Interface technology support is provided for the backbone network to put into commercial use during this phase.

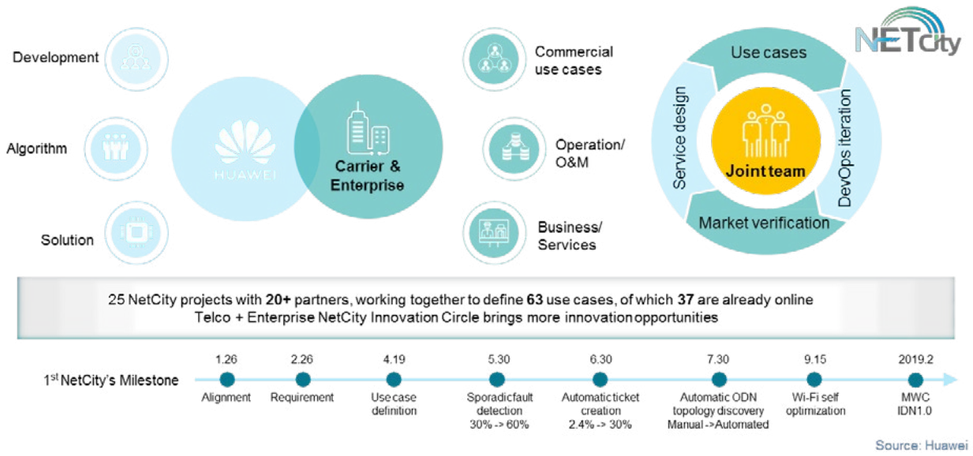
SRv6, which is a successor to MPLS on IP transport networks is a next-generation core protocol based on native IPv6 and source routing. SRv6 improves network configuration efficiency, and helps provide application-level management and services by replacing complex protocols running on existing network/s. SRv6 enables the network controller to implement path programmability, providing differentiated SLA assurance for a wide range of services and applications. It is evident that only those transport networks that are fully SRv6-ready will be able to meet service transport requirements in the 5G and cloud era. Routers supporting MPLS and SR/SRv6 dual-plane deployment would be ideal in this phase.

The 5G Deployment Phase:

In this phase, building an integrated transport network that supports all business to home (B2H), business to business (B2B), and business to consumer (B2C) services to improve the return on investment, will become a top priority for operators.

Building a converged transport network that supports all services to improve the ROI will be very important during this phase. eMBB, URLLC, and mMTC services will be fully developed with different SLA assurances.

As the density of 5G base stations increases, service access points will tend to be deployed at the same location. This brings a possibility that B2H and B2B services are accessed through the same point of presence (POP), enabling a transport network to bear B2H, B2B, and B2C services at the same time.



Source: Huawei

In this phase, an ideal network would be one in which the network is decoupled from services and sliced to provide services on demand.

The network slicing technology works with end-to-end SRv6 path programming to provide differentiated SLA capabilities for services. The network architecture is much simplified and higher bandwidths are also available. This provides ample network and bandwidth for various services to be delivered with an optimized experience.

An intent-driven intelligent operation platform with artificial intelligence and big data analytics capabilities is introduced in this phase. These capabilities will cater to automated deployment, status collection, and intelligent analysis, enabling full-lifecycle network management and proactive O&M, improving service provisioning, O&M efficiency and ROI.

The first phase enables the development of a faster transport network solution at an affordable cost, which helps in successful implementation of basic 5G services. While in the second phase a strong and converged transport network is build that supports all 5G services to improve the Return on Investment (ROI) for the telecom operators.

Building an Open and Cooperative IP Industry Ecosystem

Realising the 10-fold traffic growth at a single site in the 5G era, it is important for vendors to achieve optimal cost per bit and fast bandwidth upgrade by innovations in NP chips, energy saving design, new interface, and new protocols. This includes next-generation router chips with the highest degree of integration and best performance.

> **Realising the 10-fold traffic growth at a single site in the 5G era, it is important for vendors to achieve optimal cost per bit and fast bandwidth upgrade by innovations in NP chips, energy saving design, new interface, and new protocols.**

As a major contributor to 50GE/400GE interface standards, Huawei appears to have taken the lead in commercialising 50GE/400GE and has driven the technology to maturity. As a major member of the new-generation SRv6 standard organisation, it has not only submitted more than 15+ SRv6-related drafts to the IETF, but also promoted interoperability between vendors and SRv6 commercial deployment.

To lead the 5G race, vendors are actively carrying out joint innovations with operators in Europe, Asia Pacific, the Middle East, and many other regions through NetCity projects to explore future network evolution and promote IP industry development.

It is also helping operators cultivate IP talent through Certification programmes, and building an evolvable IP transport network to enable 5G business successes.

Transport networks will need important upgrades going forward to support new service offerings and applications promised by 5G. Mobile operators at the same time will be taking measures to reduce cost, but they will also need to explore more alternative approaches, such as network sharing, which involves joint building of new 5G networks and new revenue models. T

Yahsat and Hughes form satellite services joint venture in Brazil

Yahsat have announced an agreement to enter into a joint venture to provide commercial Ka-band satellite broadband services in Brazil. This new venture combines Hughes experience delivering satellite networks and services in Brazil with Yahsat's strong position and capabilities in the region. Hughes will hold the majority interest in the joint venture.

The new entity will combine Hughes do Brazil with Yahsat's consumer broadband company in Brazil, creating a strong value proposition to serve the growing market demand for a wide range of broadband services, including consumer Internet access, enterprise networks, cellular backhaul and community Wi-Fi hotspot solutions. The venture will combine the companies' more than 65 Gbps of Ka-band satellite capacity on Hughes 65 West, Hughes 63 West and Al-Yah 3 high-throughput satellites (HTS), reaching more than 95% of Brazil's population. It also includes Hughes and Yahsat's three gateways in Brazil. In addition to the combined existing capacity, the new entity will also leverage the capacity on Hughes next-generation JUPITER™ 3 Ultra High-Density Satellite (UHDS), designated EchoStar XXIV, planned for launch in 2021.

In 2018, Yahsat and Hughes launched a joint venture to provide satellite broadband services to the Middle East, Africa and southwest Asia markets.

"The formation of the new joint venture with Hughes in Brazil will strengthen the nation's digital landscape and bring with it a host of lasting benefits for communities and businesses across Brazil," said Masood M. Sharif Mahmood, Yahsat's Chief Executive Officer. "Our partnership with Hughes supports Yahsat's mission to enable social and economic

development by empowering communities in remote regions with high-performance broadband connectivity. We now look forward to combining our efforts to unlock the massive potential of the largest and most exciting economy in Latin America."

Pradman Kaul, president of Hughes, added: "Yahsat is the logical partner for Hughes in Brazil as we continue to expand our services and meet growing demand across consumer, enterprise and carrier markets. Brazilians throughout the country will benefit from the capacity, scale and operational synergies of our combined entity as we connect the unconnected and enable businesses and communities to thrive." T

Bringing "terrestrial networks" into space

Q: What brought you to CABSAT this year?

A: We have recently announced a partnership with a Saudi company called Skyband and CABSAT seemed like a great opportunity and the perfect venue to talk about that and get some exposure around that. Secondly, GVF (Global VSAT Forum) is there and they give a lot of presentations and invite a lot of their partners to give presentations here. We were also part of that and being the start-up that we are, there are so many things to share with the larger audience at such gatherings.

Q: What makes LEOSAT's low earth orbit satellite system unique?

A: The design of the satellite has been done by data-based personnel - rather than what you see typically in this industry (which is to take geostationary satellites and bringing them closer to earth), what we are doing is much like terrestrial infrastructure with a lot of precision and speed. We are bringing terrestrial infrastructure in space which is a different way of tackling a problem and once in space, we "fiber everything up" like you would do on the ground but clearly we are not using fiber and instead using lasers for that. In doing so we have built an optical backbone in space with a lot of intelligence in the constellation itself that is fully able to do all the routing and switching that you would do in the terrestrial infrastructure.

We are meeting all the requirements that we need to have from a terrestrial perspective speed, performance and everything else but now we can successfully add to that the main advantage of being in space which is that you get many more locations you can connect with. You can connect port capacity from location to and you are actually a lot faster than fiber because bits travel faster in free space than they do in the fiber optic cable. So, there are many advantages you can bring by being in space as supposed to being on the ground.

Q: What are your thoughts about 5G and how it is going to effect the satellite systems industry?

A: 5G is an interesting topic - many people take it to be an extension of 4G or more capacity (or so and so) but it is actually a whole new type of concept where many more applications will be introduced into that infrastructure showing the clear difference, e.g 3G & 4G do not carry mission-critical type application as 5G will be carrying.

What needs to happen is that the reliability of that infrastructure needs to increase drastically relative to 2G, 3G and 4G. So, now needing carrier-grade high quality infrastructure, LEOSAT is ideally positioned to help out with the 5G challenge because that is the type of infrastructure we are planning to put in space - it is carrier grade, it is highly reliable based on the design that we have put in place and in doing that we are going to be a great partner for all these companies that are looking to introduce 5G not just in far remote locations but also in highly populated areas where you typically use fiber.

> **"We can do anything that other LEOs do, we are able to compete on price if we have to and on offering more bandwidth or lower latency than others - we can always do that"**

Q: Are you planning to expand your services to any new markets?

A: We are getting lots of requests from markets and companies that typically would not call upon a satellite company because the satellites do not usually meet the basic requirement of terrestrial infrastructure. However, now doing so and sometimes doing better than that particularly in latency there are great examples where we are able to make a connection between London and Singapore that we are always advertising with the fact that this is always going to be 40, 50, 60 milliseconds faster than a terrestrial infrastructure.

Being able to compete with fiber and then actually beat them at their own game, by virtue of that you are going to get a lot of phone calls from markets that you would typically not get any phone calls from. So, we are targeting other markets and it is really interesting to see that they are actually seeking us. At this point of time, we have not made a hard and long pitch to win them over because they seemed to be convinced before we even call them which is fantastic.

Q: What role do think low earth orbit satellites will be playing in in future communication?

A: So, first of all, there are a lot of things to choose from LEO and I hope I have been able to make it clear that we are taking a different path than some of the other LEO propositions out there. We can do anything that other LEOs do, we are able to compete on price if we have to and on offering more bandwidth or lower latency than others - we can always do that. But there are pockets of applications that we can tap into because of the changed architecture, so to answer to your question, satellites have always been playing a part in data, not by choice so to speak. That I think is where it is moving, it is not just about data - it's about changing the way satellites are being used for last mile solution to a solution of choice that you would choose over fiber because it has certain benefits, that is the ambition that people should have with LEO. In our company, we certainly have this and once we launch, I think we are going to be able to deliver on that quite easily and given the commercial uptake we are seeing in the past two/three years (We have now closed a billion and half in pre-commitments), that there is a great future for the satellites and a great future for LEO but we have to get the design right and bring real value to (REAL) Datacom as opposed to last resort type of solutions at the lowest price possible. T

Interview: Khalid Athar

"One of the biggest challenges that arrives with 5G will be about security"

Joe Sarno, VP Sales, International Emerging at Fortinet

Khalid Athar: What according to you will be the biggest challenges that the operators will have to face with the advent of 5G?

Joe Sarno: We see two major challenges: The first one, with new 5G services, the operator would want to monetize on new services and they will be pushed to use the MEC services (Multi-access edge computing services).

The second big challenge in my opinion is the lack of focus on security because what we see today is more focused on other aspects of 5G such as performance and how will it help build the value added services for the operator but less on the security side.

Khalid: Can you tell us about your solutions capable of protecting the 5G infrastructure?

Joe: We cover all VNFs (Virtual Network Functions) on our solutions - both for the 5G infrastructure and the internal 5G core solutions. We really have broad coverage of all the necessary security solutions for the 5G infrastructure. We also have a number of solutions for the operator's cloud, we have products that address the network next-gen firewall NFV and the web application firewall NFV which are both related to edge computing and therefore the issues relating to applications that we need to protect on the edge.

Khalid: How do you think can service providers protect their virtual networks and cloud platforms.

Joe: Here are two aspects - we protect the North-South traffic using typically our physical appliances where Fortinet is a long strategic partner for many telco's worldwide and in the recent years we have been adding the virtual solutions integrated in different virtualized platforms for the East-West traffic.

So in that case, we provide application control and load balancing features across the data centers for the East-West traffic. Cloud platforms are open and flexible and are really responsive to customer's demand - this is one of the aspects that we have put a lot of effort into our innovation to be able to offer flexible and open solutions for the cloud providers.

Khalid: Digital transformation has led to a massive increase in data which keeps increasing as we move forward in terms of the deployed level of technology. With unused data piling up already - do you think we can manage and sustain the level at which we deal with our data whilst we are constantly increasing the sources that create it?

Joe: Well, we will have to, the good news is that Fortinet since its very beginning has been building high-powered solutions. This has allowed in the years to be extremely powerful in terms of performance. This is continued on the virtual solutions where we have the smallest footprint for the VNs (Virtual Networks).

> **What we have to do, starting from schools and universities, is to teach children, young men and women, and teachers about how to avoid simple phishing attacks which is still the common aspect and major cause of social media malware attacks in the cyber security arena"**

We are able to spin-up a VN inside a data center in a matter of seconds where our competition takes minutes because of the footprint of virtual solutions and virtual software. This is extremely efficient when you consider high-level implementation with hundreds if not thousands of VN's to implement across data centers.

Khalid: How do you feel about the Middle East market in general?

Joe: The Middle East has always amazed me - every time I go to the Middle East there is always something new happening from taxi drones to smart city application. We are working with all the major CSP's in the Middle East and this allows to access and work closely with communication service providers to develop together new services and new technology to allow the Middle East to continue this very positive trend in the technology that they are having.

> **We are able to spin-up a VN inside a data center in a matter of seconds where our competition takes minutes because of the footprint of virtual solutions and virtual software"**

Khalid: Privacy has been hugely compromised with the arrival of social media and connected devices making individuals more vulnerable to cyber threats and crimes. What measures can individuals take to reduce their exposure to cybercrime? Do you have any social initiatives or training programs to spread some awareness?

Joe: I think here the issue here is not only about the technology, the issue is more about culture. We are continuously bombarded with all types of cyber-attacks especially in the social media area. What we have to do, starting from schools and universities, is to teach children, young men and women, and teachers about how to avoid simple phishing attacks which is still the common aspect and major cause of social media malware attacks in the cyber security arena. I think training is fundamental.

We do training inside our corporate offices and we actually test our employees to see if they get caught in the phishing attacks and even as a security company we do see it happen. What we try to do as a separate element regarding technologies is to really try and give expertise to our customers and partners so that they are able to understand the real element behind such attacks. T

Faster Digital Transformation

In a desire to make their citizens' lives better and protect them, governments around the world are focusing their efforts on digital transformation, although the pace of adoption of the latest technologies varies given local requirements and resources.

Over the past decade, we've seen the rise of multiple disruptive technologies that are fundamentally changing the industries and the entire geographies - from the pervasive adoption of mobile devices, advanced data analytics and artificial intelligence (AI), to the rise of the Internet of Things and the ubiquitous movement of applications and platforms into the cloud. In the government sector, these new technologies are capable of making entities more efficient in meeting their citizens' needs and demands, and serving as a powerful vehicle for driving substantial socio-economic growth.

And while the benefits of these network-enabled technologies and solutions are known, they do have one very important thing in common – they typically require high-bandwidth low latency connectivity.

This can be a stumbling block for some digital transformation initiatives depending on the infrastructure available. Solving the network availability and performance conundrum – especially in the hard-to-reach locations - allows quality digital transformation.

Modernising government services in Burkina Faso with MEO

Landlocked Burkina Faso, with its vast and often hard-to-reach territories, has decided to embark on an ambitious project to transform people's lives through key e-applications in critically important sectors and to deploy them countrywide. For this, a reliable ICT Infrastructure is required.

Nicole Robinson, Senior Vice President, Global Government, SES Networks

At the heart of the end-to-end infrastructure is the O3b Medium Earth Orbit (MEO) constellation. Capable of delivering fibre-like connectivity to any location, it is seamlessly integrated into the partially available terrestrial government infrastructure called RESINA, extending it into remotest provinces across the 270 thousand square kilometres-wide country.

As part of the project, and with the support of the Government of Luxembourg under the PARICOM program, SES Networks installed 5 MEO terminals – in Ouagadougou, Bobo-Dioulasso, Gaoua, Tenkodogo and Dori. With an initial contracted speed of 600 Mbit/s, the network is capable of attaining higher speeds to meet country's future needs. The entire infrastructure is reinforced by the wireless technology and multiple point-to-point links, which is in term operated by Burkina Faso's National Agency for Promotion of Information and Communication Technology (ANPTIC). The software-based monitoring system developed by SES Networks makes the infrastructure easily operable for the Burkina Faso government.

It's not just reliable access to high throughput connectivity that matters, it is also what it enables that matters immensely. Overall, the network is designed to connect 881 sites across Burkina Faso to improve day-to-day operations for government offices and enable deployment of e-government, e-education, e-health projects. A reliable network is also the basis for further adoption of advanced cloud-scale IT tools and applications.

The integrated, end-to-end satellite and terrestrial network solution is opening the door to data-intensive applications in remotest government offices in Burkina Faso, allowing processing of large files, videoconferencing, e-learning tools and boost medical services through telemedicine applications.

Through the last couple of months, our teams have been talking to the various government offices who have already witnessed the benefits that reliable connectivity can bring. The ultimate winners are the citizens, who will get improved, faster and more efficient services – whether these are delivery of necessary documents and processing applications, better education or healthcare.

Multi-orbit satellite connectivity: integration with fibre made easy

Today, governments across the globe can acquire multi-orbit satellite-enabled services via our growing Geostationary Earth Orbit (GEO) and Medium-Earth Orbit (MEO) fleets.

The latter provide lower latency and high throughput. MEO is a relatively new but already proven technology as seen by many governments and institutions across the globe, including U.S., UN, or Burkina Faso who are already benefitting from it.

Satellite-enabled solutions developed by SES Networks, also seamlessly fit into the mix of infrastructures, and can bring connectivity into any point of the terrestrial network, allowing for example public and private cloud. For governments looking to embrace digital transformation and implement new technologies country-wide and in a timely manner, this is an incredible solution for both civil and defence & security applications.

Most recently, SES Networks has launched another batch of the current generation O3b MEO to serve the growing market needs. This launch also marks the transition towards the next generation MEO called O3b mPOWER, that will be launched in just couple of years and will provide terabit-scale capabilities. There has never been a better time for governments to adopt MEO! T

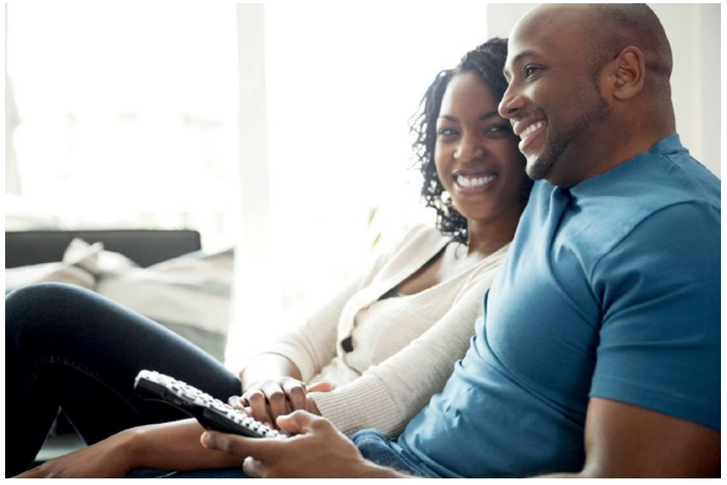
Ivory Coast accelerates digital migration with SES

Ivory Coast's public broadcasting company, the Société Ivoirienne de Télédiffusion (SIDT), has selected SES as its digital partner in a major move to meet the country's 2020 deadline for switching over from analogue to digital broadcasting. Under this multi-year agreement, 60 analogue turned digital channels will be broadcast with brighter, sharper picture and better sound, via the SES-4 satellite at 22 degrees West.

SES will be using the comprehensive coverage of SES-4 to ensure high service availability of bandwidth and to broadcast all channels via the Digital Terrestrial Television (DTT) infrastructure across Ivory Coast. These digital channels will then be available to all Ivorian television (TV) viewers who have a digital set-top box or an integrated digital TV with a built-in DTT decoder.

In addition to using SES-4 to accelerate the digital switchover, the capacity leased on SES-4 for digital broadcasting will also be used to broadcast Radiodiffusion Télévision Ivoirienne (RTI), the state's public TV network, to fulfill its public service mission of providing local news and information to Ivorians.

"SES has provided us with an innovative solution to ensure deployment of digital TV by broadcasting multiplexes across the country. This is an important milestone as we are now one step closer to ending analogue service," said Yeo Adama, General Manager of the SIDT. "We are excited to work with SES, which has both the technical capabilities and the practical experience required to support our ambitious projects, including the implementation of new broadcasting standards."



"The move from analogue to digital broadcasting can be complex, and we are fully committed to making this as hassle-free as possible for the SIDT in Ivory Coast. Our satellite will provide the reliability to broadcast high-picture-quality TV services to Ivorians, while our teams are well-positioned to deliver the technical services and innovative solutions required to facilitate a successful digital migration for Ivory Coast," said Clint Brown, VP of Sales and Market Development for SES Video in Africa. T

Airbus to build multimission satellite for MEASAT

Airbus has been selected by MEASAT to build MEASAT-3d, a new multimission telecommunications satellite to replace capacity and augment its core business in Malaysia, Asia, Middle East and Africa.

Positioned at 91.5°E collocated with MEASAT-3b, also built by Airbus, MEASAT-3d will deliver improved performances to progressively replace MEASAT-3 and MEASAT-3a, supporting Asia's premium DTH (direct to home) video distribution.

Planned to be launched in 2021, MEASAT-3d will provide C and Ku-bands capacity for DTH, video distribution and telecommunication services.

The new HTS Ka-band mission features multiple user spot beams optimized to deliver high speed broadband communications over Malaysia to bridge the digital divide in the country.

It will also carry an L-band navigation hosted payload for the Korea Augmentation Satellite System (KASS) for KTSAT.

MEASAT-3d is based on Airbus' proven and highly reliable Eurostar E3000 satellite platform. Planned for more than 15 years of operation, MEASAT-3d is designed to have an electrical power of 12kW.

Dr Edmund Kong, MEASAT's CTO said, "We are delighted to once again appoint Airbus as the manufacturer of MEASAT's 8th communication satellite. With MEASAT-3d, MEASAT reaffirms its commitment to provide core infrastructure for the Malaysian ICT and broadcast industry. Collocated with MEASAT-3a and MEASAT-3b at 91.5°E, MEASAT-3d will serve the growth requirements of 4G & 5G mobile networks in Malaysia while continuing to provide redundancy and additional distribution capacity for video in HD, 4K and ultimately 8K in the Asia-Pacific region. Furthermore, MEASAT-3d will aid in bridging the digital divide in Malaysia by enabling 100% coverage for high speed consumer broadband services to all Malaysian households." T

Hughes India and Airtel announce new satellite venture to serve enterprise and government customers in India

Hughes and Bharti Airtel have announced an agreement to combine their Very Small Aperture Terminal (VSAT) operations in India.

The combined entity will bring greater scale, operational efficiencies and market reach to serve India with secure and reliable broadband satellite and hybrid solutions for enterprise and government networks. Hughes and its subsidiaries will maintain majority ownership in HCIL, the surviving entity, and Airtel will have a significant shareholding.

"In India today, satellite is an important layer in the enterprise networks across all kinds of industries – from retail to petroleum to banking to military," said Partho Banerjee, president and managing director, HCIL.

"Together with Airtel, HCIL will expand our VSAT and terrestrial operations to serve the growing demand for always on, always available network connectivity across the country."

Ajay Chitkara, director and chief executive officer, Airtel Business, said: "We are pleased to combine our VSAT operations with Hughes to serve the connectivity needs of Digital India. Combining the proven capabilities of both the companies, the partnership will bring synergies to the forefront for the benefit of customers across the length and breadth of India."

The largest satellite service operator in India, HCIL provides broadband networking technologies, solutions, and services for businesses, governments. Airtel is a significant VSAT service provider in India, offering satellite connectivity to unreachable terrains and helping businesses supplement their terrestrial networks with satellite for primary and backup connectivity.

The combined entity will be positioned to introduce new VSAT and related technologies to deliver a wide range of quaility products and services. HCIL will continue to serve existing HCIL and Airtel customers while focusing on serving the growing networking needs of enterprise and government customers in India. T

Hisdesat appoints Airbus and Thales Alenia Space to build two SpainSAT NG satellites

A four co-primes consortium formed by Airbus and Thales Alenia Space (both in Spain and France) has been selected by Hisdesat (Spanish Governmental Satellite Operator) to build two SpainSAT NG satellites. Used for governmental communications, these new generation satellites will replace the existing Spainsat and Xtar-EUR satellites. Airbus will act as "lead partner" of the consortium.

The SPAINSAT NG programme includes two satellites, SPAINSAT NG I and II which will be situated in different geostationary orbital slots to operate in X, military Ka and UHF bands.

The first of these New Generation Spainsat satellites will be launched in 2023 guaranteeing the continuity of the secure communications services to the Spanish Ministry of Defense and Governmental Agencies using the current fleet .

The satellites will be based on the Eurostar Neo platform, Airbus' new geostationary telecommunications satellite product, a significant evolution of the highly reliable and successful Eurostar series with an entire range of major innovations. These include an X-band fully flexible payload, employing active antennas with in orbit reconfiguration capability, an onboard digital processor that will interconnect the X and mil-Ka band payloads for crossbanding, and a dedicated high speed service link enabling fast re-configuration. This will result in a greater capacity, and increased flexibility allowing for electronic reorientation of the beams depending on the coverage needs. T

Telenor Satellite selects Newtec to meet growing bandwidth demand

Telenor Satellite aims to satisfy rising demand from its customers for higher throughput maritime services on its THOR 7 Ka-band High Throughput Satellite (HTS) with a new collaboration with Newtec on its Newtec Dialog® platform.

Telenor Satellite will use the platform for high end users such as Ferry, Cruise and OSVs where it will be able to fully exploit the potential of THOR 7 and deliver a service that far exceeds what it is possible to deliver today using existing hub-based technology. Newtec Dialog also opens up the possibility of using THOR 7 in new verticals not presently using hub-based technology for service delivery.

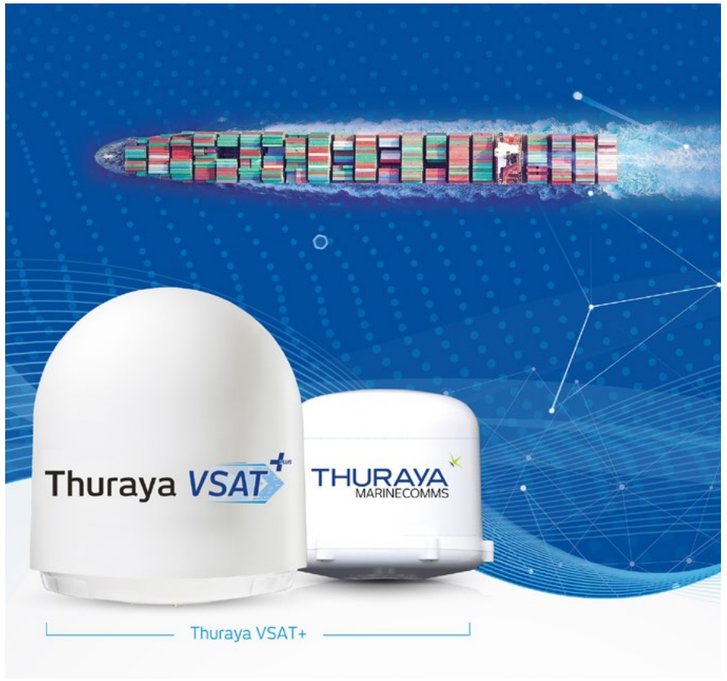
Launched in 2015, THOR 7 targets the North Sea, North Atlantic/Norwegian Sea, Baltic Sea, Black Sea, Caspian Sea, Red Sea, the Persian Gulf and the Mediterranean Sea. Its HTS payload uses high power spot beams making it ideally suited for the mobility VSAT market. Telenor Satellite's new Anker suite of services was also recently developed to meet growing demand for unique VSAT profiles capable of meeting any requirement.

"Today's maritime users wish to remain constantly connected via their mobile devices and ferry and cruise operators are utilizing maritime connectivity more and more to enhance operational efficiency," said Jan Hetland, Director, Data Services, at Telenor Satellite. "Consequently, demand for throughput on vessels is increasing exponentially. As a leading Ku- and Ka-Band satellite operator and managed services provider, we are committed to meeting that demand and ensuring our service delivers the highest possible throughput. This Newtec Dialog platform will enable us to achieve that goal."

Newtec Dialog is a single-service and multiservice VSAT platform which brings scalability and flexibility to operators and service providers, allowing them to build and adapt infrastructures and satellite networking as and when required by their customers. T

Thuraya VSAT+ empowers smart shipping and digitalization

VSAT+, the ground-breaking maritime satellite service from Thuraya, will be unveiled in Europe at this year's Nor-Shipping conference and exhibition event in Oslo, three months after its commercial launch at the annual Thuraya partner conference in Dubai.



With digitalization now a major driver of change in the maritime sector, Thuraya VSAT+ is the ideal satellite service to help fleet operators increase operational efficiency, gain market advantage and meet growing demand for monitoring and compliance.

Thuraya VSAT+ seamlessly integrates the high-bandwidth speeds of Ku-Band and reliability of L-Band with affordable global coverage and high levels of security, resilience and flexibility. As the flagship of Thuraya's progressive maritime vision, it has been designed to help maritime customers achieve their goals and overcome the challenges of today's market.

Nadeem Khan, Director of Maritime M2M & IoT at Thuraya, said: "As demand for data increases exponentially, satellite communication is the only realistic option for ship-to-shore and inter-ship communication. That is why we designed VSAT+ to offer optimum flexibility and affordability. We believe it can help deliver significant savings for fleet operators – perhaps as much as 20-40% of operating costs through intelligent fleet management."

VSAT+ gives Thuraya a unique proposition in the Scandinavian and wider European markets, where it has maintained a strong maritime presence since 2001. The VSAT+ coverage in Europe, and globally, is enabled by the Panasonic global mobility network. Thuraya accesses the network through its partnership with Panasonic subsidiary ITC Global.

Europe provides a great opportunity for growth to Thuraya and its partners. As global Master Distributor for VSAT+, IEC Telecom will be central to service delivery in Europe and Scandinavia. Awarded Best Maritime Thuraya Service Partner in 2018, IEC Telecom will offer a range of value-added services and help Thuraya diversify its portfolio in the region.

Alf Stian Mauritz, VP - Business Development IEC Telecom Group and Managing Director of IEC Telecom Norway, said: "Sustainability of the maritime industry is one of the key challenges for Europe. Next year the IMO2020 rules on clean fuel will come into effect imposing dramatic reductions in carbon emissions by 2030. Satcom technologies enable vessel owners to reduce their carbon footprint by optimizing operational efficiency of their fleets. VSAT+ can play an important role in the ongoing transformation of the maritime sector, enabling on board smart applications for remote control and maintenance." Analysis of data from ships and fleet operations can provide insights into where and how efficiencies and savings could be made. Operators who fall behind in the race to gather and utilize their data in this way risk losing data through a single integrated, flexible and affordable service.

Data acquisition and the rapid growth of digitalization augment online risk from cyber criminals. However, Thuraya helps users mitigate this threat by offering comprehensive cyber security packages through its VSAT+ partner network. T

teletimes INTERNATIONAL

Thuraya signs strategic agreement with Elcome to drive maritime growth

Thuraya has signed a Service Partner agreement with Elcome, a marine technology system integrators. Elcome will provide Thuraya's products and services worldwide across key vertical markets.

Ali Al Hashemi, Chief Executive Officer of Thuraya, said: "Thuraya is pleased to welcome Elcome as a Service Partner. This partnership will further enhance our commitment to key sectors, including maritime, government, energy and leisure. Nowadays, these sectors and their customers demand solutions that go beyond the standard connectivity. This partnership will meet those needs on all fronts, including products, network, integration and support."

Jimmy Grewal, Executive Director of Elcome, said: "The demand for innovative and flexible data solutions for the maritime industry is growing exponentially. We are proud to partner with Thuraya to deliver such integrated services to our regional defence, government and commercial customers."

Shawkat Ahmed, Chief Commercial Officer of Thuraya, said: "This is an important step towards an extensive and exciting long term collaboration. Elcome covers a wide customer base who truly need comprehensive connectivity at all times beyond terrestrial reach. Our capabilities are complementary, and we will be able to give end users far greater flexibility than they have now. This agreement delivers reliable communication wherever and whenever it is needed." T

Collaboration and interoperability needed for a 'smart' maritime industry

Rob O'Dwyer
Chief Network Officer, Smart Maritime Network

The Smart Maritime Network (SMN) was established in January 2019 to provide a platform to promote the benefits of enhanced integration and data sharing among stakeholders within the maritime and transport logistics sectors, with the goal of driving increased harmonisation in IT development and improving interoperability between the different technology systems employed in the maritime sector.

This initiative has emerged in response to the rapid changes that have been taking place in maritime digitalisation over the last decade, and in the last three years in particular, creating a need for greater integration between technology systems from different suppliers. The lack of standardisation in the IT systems available to shipping is a common frustration among industry professionals, both vendors and users, as it creates difficulties in linking different equipment and applications together and inhibits sharing of data, within the company itself and more widely with external stakeholders.

The recent growth in the broadband capacity available at sea, driven by huge investment by satellite operators like Inmarsat in next-generation technologies, has accelerated the capabilities of shipping companies to collect and share data. However, much of the maritime industry's legacy technology infrastructure does not lend itself to easy integration, which limits companies' ability to fully grasp the opportunities created by access to better communications and maximise the potential value of their data. Everybody benefits if bridge systems, for example, can share data more easily with other third-party software applications, which can then integrate seamlessly with the onboard communications set-up for further data analysis on shore. If data collected by sensors installed on a vessel can be directly shared with optimisation applications to enhance performance then the value of the sensors and the software are both enhanced – and the technology system as a whole can provide more benefit to the shipping company end-user.

We need to bring this philosophy of cooperation and mutual benefit to maritime technology, to start talking about the areas where systems developers are not competing and where they can collaborate better to allow digitalisation to work more efficiently for the industry as a whole.

Thankfully, there are a number of major maritime technology companies that support this view of the potential benefits of collaboration and are keen to explore these issues further. This has led to the creation of the Smart Maritime Council, a series of global meetings for technology developers and systems integrators to come together and discuss the development of a wider range of mutually beneficial partnerships, on issues relating to compatibility, standardisation and harmonisation.

The goal of the Council is to include a variety of voices that represent the different stakeholders in the industry, to widen the net for collaborative projects and gain different perspectives on suggested standards. We're fortunate enough to have a diverse group already involved, covering technologies like communications, computer hardware, software and bridge systems, while a number of major shipping companies from different global markets have also joined the initiative to advise on their requirements when it comes to integrating technology systems.

Inmarsat was one of the first maritime technology companies to support the initiative and join the Smart Maritime Council, and is expected to play a key role in the Council's discussions on standardisation and harmonisation of maritime IT going forward. As a satellite communications provider Inmarsat is agnostic with regard to the format of the data carried across its network – where it's all just bits and bytes – but recognises the potential benefits that all parties stand to gain by improving interoperability in technology systems.

A better connected shipping industry, where real-time data can be collected and analysed by digital technologies to support decision making, will help to ensure safer, sustainable and more efficient operations in the future. This is in the interests of every maritime stakeholder, as well as the wider logistics network on shore – working together to achieve that goal through collaboration is our best chance of success. T

teletimes INTERNATIONAL

ISOC strives to ensure the Internet is future ready for generations

Salam Yamout, ISOC's Middle East Regional Director speaks to Teletimes

Ana Gulraiz

Ana Gulraiz: What are the key focuses of the Internet Society (ISOC) in the Middle East?

Salam Yamout: ISOC believes an open, globally connected and secure Internet is for everyone. By working collaboratively with governments, organizations, youth and communities, ISOC strives to ensure the Internet is future ready for generations. We believe that the Internet can help improve the quality of your life and lives of people everywhere. This is only possible with the collaboration of partners, chapters and individual members.

With more than 4,000 individual members and chapters in Bahrain, Lebanon, Palestine, UAE, Yemen, Egypt, Mauritania, Morocco, Sudan and Tunisia, our work spans across three pillars:

- **Trust -** Trust is a primary design element at every layer of the Internet's architecture. Trust is the key issue in defining the future value of the Internet. At its core, trust is created by taking responsibility for securing that piece of the Internet for which one bears responsibility, and by being held to account when one doesn't.
- **Access –** Access remains a serious concern in all countries including the Middle East. The digital divide that was once defined as the "haves" and the "Have nots" are now threatening again with the vast ICT developments that are taking place and the new applications that pop up every day. How to be ready and prepared is one of the key objectives that ISOC would like to achieve through collaboration and partnership with all relevant stakeholders. We aspire to help our partners to maintain a robust, open and secured Internet that provides a sound platform for innovation, creativity and economic opportunity.

- **Development -** We understand that Internet infrastructure is the enabler of the digital transformation. ISOC works to foster growth and access to technology by bringing information, training, and partnerships to people and communities across the ME through conferences, workshops, research supporting local and regional Internet organizations, Ministries and regulators as well as funding grants for Internet experts in developing countries. Decision-makers globally as well as in the Middle East have a responsibility for the overall economic development and social wellbeing of their citizens.

AG: How do you think certain policies by the regulators can come in the way of the Internet's evolution?

SY: We believe that the Internet is the most powerful tool in the world, and we should certainly know who wants to control it, and particularly, who determines its future. There is a risk that we as users will lose the single, global Internet in favour of interests that are defined by political, geographic and economic boundaries. Currently, there is a battle for control of the Internet taking place and control by any one entity would fracture the Internet's nature.

There are a number of current issues happening at the moment, the biggest which is "lawful access" - a key topic of debate at the G7 Interior Ministers Meeting. The idea sounds so reasonable: bad people often communicate with others using encryption. So, after they have committed their crimes,

it is practically impossible to find out how the crimes were planned or even to find the incriminating evidence. The idea is that, under appropriate legal authorization, legitimate law enforcement agencies will have the power to intercept and open up communications between terrorists or other malefactors, and to decrypt data to retrieve incriminating evidence.

But such regulation would threaten the very infrastructure of the Internet itself. The Internet is a layered architecture—a network of networks. Much of what are currently perceived as its problems actually have to do with top-level applications, not with the infrastructure of the Internet itself. Solutions that seek to alter or attack the very fabric of the Internet are inadequate and bound to fail. We need strong, secure communications in order to thwart terrorism—not the opposite.

AG: As the Internet and its related applications grow, cybersecurity remains a crucial global concern. How do you think this problem can be resolved?

SY: Cybersecurity continues to remain a major global concern. It is critical for network operators to integrate security into network design to avoid incidents that lead to high-level malicious attacks. Trends in the cybersecurity domain are evolving at a fast pace, posing a universal threat to the globally connected world. To create a secure Internet environment, every organization that is private or government owned, must safeguard their user and commercial data by preventing collateral damage. To address the looming cybersecurity issue, we must collaboratively:

• Ensure international cooperation and cross-border collaboration
• Adopt policies that align with open technical standards
• Policies must be responsive to new challenges like proprietary approaches; open standard process agility; decreased flexibility in core Internet standards and lack of sufficient government recognition
• Develop policies based on multi-stakeholder models

AG: How do you think the Internet will change over the next decade?

SY: From the underlying infrastructure to the way users engage, the Internet is evolving in many ways.

In our 2019 report, the Internet Society asks whether the Internet economy is consolidating and, if it is, what the implications might be. From the dominance of Facebook in social messaging, Google in search and Amazon in online shopping, the largest Internet platforms are capturing fundamental human interactions.

This dominance, and the finances and reach that accompany it, enable the platforms to extend their influence and reach into new market spaces, from autonomous vehicles, to AI, to cloud services and beyond.

This leverage is built on unprecedented network effects, vast troves of user data, business agility, and regulatory freedom that few other companies enjoy. We recognize the incredible convenience these platforms provide the Internet user. At the same time, the Internet Society also recognises the concerns that are being voiced about this dominance, and about the responsibility these companies have to society and economy. For further details on our 2019 Internet report, visit https://future.internetsociety.org/2019/.

AG: Do you think the policies of the Internet usage in the Middle East are supporting usage trends and user preferences especially with regards to services such as VoIP etc?

SY: Compared to other regions, Internet usage in the Middle East is restrictive. Policies and regulations are in effect that prohibit the free deployment of fiber (usually only one incumbent provider per country can lay fiber), high interconnection prices between providers, etc. On the content side, we see restriction on two kinds of content.

The use of VOIP is prohibited because of economic reasons (loss of income for the telcos and the state). However, the regulator is not counting the loss of revenues and lesser opportunities to the entire active economy and the private sector as a result of this restriction. Finally, we see the prohibition of culturally sensitive content, and the penalty for publishing such content is serious (such as imprisonment for posting on social media).

AG: As a global community, are we putting enough effort into producing a well-trained workforce for the digitally transformed future world? And what role can governments play in this regard?

SY: Internet access and development of digital skills can transform lives, globally. We need to change the mindset of the communities if we want to produce a well-trained and digitally-enabled workforce.

A lot of effort is being put in to ensure the development of skilled, trained, and engaged people who can create, sustain and maintain infrastructure; this is what we do at the Internet Society.

We focus on practical and specialized skills for operating and managing the Internet infrastructure. We find that engineers have the general knowledge provided by university training and that the region can benefit from such specific specialized training. We need to equip the workforce with the technical skills to support the development of technology and infrastructure.

AG: How do you think we can make communities more digitally responsible?

SY: As a global community it is our responsibility to keep the public informed that the exchange of online information and data is essential in this tech-driven world, unfortunately, we live in an age where privacy protection is difficult. Internet Society states some measures to ensure your data is not exposed.

• **Keep your private life private:** Keep your personal information separate from your professional role. Use different personas for different roles and post wisely.
• **Obscure your location:** Remove location data from images and videos before posting. Turn off application access to location. Don't disclose your location in public posts.
• **Guard your devices:** They're more precious than any jewels. Protect them from both physical and digital tampering. Use encryption and strong access credentials.
• Make sure you use end to end encryption for all your communication
• **Beware of Trojan horses:** Look out for spear-phishers and unsolicited email messages that have links in them or documents attached to them. Check before connecting with someone new. If something seems too good to be true, don't trust it!
• **Protect others:** If you host user-generated content, prevent users from posting derogatory or other abusive messages.
Help remove personal information that has been exposed to hurt someone. Report offenders. T

AI in cybersecurity – friend or foe?

Tabrez Surve, Regional Director – F5 Networks, Gulf, Levant & Turkey

It's well-known that advances in AI and machine learning have enormous transformative potential for cybersecurity defences.

However, rapid advances in technology also result in big opportunities for hackers to get smarter and faster. So, when it comes to cybersecurity, is AI a friend or foe?

Although the AI arms race is just beginning, the ultimate potential for automated threats is vast and unknown. AI-based malware alone will soon become a widespread plague, so businesses need to pay attention or risk getting caught out.

Automated threats on the rise

We've already started to see how AI-based malware can be used to scale up attacks. Polymorphic malware, for instance, can constantly adapt so its code can't be identified. TrickBot is another example of a stealthy threat that has evolved and expanded its capabilities from a banking trojan to target credit card companies and wealth management services.

With TrickBot, the threat's code enters a network and infects systems automatically, making it difficult to detect and mitigate as it changes to avoid detection. TrickBot is also known for its resilient infrastructure, including command and control (C&C) servers set up on hacked routers, many unique C&C IP addresses, as well as regular updates to make it harder to take down.

Where next?

It is conceivable that we'll soon see a rise in AI-powered phishing emails, high-quality spam and a vast proliferation of false flags. We're already noticing this with threats like TrickBot, which consistently use email spam and phishing campaigns as its initial attack pattern. As a result, it is imperative that businesses train their employees to spot potentially fake emails, not to open suspicious file attachments or click on questionable embedded links. Currently web application firewalls can help detect and mitigate banking trojans, but businesses need to ensure they are updated regularly to keep pace with AI-powered threats.

Intriguingly, AI could soon be used to conceal malware presence in a victim's network and combine various attack techniques to identify the most effective disruptive option. In time, hackers will be able to use AI to bypass security algorithms. It is critical that all likely targets – and few are immune – start to harness AI to fight back.

The business battle

AI's widespread adoption across different areas of a business can make it difficult to understand where to best deploy security systems, and where to focus cybersecurity teams' efforts.

Organisations need to ask themselves a series of questions. What are the strengths and weaknesses of the IT infrastructures? Who in the cybersecurity team is fighting the attacks? Where are resources required to better cope with AI-based threats? What employee and industry behaviours influence security defences? Answering these kind of questions makes it easier to determine the best use of AI.

The key is to adopt a prevent, detect and response strategy. If deployed correctly, AI can be used to collect intelligence about new threats, attempted attacks and successful

breaches. It can detect abnormalities within an organisation's network and flag them more quickly than a human ever could.

Businesses can also make life difficult for hackers by isolating vulnerable applications. This is a useful method to reduce threat risk and render malware harmless by allowing it to fully execute in a completely isolated, contained environment. Crucially, it helps protect against the most common attack vectors, such as malicious downloads, plug-ins and email attachments. As the use of apps across organisations continues to soar, these are the areas hackers will target with AI-powered attacks. Securing applications must always be a key concern for business leaders looking to ensure IT infrastructures are continually protected, despite new technologies entering the market.

AI versus AI

The business case for AI in cybersecurity is strong, and the operational efficiencies of automation are becoming clearer with each passing day. Even so, it is important to not entirely rely on automation. It is not a silver bullet, and security teams should still be present in frontline roles. For example, there will always be a need for specific human knowledge and interaction with application services. Cybersecurity as a discipline currently boasts one of the widest uses of AI in the enterprise space, and it's clear that adoption isn't slowing any time soon. Everyone needs to remember that AI can be both a weapon of mass destruction and a vital part of the solution. T

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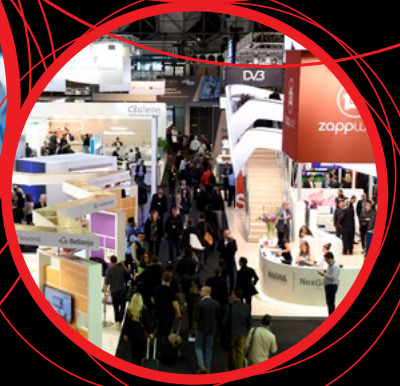

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