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Number 2

For wireless comms professionals in the Southern Asian region

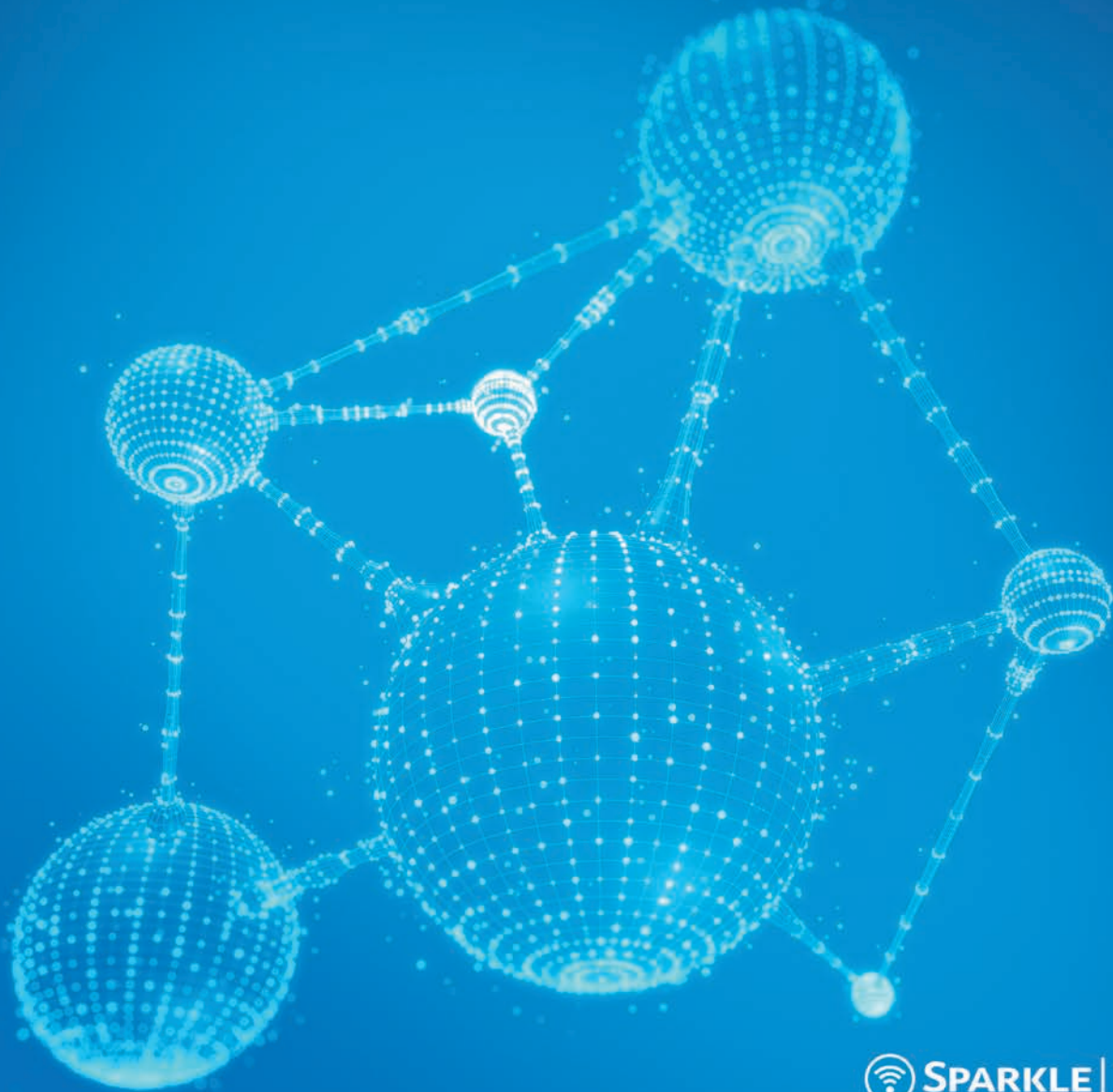
COMMUNICATIONS

- The stumbling blocks for universal broadband
- Better health through wireless comms
- HTS: hyperspace connectivity or just hype?



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For more information and general enquiries please contact Suzanne Thomas at suzannet@kadiumpublishing.com or call +44 (0) 1932 886 537.

EDITORIAL:

Editorial director:

Rahiel Nasir

Designer:

Alan McClenaghan

Contributors:

Dr. Nicola Davies

Jo De Loor

ADVERTISEMENT SALES:

Sales executive: John Davies
johnd@kadiumpublishing.com

Production & circulation:

Production: Suzanne Thomas
suzannet@kadiumpublishing.com
Tel: +44 (0) 1932 886537
Fax: +44 (0) 1932 886539

Editorial enquiries:

Tel: +44 (0) 1932 886537

Fax: +44 (0) 1932 886539

rahieln@kadiumpublishing.com

Publishing director: Kathy Moynihan
+44 (0) 1932 886537

The **RFS** Product Portfolio

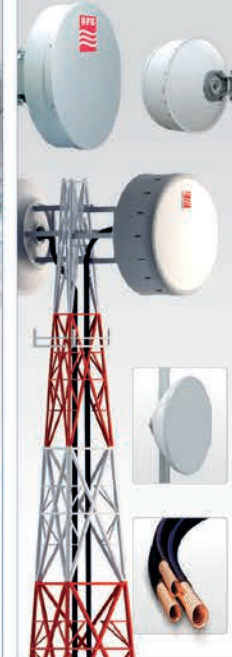
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For more information:
lea.gahl@rfsworld.com
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M1 launches Singapore's first public VoWiFi trial

M1 has launched Singapore's first public Voice over WiFi (VoWiFi) trial with full seamless mobility, using a heterogeneous network (hetnet). This follows another deployment of hetnet technology to support its *WiFi-On-The-Go* service earlier this year.

M1 began its VoWiFi trial at the end of April. It said that unlike OTT calling apps which only allow calls between handsets with the same calling software, its service also enables calls to and from fixed numbers.

In addition, M1 VoWiFi supports two-way mobility between Wi-Fi and mobile networks. The operator said that this means that a voice call initiated on a Wi-Fi network will not disconnect when the user moves to cellular network or vice versa.



M1 is using hetnet technology from Parallel Wireless as part of its *WiFi-On-The-Go* service on buses in Singapore.

The trial is part of the Infocomm Development Authority of Singapore's vision of connecting the whole nation under its 'Smart Nation' initiative. It is available to users of its hetnet trial sites within the Jurong Lake District.

Earlier in April, M1 deployed what's claimed to be the world's first

NFV-enabled hetnet technology for use on-board buses. As part of its *WiFi-On-The-Go* service, the operator is using technology from Parallel Wireless.

The US-based vendor claims its system offers "pervasive" mobile coverage using real-time orchestration and traffic prioritisation made possible by the *HetNet Gateway*. All bus passengers receive seamless, high throughput connectivity from an on-board multi-mode LTE/Wi-Fi small cell with integrated backhaul, including licensed assisted backhaul.

Parallel added that by enabling carrier aggregation for backhaul, end user throughput can be increased 10 times (up to 300Mbps), allowing passengers to take advantage of multimedia content without buffering.

Wi-Fi services boosted in Bangladesh

Mobile operator Robi Axiata has signed a deal with Aamra Networks, paving the way for subscribers to experience faster, reliable and seamless internet access at Wi-Fi hotspots deployed by Aamra.

Dhaka-based Aamra (formerly Global Online Services Limited) specialises in a variety of ICT services and also runs a nationwide backbone network. Earlier in March, it signed an agreement with the Dhaka North City Corporation for free Wi-Fi hotspots at Nagar Bhaban in Gulshan as part of an ongoing project to provide 1,500+ free Wi-Fi locations by the end of 2016.

This latest move for Robi comes with its launch of Wi-Fi services on board 200 buses and taxis under a state-led initiative to expand internet availability in Bangladesh. The operator is collaborating with the government and its *Digital Bangladesh* vision which includes internet connectivity as a key component.

As well as working with Aamra, the operator has also teamed up with technology specialist AccessTel and broadband ISP Augere Wireless Broadband Bangladesh (Qubee) to deploy and maintain the hotspots.

The project will be expanded by the end of this year to include 350 buses, taxis and trains, 500 restaurants and cafés, 100 educational institutes, 10 public places, as well as rail stations and airport.

Pakistan MNOs perform well in survey

China Mobile subsidiary Zong has the highest mobile data throughput speeds among Pakistan's four operators licensed for next generation mobile services (NGMS). This follows a comprehensive QoS survey carried out by the Pakistan Telecommunication Authority (PTA) earlier this year.

As part of the study, the authority assessed 2G voice and NGMS in Islamabad, Rawalpindi and Peshawar. Surveys of other cities are currently in progress.

In the NGMS auction held in April 2014, Mobilink and Zong each acquired 10MHz for 3G services, while Telenor and Ufone acquired

5MHz. The results of the QoS survey revealed that the internet data speeds provided by the operators with 10MHz is higher than that provided by 3G operators with 5MHz. Across the coverage areas tested, average user data throughput from Zong came in at 7.57Mbps followed by Mobilink at 4.82Mbps. Telenor and Ufone trailed at 1.97 and 1.48 respectively.

Zong also won 10MHz for 4G services, and its internet data speed here was also highest among all NGMS operators.

Voice and SMS services from all five of the country's MNOs – which also include Warid Telecom – were

also checked. Only Telenor and Mobilink met the benchmark of below seven seconds of call connection time (CCT); Zong fared the worst here with an average CCT of 7.9 seconds.

Warid beat its rivals in terms of call completion ratios with a success rate of 99.18 per cent. Mobilink and Ufone came in below the standard at 97.73 and 96.62 per cent respectively, while the other three met the benchmark.

For other KPIs, such as network accessibility, grade of service, end-to-end speech quality, and end-to-end SMS delivery time, all five operators were deemed to be either satisfactory or above the standard.

Arianespace prepares launch for Bank Rakyat's satellite



In early May, *BRIsat* was unloaded from a chartered Antonov An-124 jetliner at Félix Eboué airport in French Guiana.

Preparations are under way for the launch of a new satellite developed by Bank Rakyat Indonesia (BRI).

At the time of writing, *BRIsat* arrived in French Guiana on 9 May. Its environmentally-controlled shipping container was then transferred by road to Arianespace's spaceport to undergo processing in the payload preparation facility.

Together with US orbiter *EchoStar 18*, *BRIsat* is scheduled for launch on flight VA230 in June. Once it begins

operations from 150.5°E, *BRIsat* will serve as a dedicated relay platform for banking connection services across the Indonesian archipelago.

BRIsat will have a 36 x 36MHz C-band and 9 x 72MHz Ku-band transponders. Its service will reach Indonesia and ASEAN countries, East Asia (including most of China), most Pacific (Hawaii), and Western Australia.

The satellite will be owned and operated by BRI, which was established in 1895 and is the

Indonesia's oldest bank. It has more than 9,800 branches throughout the country but many of them cannot be economically reached by terrestrial infrastructure. As a result, satcoms serve as both the primary and backup means of communication for the bank.

BRI is currently leasing capacity from nine satellite service providers in Indonesia. The bank announced plans for its own satellite a few years ago (see *News*, Q3 2014) as it wants to expand into more remote and rural areas.

Bhutan Telecom transforms BSS

Bhutan Telecom Limited (BTL) is overhauling its BSS platform with the help of Ericsson. Under the terms of the agreement, the operator's complete billing systems will be transformed into a convergent environment supporting mobile, fixed line and DSL broadband subscribers.

"This transformation will help us to standardise and modernise our billing systems," says Bhutan Telecom CEO Tshewang Gyeltshen. "We will be able to introduce innovative offers for our customers, and at the same time manage differential charging options effectively."

Ericsson adds that the new BSS platform will enable BTL to design and offer promotions and campaigns in real-time and in accordance with subscribers' interests, while monetising ongoing growth in data traffic.

The vendor will be responsible for design, deployment and systems integration of the solution. The convergent charging solution will be based on its *BSCS iXR4* system together with data monetisation features such as PCRF which will be integrated with the telco's existing infrastructure. BTL plans to migrate its subscribers onto the new platform by the third quarter.

State-owned Bhutan Telecom's microwave, IP and optical fibre backbone infrastructure covers the entire country. The company offers fixed line telephony, internet services under the *DrukNet* brand, and also runs the B-Mobile GSM network.

According to GSMA Intelligence, Bhutan currently has around 676,400 cellular subscribers. B-Mobile competes with TashiCell which says it offers extensive 3G network coverage throughout the country. In early April, it also launched LTE services at 700MHz in Thimphu, Paro and Phuntsholing.



State-owned BTL offers fixed line telephony, internet and mobile services under the B-Mobile brand.

Syniverse IPX gives Warid global LTE reach

Pakistan's Warid Telecom will use Syniverse's *IPX Network Solution* and *Diameter Signaling Services* to enable its subscribers to access LTE services around the world. Under the deal, the operator will also provide LTE service to visiting inbound roamers throughout the country.

According to the Pakistan Telecommunication Authority, the nation had more than 26.1m 3G and LTE subscribers as of February, up from just 24.7m in January.

"LTE service has quickly moved from a next-generation technology to a mobile-service standard, and our customers are coming to expect LTE speed and capacity anywhere they go," says Asma Khan, Warid Telecom's director of international business. "Syniverse will help us take an important step forward in implementing LTE on a global basis and in ensuring we meet customers' expectations for smooth, consistent LTE service wherever they travel."

According to the vendor, a crucial part of LTE involves the deployment of an IPX network and Diameter for proper routing and delivery of messages. The company claims it provides operators with a "comprehensive" solution for global LTE enablement with a carrier-grade connection to its all-IP network.

H3I expands mobile core with Nokia

Hutchison 3 Indonesia (H3I) will work with Nokia to expand its core network to meet increasing mobile data demands in the country's market.

Indonesia is the fourth most populous country in the world, and with a growing economy and ever more affordable connectivity it is said to be experiencing rapid smartphone and 3G data service adoption. As a result, H3I has seen its data traffic double approximately every nine months.

Nokia will supply H3I with packet core technology in major cities such as Surabaya, Semarang, Solo and Yogyakarta. These are considered

to be the most densely populated metros in the country.

According to the vendor, its technology will help the operator to better utilise network resources in order to deliver a differentiated service experience, while laying the foundation for network evolution to allow it to meet future customer data demands.

The services and products Nokia will offer include: network planning, optimisation and implementation; core network elements such as its EPC-ready *Flexi Network Gateway* and *Flexi Network Server*; *Flexi Convergent Mediation Device*; and its *NetAct OSS*.

Nokia's head of Indonesia, Robert Cattanach, said: "The deployment of our mobile core technology in this very important region will provide Hutchison 3 Indonesia with the network flexibility it needs to meet an increasingly diverse mix of traffic today and in the future."

H3I has 2G/GSM 1800MHz and 3G/WCDMA licenses in Indonesia. It is a subsidiary of CK Hutchison Holdings Group which also runs mobile operations in Indonesia, Vietnam, Sri Lanka, Australia, Austria, Denmark, Hong Kong, Ireland, Italy, Macau, Sweden and the UK.

Afghan ISP to use satcoms for government

Afghanistan's first licensed ISP, NEDA Telecommunications, has commissioned SpeedCast International to build a secure private network for the government.

As part of a multi-year service deal, SpeedCast will supply a satellite-based network with more than 50 sites to deliver the connectivity required by an unnamed government ministry.

NEDA Communications began operations in 2003, starting with dial-up services before moving quickly into wireless and fibre-based broadband. It is said to be the preferred ISP for most of the banks and government ministries operating in Kabul, but also has a presence in most of the country's major cities and has plans for further rollouts.

The company also claims to have "the most experienced" VSAT team in the region, and is the official national service partner in Afghanistan for the



YahClick Ka-band service offered by Yahsat's *Y1B* satellite.

"SpeedCast has been our main backbone network provider for the past few years," says NEDA CEO Ahmad Ihsan. "Their experience with the Afghanistan market and expertise in satellite communications is instrumental to our success. This new network will open the door to a new market

SpeedCast runs a global network of 31 teleports, including this one at Mawson Lakes in Adelaide.

opportunity for us."

Headquartered in Hong Kong, SpeedCast specialises in global satcoms supported by a network of 31 teleport operations as well as its sales and support offices worldwide. Over the last decade, it has been by providing connectivity and value-added services to Afghanistan's service providers and private sector.



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Experimental sub-1GHz licenses prove auctions are “misguided”

The Indian Government will issue eight experimental licenses in the 470-582MHz band to enable network trials based on TV white space-like rules and regulations already adopted in other countries such as Malawi, Ghana, Singapore, the Philippines, the UK, as well as in North America.

The government's decision has been welcomed by the Dynamic Spectrum Alliance (DSA). It said that in most parts of India, more than 100MHz of available spectrum in the 470-582MHz band is unused, even for analogue TV transmission by the country's single



DSA executive director Prof. Hyacinth Nwana said 470-582MHz spectrum is key to bridging India's digital divide.

terrestrial broadcaster, Doordarshan. In ITU Region 3, which includes India, 470-582MHz spectrum can be used for fixed, mobile and broadcasting services as competing 'primary services', and for other non-interfering uses on a 'secondary basis'.

DSA executive director Professor Hyacinth Nwana said: "The 470-582MHz band will be key to bridging the digital divide in India, a country with more than 800 million people who are not connected to the internet, 68 per cent of which are living in rural areas."

The DSA said the move will create opportunities for the use of sub-1GHz spectrum in India in either an unlicensed or lightly licensed fashion without the need for auctions. It believes that the "school of thought which claims all spectrum must be auctioned is not only limiting, but also misguided".

The alliance added that TV white space (TVWS)-type regulations also have a clear legal basis in India, as evidenced by a recent Supreme Court decision that auctions are not the only permissible method for distributing spectrum.

"Under the Supreme Court's edict, spectrum such as TVWS or 5GHz, could be allocated on a license-exempt or unlicensed basis as long as such a policy is 'backed by a social or welfare purpose', such as using connectivity to increase social and economic inclusion," stated the DSA.

Hanoi Telecom unifies metro and core networks

Following on from its deployment of Infinera's *TM-Series* optical system for its metro network (*News, Q4 2015*), Hanoi Telecom Corporation (HTC) will now also use the vendor's *DTN-X* platform for its backbone connecting Ho Chi Minh City and Vung Tau.

Working with Infinera's local partner Nissho Electronics, the telco has created a unified metro and backbone network that includes a common management system for rapid service delivery in the region.

HTC is the first operator in Vietnam to use Infinera's *DTN-X XTC* series of next-generation terabit-class transport network platforms, and this is the first time any network in the country is deploying 500Gbps 'super-channels'. These are made possible through the

use of photonic integrated circuits (PICs) which have been developed and manufactured by Infinera.

The deployment also leverages the vendor's *Instant Bandwidth* system. It's claimed this enables optical capacity to be software-activated in 100Gbps increments with the click of a mouse.

"*Instant Bandwidth* allows us to differentiate our services through pre-deployed capacity which can be delivered on-demand via software defined activation," said HTC CEO Trinh Minh Chau. "In addition, Infinera's platforms have demonstrated the type of reliability and quality we are looking for in our network."

HTC offers carrier and wholesale services, as well as a mobile network under the Vietnammobile brand.

Lintasarta uses satellite for managed enterprise services

Telecoms provider Lintasarta will use Hughes Network Systems' *JUPITER* platform to support growing demand for enterprise managed services throughout Indonesia.

Lintasarta provides data comms, internet and VAS to more than 2,000 corporate customers in the country. The firm guarantees up to 99.99 per cent network availability supported by connectivity that includes fibre, BWA and satellite, all controlled and fully backed-up via a multi backbone network and monitoring system.

It will use Hughes' platform as part of a new high-availability satellite broadband network. Lintasarta will use a *JUPITER System* gateway, to be installed in Jatilahur, and up to 5,000 terminals as part

of a C-band network that promises to provide reliable, efficient and high-bandwidth connectivity nationwide.

According to Hughes, *JUPITER* features a "flexible and robust" gateway architecture with lights-out operation, an enhanced IPoS air interface for bandwidth efficiency, and high-throughput terminals. It claims the platform enables operators to achieve the "highest possible" capacity and efficiency for any satellite broadband implementation.

The firm adds that *JUPITER*'s underlying technology is a "powerful" system on a chip. This is a custom-designed microprocessor that uses multi-core architecture and is said to enable 100Mbps of throughput on every terminal in the *JUPITER* range.

Viettel to launch 3G only in Myanmar as Ooredoo goes 4G

After being chosen by the Myanmar Government as its joint venture partner to launch the country's fourth mobile network (see *Wireless Business, Q1 2016*), Viettel says it will rollout 3G-only services.

The Vietnamese telco will use 900MHz and 2100MHz frequencies for its 3G network, but has also reportedly said it will also introduce LTE services at 1800MHz if it gains a 4G license.

Viettel is part of a Myanmar Government consortium that comprises local firms and investors who, together with the state, own a 51 per cent shareholding in the operation. Viettel owns the rest. The consortium will now compete with Telenor, Ooredoo, and the joint venture operation between Myanmar Posts and Telecom (MPT) and Japanese telco KDDI.

In separate news, Ooredoo will reportedly become the first operator

Ooredoo Myanmar CEO Rene Meza said LTE will be launched in two cities.



to launch 4G in Myanmar. The company's CEO Rene Meza recently told the *Myanmar Times* that LTE will initially be introduced in the cities of Yangon and Mandalay in May.

He added that Ooredoo would need more spectrum in order to expand LTE to other parts of the country. Its application for more frequencies has been approved, but the authorities have yet to confirm a date for the release of spectrum. This is expected sometime during the next 12 months.

According to reports, the authorities are considering the release of frequencies at 900, 2100, 700, 1800, 2300 and 2600 megahertz.

XL Axiata enhances MFS with Amdocs platform

Indonesian cellco XL Axiata will enhance its *XL Tunai* mobile financial services (MFS) platform and introduce new products with the help of Amdocs.

Under a seven-year managed services revenue-sharing contract, Amdocs' solution will replace XL Axiata's homegrown legacy system.

It will enable *Tunai* customers to use a single wallet for all financial services including airtime top-ups, money transfers, credit purchases, as well as online and retail payments. In the future, they will also be able to pay for TV media services, insurance, and travel purchases.

Amdocs will deliver the overall solution as part of the deal which includes technical design, hardware acquisition, implementation, and third-party system integration. It will also work closely with XL Axiata's business team to develop new use cases and go-to-market strategies for Indonesia.

According to Ongki Kurniawan, digital service director at XL Axiata, *XL Tunai* is one of the "most comprehensive" mobile financial services in the country.

"With around 42 million subscribers and a strong ecosystem of dealers and merchants, we now have the capability to further enhance our services. Amdocs' MFS solution, along with their expert business acceleration services, will enable us to quickly expand and roll out new innovative services for both banked and unbanked users."

XL Axiata's Ongki Kurniawan say *Tunai* offers one of Indonesia's "most comprehensive" mobile financial services platform.



Rob Miller,
senior security
consultant,
MWR InfoSecurity

ON THE NETWORK

Building a secure LoRa solution

Long range radio protocols, like GSM and Wi-Fi, draw a lot of power which makes them unsuitable for smaller or remote devices. In contrast, low power solutions, such as ZigBee or BTLE, are limited in range to tens of metres. So there is a need for a long range solution that only sends occasional, small amounts of data that could run off a battery for years.

LoRa, and its primary protocol LoRaWAN, addresses this gap in the market. It is intended for systems that require the ability to send and receive low amounts of data over a wide range without high power costs.

But whilst several effective security features are designed into LoRa, companies should not consider the protocol secure out of the box. Simply stating that a technology "uses AES-128 encryption" does not mean it is therefore secure. It should be clear to all developers of LoRa solutions that using the protocol does not guarantee security. Instead, they should build LoRa solutions with the potential attacks in mind.

Given that LoRa will form part of a complex IT solution, security vulnerabilities are likely to occur during development. Similarly, given that LoRa solutions are being used in applications ranging from home security through to monitoring and controller infrastructure, attacks and development of exploits against these systems are also likely.

Secure systems can be developed by understanding LoRa's security features as long as developers accept that they are not a silver bullet. A solution can be developed by considering cyber security at every stage. Knowing the different ways that an LPWAN solution can be attacked allows a system to be developed that is built to defend, detect and respond to cyber attacks.

Sparkle is net admin for SEA-ME-WE 5

Sparkle has been appointed as network administrator for the new *South East Asia-Middle East-Western Europe 5 (SEA-ME-WE 5)* cable system. It will also be responsible for the NOC.

The cable promises to provide the lowest latency connectivity through 16 countries: Singapore, Malaysia, Indonesia, Myanmar, Bangladesh, Sri Lanka, Pakistan, Oman, UAE, Yemen, Djibouti, Saudi Arabia, Egypt, Turkey, France and Italy.

With a design capacity set at 24Tbps on three fibre pairs, *SEA-ME-WE 5* also offers an additional network layer of diversity and

resilience for the heavily loaded Asia to Europe route. It is due to come into service by the end of this year.

The system has been developed by a consortium of 19 carriers which include Sparkle, the international services arm of Telecom Italia Group.

The company will carry out its functions as network and NOC administrator at its core landing station in Catania which is the main landing point in Europe for *SEA-ME-WE 5*. Its connectivity solutions will be available to the new cable through the 'Sicily Hub', its next-generation data centre and open

ecosystem located in Palermo. The operator describes this as a "rich service marketplace" interconnected with all international cables landing in Sicily where customers can also peer directly with content providers or publicly through Germany-based IXP, DE-CIX.

SEA-ME-WE 5 is said to be the first cable on the Europe-Asia route to provide advanced connectivity solutions on a POP-to-POP basis from open telehouses in Europe (such as the Sicily Hub) as well as in Singapore. *Tier 1 telcos launch Bay of Bengal Gateway – News, p10*

Google content billing for Idea subscribers

Idea Cellular has implemented direct carrier billing (DCB) from mobile payments specialist Bango for *Google Play* in India. This is the first time *Android* users in the country have been able to charge purchases made in the app store to their phone bills.

Citing 2015 figures from the GSM Association, Bango says India is the world's third-largest smartphone market and *Android* devices are extremely popular.

Android devices are extremely popular in India which is the world's third largest smartphone market.

However, credit card penetration in the country is less than three per cent which limits customers' ability to purchase mobile content and services.

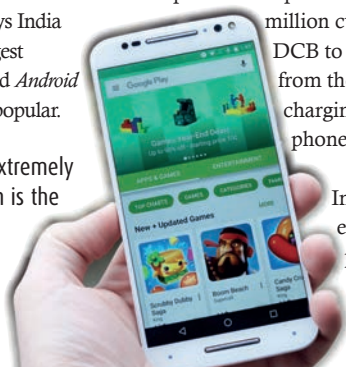
Idea Cellular subscribers now have a secure payment method that works on pre- and post-paid billing plans. The operator's more than 175 million customers can use DCB to pay for content from the *Google Play* store, charging the cost to their phone bill in one click.

Bango believes India offers enormous potential for

online commerce, adding that the introduction of carrier billing represents a "major milestone".

The firm also claims that in other high-growth markets where its *Payment Platform* has been introduced, app stores have seen an increase in sales by more than 10 times, as more smartphone users are able to access and purchase content more easily.

The platform is said to enable app stores to maintain a standard technical and operational model for carrier-billed payments everywhere, with Bango handling local market variations to ensure they can scale payments quickly and consistently.



Xtera set to equip AAE-1



Long-haul transport and optical networking specialist Xtera will equip the three terrestrial segments found in the 25,000km AAE-1 network connecting Asia, Africa and Europe. The sections comprise: crossing Egypt to connect the Mediterranean and Red Seas; crossing the Thailand peninsula to minimise the latency for the landing sites situated east of Thailand; and crossing Malaysia to connect the cable landing station north of Kuala Lumpur to Singapore. All three are based on two physically diverse fibre routes in order to maximise availability.

Singtel Dash app launch



Singtel has launched a new version of its m-payments app along with an NFC SIM. *Singtel Dash* is said to be Singapore's first all-in-one mobile payments solution, offering fast and secure transit payments and top-ups, in-store and online retail payments, as well as local and overseas money transfers. *Singtel Dash* can be used by anyone in the country regardless of their operator or device. The new SIM effectively transforms NFC phones into *ez-link* cards which are used for contactless payments on Singapore's public transport system.

New Asia-Africa cable



PCCW Global will build an undersea cable system connecting Africa with the Middle East and South Central Asia. The Hong Kong based telco has signed agreements with pan-African mobile operator MTN, the Saudi Telecom Company, Telecom Egypt and Telkom South Africa to build the *Africa-1* cable. As a minimum, the system will feature a three-fibre core that stretches more than 12,000km across Africa's east coast, with up to a further 5,000km for additional branches. The consortium plans to launch commercial services in 2017.

OTT mobile video for low bandwidth networks

FastFilmz will use what's said to be "groundbreaking" video compression software to deliver streamed video content to 2G and 3G users in India.

The company's new OTT mobile service initially targets the country's 120 million or so Tamil speakers. It is powered by what's claimed to be the highest performing video compression technology, V-Nova's *PERSEUS* software, which enables standard definition quality video distribution at sub-audio bit-rates (below 128kbps).

As a result, FastFilmz says it will be able provide quality streaming over 3G as well as the 2G networks that 70 per cent of the region's consumers use for internet access.



Unlike menu-based legacy VOD portals, FastFilmz claims its OTT service has a highly graphical and intuitive user interface designed specifically for international markets.

Karam Malhotra, the company's joint-CEO and co-founder, says: "Without *PERSEUS* our streaming service could have only reached a maximum audience of the 30 million

people having 3G access. With V-Nova's advanced compression, we are able to reach both 2G and 3G users, increasing our potential customer base by four times to over 120 million subscribers."

As well as launching the first subscription video service built for consumers who are mobile bandwidth-constrained, FastFilmz says it is able to halve the data costs of streaming and downloading movies.

The firm believes it offers the "most comprehensive" regional OTT offering based on deals with top regional top content owners. It adds that its mobile first service is offered via simple, low-cost packages through leading local operators such as Aircel.

Kii to support smart city solutions in India

Kii is bringing its Internet of Things (IoT) platform, experience and expertise to enable smart city solutions in India.

The Japan-based firm plans to work with government officials at city and regional levels, as well as others across the smart city ecosystem, to help carry forward India's *100 Smart Cities* vision. This is the Government's urban renewal and retrofitting programme that aims to develop 100 cities throughout the country in order to make them "citizen-friendly and sustainable".

According to Kii, its global platform enables all three layers of a typical IoT solution: things, services and apps. It adds that the platform has been designed to support all components of a typical smart city solution. These include: sensor/device/gateway components through Kii 'device agents' that provide cloud enablement and bi-directional data flow between devices/sensors and cloud; smart city middleware that provides data, user and device management, analytics and

optimisation; and smart city apps and services through the platform's APIs and SDKs.

Kii CEO Masanari Arai reckons the mission of smart cities is to "vastly improve" the lives of people by addressing some of the challenges that metropolitan areas face.

"We believe that smart city initiatives such as smart street lighting, smart transportation, smart utilities, etc., will significantly help to reduce costs, increase revenues and optimise consumption of smart city services."

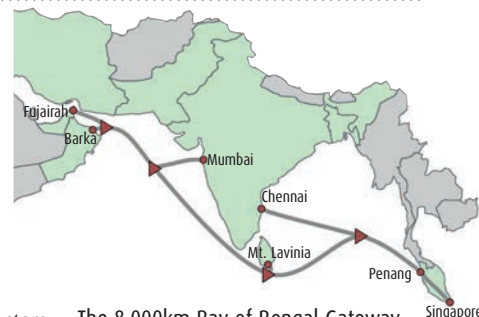
Tier 1 telcos launch Bay of Bengal Gateway

The *Bay of Bengal Gateway* (BBG) cable system has now gone live. The 8,000km network was built by a consortium of Tier 1 operators to link the Indian sub-continent, Middle East and Far East (also see News, Q2/2013 issue).

The *BBG* is a three fibre pair cable based on 100G DWDM coherent technology with an overall design capacity of 10Tbps per fibre pair. It aims to enhance international connectivity into and out of six countries via landing points in the UAE (Fujairah), Oman (Barka), India (Mumbai and Chennai), Sri

Lanka (Mt. Lavinia), Malaysia (Penang) and Singapore where POPs have been installed at Equinix and Global Switch.

The consortium behind the system includes the Vodafone Group as the lead investor, Dialog Axiata, Etisalat, Reliance Jio Infocomm, Omantel and Telekom Malaysia. They claim the *BBG* offers a unique combination of benefits such as: the lowest cost landing in India; diverse, protected routing from Penang to Singapore, avoiding the "high-risk" Strait of Malacca; and the first subsea system to offer 100G from day one.



The 8,000km Bay of Bengal Gateway aims to enhance international connectivity into and out of six countries.

The *BBG* is also said to offer "seamless and highly cost-effective" interconnection with existing systems into Europe such as the *EIG* (Europe India Gateway), *IMEWE* (India-Middle East-Western Europe), and *EPEG* (Europe-Persia Express Gateway).

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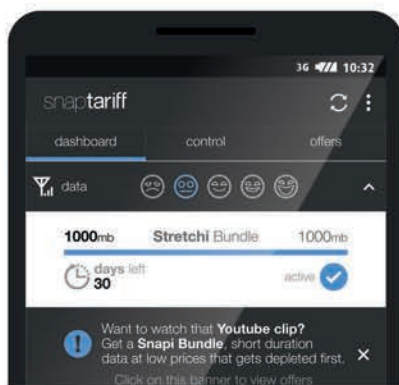
Digitata Expands Product Offering

Digitata provides solutions for mobile operators that enable them to achieve sustainable customer growth and profitable revenue generation in competitive environments, while enhancing the value of the mobile experience for their customers. Following the acquisition of Rorotika Technologies, the company has extended its product portfolio and grown in size.

"Mobile data offers a new revenue stream for operators in most markets, yet also represents a complex and sometimes expensive barrier to the subscriber. Digitata's new dynamically priced data bundles provide opportunities to stimulate subscriber spend by offering the subscriber innovative, value for money pricing options that lower barrier to entry, drive adoption and increase consumption, while helping the operator to minimise capex and improve return on investment. Our short-duration uncapped option provides a risk free opportunity for price conscious users to experience the full capability of their smartphone and the richness of the internet." - Hilton Goodhead, Exec: Innovations

dynamic **tariffing™**

Dynamic Tariffing™, the established face of Digitata, with the first and leading dynamic tariffing solution for voice, SMS and data, allows mobile operators to dynamically change the price of calls, SMS and data based on network elasticity, in order to offer subscribers better value and protect the network while maintaining or improving revenue.



Dynamic Tariffing™ is accompanied by a mobile app, **SnapTariff** that allows subscribers improved visibility of the dynamic pricing and better control of their data spend.

Digitata Insights, the fun face of the company, offers mobile media solutions that facilitate reach and engagement. Digitata Insight's **MeMe** provides an innovative premier media channel and content solution that geo tags and enriches existing mobile messages based on a subscriber's location, allowing subscribers to discover new content and engage with new services.

Digitata Insight also offers a **USSD Games Arcade** that allows both mobile operators and brands to unlock revenue and actively engage with customers in emerging markets. For mobile operators, Digitata Insight's mobile gaming unlocks revenue opportunities by using the USSD bearer to create a mobile, multiplayer, highly engaging "gaming arcade in the subscribers' pocket". For brands, the USSD Games Arcade incorporates fun and competition into mobile marketing campaigns to create a more emotional connection with their audience, leading to a longer relationship. Such games offer an unprecedented 38 minutes of active engagement with your brand.

Digitata Networks stream offers a unique vendor-agnostic network configuration management, performance monitoring and self-organising network product suite to transparently monitor, control and automate all major mobile technologies (2G, 3G, LTE, Wi-Fi) across multi domains (Core, RAN, TX).



Network 3

Parameter	Region 1		Region 2	
	Current	Previous	Current	Previous
BSCs	4	4	5	5
2G BTS	401	396	488	487
2G Cells	1184	1172	1429	1403
2G TRXs	3468	3451	4217	5205
RNCs	3	3	4	4
NodeBs	411	409	501	501
3G Cells	1233	1230	1503	1503
MSCs	1	1	1	1
SGSNs	1	1	1	1

The Digitata Networks solution offers mobile network operators cost savings through improved efficiencies gained by automating network auditing, planning, optimising, configuration and operational activities.

Digitata Innovation is our "dream stream" that develops new innovations and handles prototypes and related patents. Current products being incubated and developed in the Digitata Innovation wing include our mobile app SnapTariff, the new dynamically priced data bundles, Glovent's GloPortal and extensive work is also being done in the area of "Big Data".

digitata

digitata insights



More than four billion SIM cards were shipped globally in 2015

Worldwide shipments of SIM cards increased 0.3 per cent to reach 4.7 billion in 2015, according to the SIMalliance. While those figures are based on numbers reported by its members, the organisation estimates that the total available market last year was 5.3 billion compared to 5.2 billion in 2014.

The SIMalliance's membership represents around 88 per cent of the global market, and includes well-known vendors such as Gemalto, Giesecke and Devrient, Oberthur Technologies, amongst others.

While total shipment figures were impacted by a contraction within the Chinese market, members reported significant advances in a number of other key markets and regions. They said strong growth was

evident elsewhere in Asia, with both the Indian, Japanese and Korean markets performing well.

India, which now has the highest shipment volumes in Asia as reported by SIMalliance members, saw a 25 per cent year-on-year increase, as shipped units jumped from 653m in 2014 to 816m in 2015.

"This level of growth signals a recovery from a regulation-induced decline in 2013, as SIM shipments return to stable market levels," said the alliance.

LTE was the biggest technology driver of growth in the worldwide SIM market in 2015. According to the alliance, the continued migration to 4G led to every market in every region reporting at least double digit growth in LTE card shipments.



The SIMalliance is now leading cross-industry efforts to define 5G security needs, says chairman Herve Pierre.

"Globally, an exceptional 88.5 per cent growth in shipments of cards that can be used in LTE networks was observed, driving volumes of this type of SIM to exceed one billion units for the first time," stated the alliance.

In other regions, shipments in the Americas jumped six per cent from 738m units in 2014 to 781m in 2015; MEA saw a 14 per cent market increase where year-on-year shipments

rose from 861m to 982m units; and Europe returned to growth with year-on-year shipments increasing one per cent from 440m to 444m units.

Looking ahead to 2016, SIMalliance chairman Herve Pierre believes a key priority for the industry is to continue evolving and adapting SIM technologies in line with changing market requirements.

He said: "The association is already leading cross-industry efforts to define security requirements within 5G. From our initial findings, it appears that there could be a role for dedicated tamper-resistant hardware across the four segments identified for 5G: massive IoT; critical communications; enhanced mobile broadband; and network operations."

Record revenues for Axiata

Axiata Group Berhad has registered its highest revenue and profit after taxation and minority interests (PATAMI).

In its 4Q15 and full year results published earlier this year, group revenues for the Kuala Lumpur-based pan-Asian telco increased 6.3 per cent to an all-time high of MYR19.9bn. EBITDA grew by 4.1 per cent to MYR7.3bn with a margin of 36.6 per cent. Correspondingly, PATAMI was up by eight per cent to record its highest level at MYR2.6bn.

Axiata's two largest operating companies demonstrated "strong" QoQ growth – Celcom in Malaysia recorded its first revenue increases after three quarters of decline, while XL Axiata delivered improvements across three consecutive quarters in Indonesia.

Celcom's overall recovery was hampered by a flat growth market. QoQ revenues rose by one per cent mainly due to higher sales of devices. But service revenue saw a decline of 2.5 per cent primarily as a result of lower voice earning. Its 4Q15 normalised EBITDA and normalised PATAMI grew 9.8 per cent and 10.2 per cent QoQ respectively. PATAMI was impacted by a one-off expense of MYR32m and start-up losses of MYR71m in new ventures.

Across the group, data revenues grew by 29.8 per cent, driven mainly by Smart (Cambodia), Robi (Bangladesh) and Dialog (Sri Lanka) registering increases of 86.2, 78.9 and 62.7 per cent, respectively.

In Indonesia, XL's subscriber base improved with the addition of almost 500,000 new customers during 4Q15. In implementing its key transformation strategy of attracting higher value customer, XL recorded a 7.9 per cent growth in blended ARPU QoQ in Q415.

According to Axiata, Dialog had a "stellar year" in all metrics, despite regulatory challenges in Sri Lanka. EBITDA, revenue, and normalised profit after tax (PAT) for FY15 saw an increase of 10.0, 14.2 and 29 per cent, respectively. Mobile data revenue recorded a significant jump, growing by 62.7 per cent for the year with a 10.5 per cent rise over the quarter.

Performance at Robi was moderated due to heightened price competition in Bangladesh's market. Nevertheless, Axiata said the operator increased its subscriber base by 12 per cent YoY to close 2015 with 28.3m customers. For FY15 data revenue, Robi posted strong growth of 78.9 per cent.

In Cambodia, Smart's FY15 revenue rise of 51.9 per cent was driven by a 7.3

per cent improvement in voice and an 86.2 per cent spike in data, thanks to accelerated LTE rollouts.

Finally, the group reported "strong" contributions from its regional affiliates. In India, Idea contributed MYR368.8m to group PATAMI, an increase of 51.6 per cent over last year, while M1 in Singapore contributed MYR157.8m, a YoY increase of 8.6 per cent.

Looking ahead, Axiata said the acquisition of Ncell in Nepal (see *Investments, Mergers & Acquisitions table, p.14*) is expected to be immediately accretive to the group, while the merger of Robi and Airtel will realise significant synergies for it to significantly improve its position in Bangladesh's fiercely competitive market.

Worldwide job losses at Nokia

Nokia has started the process of reducing its global workforce. As a result of its acquisition of Alcatel-Lucent last year (see *Wireless Business, Q4/15*), the company is targeting EUR900m of opex cuts to be achieved in 2018.

The job losses will occur over the next two years. As previously outlined last October, Nokia says they will largely be in areas where there are overlaps, such as research and development, regional and sales organisations, and corporate functions.

Nokia president Rajeew Suri said the company will provide "transition and other support for impacted employees".



Processes and timelines will vary from one country to another. Around mid-April this year, Nokia met with its two European Works Councils and similar meetings and consultations with employee representatives are due to take place in almost 30 countries during the coming weeks.

Nokia President and CEO Rajeew Suri says: "We know that our actions will have real human consequences and, given this, we will proceed in a way that is consistent with our company values and provide transition and other support to the impacted employees."

As well as the redundancy programme, Nokia says it is shifting resources to future-oriented technologies such as 5G, cloud and the IoT. The company also continues to target worldwide savings in real estate, services, procurement, supply chain and manufacturing.

Ericsson overhauls structure

Ericsson is reorganising in an effort to drive growth and profitability.

“We will create a leaner, more fit for purpose organisation, to cater for the needs of different customer segments and to faster capture market opportunities,” says Ericsson president and CEO Hans Vestberg. “As 5G, the Internet of Things, and cloud drive the next phase of industry development, the time is just right to make these changes.”

As from July, the company’s new structure will comprise five business units (BUs). These include two that cover the company’s networks business. Headed by Fredrik Jejdling,

BU networks services focuses on managed services, network rollout and customer support; while BU network products combines radio and transport, and is led by Arun Bansal.

The other units include two that focus on IT and cloud products and services, and a dedicated customer group for industry and society.

Vestberg reckons the changes will make it easier for customers to do business with the company, whether they are an operator, a media company or from another industry.

This latest restructure follows on from a number of key strategic decisions made by Ericsson in recent

years. This includes exiting the handset and modems businesses, an enhanced partnership strategy on IP (such as the tie-up with Cisco announced last year), and investments to build targeted growth areas with strong focus on software and professional services.

Advantech Wireless expands in India

Advantech Wireless has appointed Decibel Technologies as an authorised reseller/partner to provide sales as well as customer service, support and training to customers throughout India.

Decibel Technologies is a supplier of satellite ground communications

products, systems and related services. It employs engineering expertise in system design and integration, mobile communications and mission critical networks, servicing customers in Asia and the Middle East.

The company’s president Randeep Sethi believes the partnership with Advantech Wireless will help the Canadian vendor to continue its growth in both RF and satcom products in India. He said: “Their industry leading expertise in solid state amplifiers and satellite networks will bring many advantages to Indian and regional customers as our market continues to become more connected

NEW APPOINTMENTS


Date	Name	New employer	New position	Previous employer	Previous position
1/3/16	Pascal Menezes	MEF (Metro Ethernet Forum)	CTO	Microsoft Skype for Business	Principal
9/3/16	Mike Coffey	KORE Wireless Group	COO	Wyless Group	CEO
17/3/16	Skot Butler	Intelsat General	President	Intelsat General	VP of satellite networks & space services
17/3/16	Yona Ovadia	Gilat Satellite Networks	CEO	Amdocs	Group president
5/4/16	Philippe Vallée	Gemalto	CEO	Gemalto	CCO
5/4/16	Olivier Piou	–	–	Gemalto	CEO – retiring as from August 2016
5/4/16	Zhao Xianming	ZTE	President	ZTE	EVP
8/4/16	Brent Dippie	Zetron	President & CEO	Zetron	COO & SVP
8/4/16	Ellen O'Hara	Zetron/EFJohnson	Chairman/board member	Zetron	President & CEO
11/4/16	Olof Lindberg	CCS (Cambridge Communication Systems)	VP sales	Coromatic International	VP worldwide sales
12/4/16	Kamal Brar	Talend	SVP & GM of APAC	IBM	GM of cloud data services for APAC
19/4/16	Emmanuel Saint Dizier	RFS	VP, strategy & portfolio	RFS	Product manager
25/4/16	Andreas Teuber	Signalhorn	Sales director	Prolifics Deutschland	Sales director Germany

INVESTMENTS, MERGERS & ACQUISITIONS

Date	Buyer	Seller	Item	Price	Notes
9/3/16	KORE Wireless Group	Wyless Group Holdings	Company	NA	According to KORE, its all-cash transaction to buy Wyless creates the only truly global, independent, multi-platform, IoT services company.
4/4/16	Brocade	Ruckus Wireless	Company	USD1.5bn	Brocade says acquisition will mean it can add Ruckus’ higher-growth wireless products to its enterprise networking portfolio.
11/4/16	Telit Communications	Novatel Wireless	Various assets	USD11m	The IoT specialist will buy several cellular module product lines, related IP & related assets for an initial cash price & conditional earn-out consideration, which is expected to be non-material.
12/4/16	Axiata Group Berhad	Ncell	Company	USD1.365bn	Axiata enters Nepal’s mobile market with its local partner Sunivera Capital Ventures holding 20% direct local shareholding in Ncell as required under local law.
29/4/16	SES	O3b Networks	50.5% stake	USD20m	SES increases its fully diluted ownership of O3b from 49.1%, bringing its aggregate equity investment in the company to date to USD323m. On completion, SES will consolidate O3b’s net debt which is currently USD1.2bn.
9/5/16	Global Eagle Entertainment	Emerging Markets Communications (EMC)	Company	USD550m	Following the merger, GEE says its global satellite-based connectivity platform will service more than 700 planes, 1,600 vessels, 100,000 cruise ship cabins, & several thousand land-based sites.

to high bandwidth digital and television services.”

IN BRIEF

 The Competition Commission of Pakistan has approved the merger of Mobilink and Warid Telecom (see *Wireless Business*, Q4/15). This approval is the first of four that are required from local regulatory bodies which include the Pakistan Telecommunication Authority, Securities and Exchange Commission, and the State Bank of Pakistan.

Mobilink parent company VimpelCom believes the combination


of Mobilink and Warid will be a “positive step” for the development of technology and communications services in the country. Its CEO Jean-Yves Charlier said: “Together, the future entity will serve more than 45 million customers through a best-in-class mobile and high-speed network.”

 The JST Group will distribute Cyan's narrowband mesh IoT technology in Thailand, with the potential to expand into other “mutually attractive” territories. JST is a supplier of technical

products and services to power industries in Thailand and across South

East Asia. UK-based Cyan has installed its *CyLec* smart metering technology in JST's laboratory in Bangkok, and the working solution has now been demonstrated to a local utility.

According to a report by Northeast Group, Thailand plans to implement more than a million smart meters which will contribute largely towards the region's USD26.4bn total investment in smart grid infrastructure by 2026.

 PMR specialist Sepura has enhanced its operations in the Asia-Pacific region by investing in new offices in Malaysia and Australia.

The new facilities opened in January. Each one provides a dedicated training/conference room and demo area, along with extra workspaces for visitors, facilitating partner training and local conferences. The Malaysian office, based in Kuala Lumpur, also features a dedicated order desk.

“Our operations in the region have tripled in size over the last five years,” said Terence Ledger, Sepura's sales director for APAC. “The continued success of our TETRA products, and the release of the SC20 series of hand-portable radios, has created additional demand for support and training which can now be provided locally.”

LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
26/2/16	SES	Luxembourg	FY15	EUR	2,014.5	1,494.2	1.30	YoY revenues up 5% (-3.2% at constant currency). Will launch seven new satellites between 2016 & end-2017 to add to the 52 in orbit as at December 2015. Schedule includes SES-9 & SES-12, both for APAC.
1/4/16	Huawei	China	FY15	CNY	395 (bn)	NA	NA	Carrier, consumer & enterprise business groups all reported increases. Carrier division generated CNY232.3bn (US\$35.8bn) in annual revenue, up 21% YoY. Widespread rollout of 4G networks accounted for large portion of this growth.
6/4/16	ZTE	China	FY15	RMB	100.19 (bn)	NA	0.78	Revenue growth reflected increased sales from 4G system & optical access products. High-end routers & handsets in the international market also saw significant growth.
14/4/16	Arianespace	France	FY15	EUR	1.433 (bn)	NA	NA	Turnover increase of 2.4% beat previous all-time high of €1.399bn in 2014. Attributed to a record number of 12 launches last year. 33 contracts worth €2.5bn signed during 2015, increasing order backlog to €5.3bn.
19/4/16	C-COM Satellite Systems	Canada	1Q16	CAD	2.433	NA	0.0125	Compared to 1Q15, revenues are up 10.5% but net profits are down 18.0%. Company ended quarter with cash position of more than \$15m & continues to be debt free.
27/4/16	Telenor	Norway	1Q16	NOK	33,013	11,685		Mobile subscriptions & traffic revenue growth remained healthy during the quarter at 6%; total revenues impacted by lower handset sales & declining earnings from fixed legacy products. 5.4m new subscribers added during quarter: 2.2m in Pakistan, 1.8m in Myanmar, & 1.5m in India. Total customer base now stands at 208m.
3/5/16	PLDT	Philippines	1Q16	PHP	7.2 (bn)	16.6 (bn)	33.31	Consolidated core net income before exceptional items is PHP2.1bn lower YoY but in line with the core income guidance of PHP28bn for full year 2016. Reduction from prior year was due largely to lower EBITDA reflecting higher product subsidies, higher depreciation, & higher financing costs.
4/5/16	Globe Telecom	Philippines	1Q16	PHP	29.9 (bn)	13.0 (bn)	NA	Mobile service revenues accounted for 77% of consolidated earnings during the period. They grew 7% from PHP21.6bn last year to reach PHP23.1bn in 1Q16. Globe said this was due to “robust” revenue contributions from data (+62%) & continued subscriber expansion across its brands.
12/5/16	VimpelCom	Netherlands	1Q16	USD	2,023	758	NA	Total group revenue for quarter decreased 12% due to adverse currency movements; in emerging markets, total revenue increased organically 6% YoY in 1Q16, driven by strong results in Bangladesh (USD153m) & Pakistan (USD257m).

Controllis claims to cut off-grid costs with DC generator

What's described as a "breakthrough" generator promises to transform the way telcos supply power to their off-grid sites. According to UK-based Controllis, the new *Basic48-10* brings the total capital cost of off-grid DC power systems below that of an equivalent AC generator-based system.

The *Basic48-10* features the vendor's

MANUFACTURER: Controllis

PRODUCT: BASIC48-10

MORE INFORMATION:
www.controllis.com

DCPrimePower technology and RSC-HMU hybrid remote management and control system, enabling operators to use a range of different charging regimes including float and hybrid battery.

Controllis says the generators has been designed to significantly reduce fuel consumption in site operation. It says these are accomplished by its very high efficiency *DCPrimePower* permanent magnet alternator, mounting the generator directly on the engine fly wheel thus negating the need for alternator coupling or bearings, and precisely varying the engine speed according to site loads.

The *Basic48-10* has been designed to easily integrate with renewable energy solutions. It can be supplied with optional 48V solar PV charging controllers for up to 12kW of solar capacity, and the controllers are integrated with the *RSC-HMU* via MODBUS to provide full remote visibility of the entire system, including solar output and battery status.

Controllis says when power demand is not met by the solar output or the battery bank, the *Basic48-10* automatically switches itself on and takes over the charging role until the renewable source can again provide sufficient energy to meet site needs.



The *RSC-HMU* monitors and manages a wide range of critical engine and fuel system parameters as well as generator site security. It communicates directly to the *Controllis Remote Management Server (RMS)* which provides comprehensive configuration, alarm management and delivery. The server integrates into any operator's NOC via SNMP or MOD/TCP-IP, and interfaces back to the RMS via its internal 9BandUMTS/GPRS modem, any other IP or RS485 interface available on site.

Digi hardens router for industrial LTE connections

Digi International has developed a ruggedised version of its

MANUFACTURER:
Digi International

PRODUCT: TransPort WR11 XT

MORE INFORMATION:
www.digi.com

commercial-grade *WR11* cellular router. It says the temperature hardened *TransPort WR11 XT* provides a secure and reliable LTE connection for industrial and retail applications in harsh environments.

The new router is built upon the capabilities of the *WR11*. Digi says these include global cellular carrier certifications, license-free enterprise software, PCI-ready security

features, small form factor, dual SIM capabilities, and what's claimed to be "advanced" network management via the *Digi Remote Manager* system.

The *TransPort WR11 XT* features a ruggedised aluminium enclosure and DIN-rail form factor, an increased operating temperature range from -30°C to +70°C, flanges for shelf- or wall-mounting, and a screw-down SIM cover.

The device comes with Digi's license-free enterprise routing and security software, and models are available that offer support for LTE, LTE with 3G fallback, as well as global HSPA+.



Lenovo unveils new way to connect

Lenovo has launched a new global wireless roaming service. A long-time MVNO, the company will now offer *Lenovo Connect* which it describes as a "seamless" communication service that works across devices, networks and borders for customers in China and EMEA.

The company says the new service eliminates the need to buy a separate SIM and offers benefits such as low-priced global roaming by leveraging



Lenovo's Big Data and cloud services. While in China

the service is available via an app on selected devices, in EMEA the company is working with channel partners to bring *Lenovo Connect* to customers using a variety of *ThinkPad* devices. Initially available in 45 EMEA markets, its claimed customers will be able to take advantage of secure data connectivity at competitive rates.

Lenovo adds that the service will be supported by customised data plans designed to support both domestic and international roaming use in more than 110 countries globally.

MANUFACTURER: Lenovo

PRODUCT: Lenovo Connect

MORE INFORMATION:
www.lenovo.com

"100 per cent accurate" revenue assurance platform

Risk management and analytics expert Neural Technologies reckons the latest version of its revenue assurance platform offers a complete end-to-end rating engine, meaning it is 100 per cent accurate "down to the cent".

Minotaur 10 is designed to offer customers an "enhanced" value proposition with 5G and Big Data-ready functionality. It also features real-time data processing, smartphone and tablet data entry/incident reporting capabilities, integrated test call generation, and introduces NoSQL.

Neural says its improved rating capabilities and the ability to connect directly to any data source in the OSS or BSS stack remove the need for any intermediary software,

meaning operators will experience lower complexity, faster integration, and fewer third-party costs.

The firm believes this direct connection simplifies connecting of new devices and networks which will grow enormously as a result of the IoT. It adds that customers will experience faster operational speeds because of the direct connection from data sources to the platform.

MANUFACTURER:
Neural Technologies

PRODUCT: Minotaur 10

MORE INFORMATION:
www.neuralt.com

Safest TETRA handheld radio

Hytera's *PT790 Ex* is the world's first TETRA handheld radio to be approved as 'ia', ATEX's highest level intrinsic safety rating.

The vendor says the device can be safely used in areas where an explosive atmosphere with a mixture of air and flammable gases, vapours or mists is permanently present (zone 0). It says the radio offers "first class protection" to users in the mining

and oil and gas industries, or fire brigades.

As well as being intrinsically safe, the *PT790 Ex* is dustproof and waterproof according to IP67, and can withstand immersion in water to a depth of a metre for at least 30 minutes. It also meets the requirements of the US MIL-STD-810 F/G-standards.

Features include 'man down' and an adjustable time alarm (lone worker function). A GNSS module comes as standard and collects position data via GPS, GLONASS and

Beidou. Hytera says these data can be transmitted to control centres/ dispatchers with AVL for further analysis.

In addition to voice and data comms, some of the *PT790*

Ex's other features include encryption, programmable keys, a 1,000 entry phone book, and an interface for extensions and accessories.

The unit itself measures 141mm x 55mm x 39mm, weighs around 515g with its antenna and battery, and also has a 1.8-inch colour LCD. The supplied 1800mAh battery is said to offer around 14 hours on a single charge.



MANUFACTURER: Hytera

PRODUCT: PT790 Ex

MORE INFORMATION:
www.hytera-mobilfunk.com

CCS unveils self-organising backhaul solution with integrated small cell

CCS (Cambridge Communication Systems) has adapted its *Metnet* self-organising backhaul solution to host a small cell in a single, compact design.

According to the company, site acquisition for outdoor small cells is currently a slow and difficult process

as separate small cell and backhaul units often exceed the size, weight and single-attachment restrictions for planning approvals. *Metnet* combines a small cell and, as a result, CCS says it is smaller and more acceptable to local planning departments which considerably speeds up deployment.

The company says its system operates in a single frequency channel with no radio planning required. It adds that each unit has a wide 270° field of view and supports multiple connections, so there's no need for manual alignment and only one is required per site. Each node is also capable of providing

GPS-derived local master synchronisation, with distributed timing recovery in the event of GPS failures.

The *Metnet* backhaul platform will host small cells in a universal design that utilises licensed or unlicensed spectrum, including LTE-A, LTE-U, MulteFire, Wi-Fi and ultimately 5G variants.



MANUFACTURER: Cambridge Communication Systems

PRODUCT: Metnet

MORE INFORMATION:
www.ccs.com

Viavi cuts costs for cell site installations

Viavi Solutions (formerly JDSU) has added baseband unit (BBU) emulation to its *CellAdvisor* base station analyser to enable comprehensive testing during RRH installations at sites. The company reckons the new feature dramatically reduces the need for repeat site visits and tower climbs

to speed up deployment times and significantly reduce opex.

Viavi says that traditionally, cell site installation is segmented into two parts performed during different visits. First, a technician climbs the tower to install the RRH, and conducts sweep testing and fibre inspection. Second, the BBU is installed on a separate visit, where the RRH is put on air, and a comprehensive cell site test can occur.

By adding BBU emulation, the vendor says *CellAdvisor* opens up a more comprehensive cell site test to identify and address problems on the



first visit. Following installation of the radio, technicians can now put it on the air to verify performance of, or identify problems with equipment (radio, antennas, coaxial cables) or the radio environment, including external interference, noise or passive inter-modulation.

MANUFACTURER: Viavi

PRODUCT: CellAdvisor

MORE INFORMATION:
www.viavisolutions.com

ALSO LOOK OUT FOR

New antennas promise low cost in-flight broadband

A UK university professor says passengers will soon be able to use low-cost mobile broadband on planes, following his acclaimed research into developing a new generation of antennas.

Yang Hao, professor of antennas and electromagnetics at Queen Mary University of London, recently won the prestigious GBP300,000 Institution of Engineering and Technology A F Harvey Engineering award for his work which focused on antennas with better aesthetics and fundamentally novel designs. It's claimed this will allow them to be used in "new and exciting" ways, particularly in satellite communications for many industries including aviation and aerospace.

One element of his work looked at the use of high-throughput satcoms that will enable passengers to take advantage of low-cost broadband internet services when they travel by plane. While air passengers currently have to switch their mobile phones to 'flight mode' and pay an additional charge to access data on their device, it's claimed Hao's research will enable a "seamless broadband experience" from land to air, at no additional cost.

The IET said Hao was awarded the prize in recognition of his research achievements in microwaves, antennas and, in particular, metamaterial antenna innovations which draw inspiration from transformation optics.

"The IET A F Harvey Engineering Research Prize will push the boundaries of our research to the next level, out of the lab towards real engineering applications and industry," said Prof. Hao. "Our goal is to make low cost smart antenna systems, an engineering reality that can be enjoyed by everyone, from professionals in satellite communications to air passengers who want to stay connected on their mobile phone or devices."



In a project that is said to have involved “unprecedented cooperation” between Afghanistan and Pakistan, Roshan Telecom initiated a telemedicine project to improve the delivery of healthcare in the region.

How wireless communications technologies are improving medical facilities and bringing healthcare to underserved communities.

A Wi-Fi network from Ruckus Wireless is said to have enabled Mumbai's SevenHills Hospital to become India's first truly paperless healthcare facility.

Since opening in 2010, the 1500-bed hospital has used a pioneering range of ICT solutions as part of its vision to provide first-class, affordable, patient-centric healthcare. Doctors and medical staff are equipped with laptops and computers-on-wheels to update and view medical records. These mobile workstations enable them to access up-to-the-minute information, including large image files such as CT scans, thereby increasing the time they are able to spend with patients and the effectiveness of bedside consultations.

SevenHills' campus covers more than 17 acres and comprises a complex of 16 interconnected multi-storey towers as well as 300 staff apartments. It has a built area totalling more than two million square-feet, and according to Ruckus, its Wi-Fi network has enabled wireless access from every part of each building for clinicians, patients and guests.

Prior to the opening of the hospital, the challenge of selecting the right Wi-Fi network was handed to Suresh Kumar who was at the

time general manager of IT but has since been appointed CIO. After consultation with industry specialists, he began considering solutions from Aruba (now part of HP), Cisco, and Ruckus Wireless. The latter is currently in the process of being acquired by enterprise networking specialist Brocade.

Kumar's team set about trialling offerings from each vendor by streaming video from the operating theatre to a separate building within the hospital complex. “Our objective was to identify a wireless solution that could deliver services with the speed of a wired network – even with bandwidth intensive applications like video streaming,” he said.

Ruckus' *ZoneFlex* access points use adaptive antenna technology which, according to the company, ensures interference avoidance and provides the highest possible throughput levels. When testing the units, Kumar's team found no disturbance in transmissions, and they considered the video QoS features of the product to be “exceptional”. They were also impressed by the user-friendly features of the vendor's *Zone Director* management interface, and the APs' self-configuring, plug-and-play functionality via *Smart Mesh Networking*. This meant the hospital

could realise significant potential savings in time and resources to install and manage its WLAN.

SevenHills' network now has 320 *ZoneFlex* 7962 dual band 802.11n APs, and a pair of *ZoneDirector* 3000 WLAN controllers. There are separate VLANs for staff, patients and guests which deliver tiered wireless access securely and efficiently.

Since deploying the system, the hospital has been quick to capitalise on opportunities to further enhance service efficiency and patient comfort levels. Beyond the electronic medical records system, some of the wireless applications enabled by the Wi-Fi platform include RFID, VoIP and real-time location sensors. And for the doctors, seamless roaming between buildings optimises treatment times.

SevenHills is now said to have a wireless network capable of delivering data, voice and video at the speed of a wired environment. Kumar said: “Users of the Wi-Fi network are generally surprised at the capability of the service. Visiting doctors are often amazed when they realise the whole hospital has wireless coverage, and I do hear them say it's as fast as a wired network.”

M2M encourages better diabetes management

Devices that use machine-to-machine (M2M) networking from Vodafone are encouraging more efficient diabetes management, and helping to keep patients informed and monitored.

Diabetes is the leading cause of blindness, amputations and kidney failure. It is estimated that eight per cent of the global population is diabetic, and in 2013 the economic cost of the disease around the world was around USD548bn. While there is no cure, diabetes is preventable and there are plenty of treatment options.

UK-Indian start-up company Diabetacare provides remote monitoring solutions to diabetes sufferers, and is trialling a new blood-sugar level device with remote monitoring capability across 800 patients in Bangalore. Working in tandem with eight day clinics in the city, the devices provide regular monitoring along with personalised treatment schedules. Specially-trained nurses monitor the daily data and specialist diabetes doctors are ready to review progress and deal with emergencies.

"Medicine is only around 30 per cent of the management of diabetes," said Diabetacare founder and CEO Dr. Sanjiv Agarwal. "The biggest factors are compliance and lifestyle choices. It's up to the patient to take their medicine on time and monitor what they eat and drink."

Reports suggest there are 100 million diagnosed diabetes sufferers in India, with perhaps a further 30 million undiagnosed. Diabetacare's devices are designed to be a mainstream proposition and the service is said to be affordably priced.

"It provides a personal, positive loop," said Agarwal. "The more data we have the better able we are to treat the patient. It provides us better insight into the lives of diabetes sufferers."

The more attention we pay to a patient, the more likely we are to see regular data."

Traditional treatments require patients to stick to a rolling regime of medication and monitoring. Unfortunately, this demands strict discipline from patients and regular visits with doctors, costing time and money. Diabetacare says it helps both the discipline and the monitoring. However, for its devices to function they require real-time connectivity. This allows data to be uploaded to a central server and then securely accessed by multiple parties. The Diabetacare solution monitors glucose and blood pressure levels, automatically sending these data to specialist clinicians (including doctors and nutritionists). Treatment is personalised and adjusted accordingly, with periodic face-to-face visits at the nearest clinic.

Agarwal said developing the right technology was key: "What we didn't want to do is overload patients with more technology; they won't adopt it. It had to be technology they were comfortable with. We didn't want wires and we didn't want Bluetooth. We wanted easy, switched on connectivity."

After speaking to Vodafone's specialist m-health team, Agarwal decided that the operator's global M2M platform offered the best solution. He said the devices used by Diabetacare are a vital piece of medical equipment and the company had to make sure the solution worked perfectly before launching. This required many rounds of testing which, according to Agarwal, couldn't have been done without Vodafone's "patience and expertise".

The operator said its M2M network's scale and coverage means Diabetacare needs just one supplier, fully managed via a single global platform. It said this provides a real-time view of all customer data usage and billing, as well as SIM control.

Diabetacare's pilot in Bangalore began in March 2014, and the company's plan includes a cluster-by-cluster rollout across India, as well international expansion which started with a trial in Dubai last year. Vodafone said its single global SIM will support the business' global ramp up from a local pilot of 800 users to 100,000 subscribers within three years.

"Unprecedented cooperation" in Afghanistan

More than a quarter of a century of war has left Afghanistan's healthcare system in ruins. According to local mobile operator Roshan Telecom, around 600 children under the age of five die every day in the country due to preventable diseases. There is one doctor for every 100,000 people, compared to one for every 365 in France and one for every 500 in the US.

There are numerous barriers to developing the nation's medical system: most of the hospitals are destroyed, there is a deficit of skilled medical expertise, and there are no ongoing training programmes in the health sector to build capacity. As a result, Roshan has developed an innovative telemedicine project that leverages its nationwide telecom infrastructure. The solution is designed to link hospitals throughout the country to specialist diagnosis and training resources provided by international medical facilities.

Roshan said the project involved unprecedented cooperation between Afghanistan and Pakistan to improve the delivery of healthcare in the region. Roshan Community, the operator's CSR division, has partnered with the government, the Aga Khan University Hospital (AKUH) in Karachi, Aga Khan Health Services, the French Medical Institute for Children (FMIC) in Kabul, Cisco Systems, and other telecoms suppliers.

The telemedicine project uses broadband technology running across Roshan's wide reaching, secure and reliable network to connect hospitals across difficult and remote terrain. After the first phase which linked FMIC Kabul to AKUH Karachi, a second phase extended the link to Bamyán Provincial Hospital. This serves a region plagued by infectious diseases and preventable illnesses, as well as one of Afghanistan's highest levels of maternal and child mortality rates.

Roshan's network provides real-time, high-speed access for the transfer of medical imaging, video, data and voice transmission. Through the digital transfer of CT scans and other medical imaging, the technology allows specialist and remote diagnoses of many medical conditions that can then be successfully treated in Afghanistan. Through the telemedicine link, 40 radiology cases are evaluated

between Bamyán Provincial Hospital and FMIC, and 40 radiology cases

are evaluated each month between FMIC and AKUH.

The system also provides video-conferencing services for training, lecturing, and procedure and



The SevenHills Hospital campus in Mumbai has a built area of more than two million square feet. A pair of ZoneDirector 3000 WLAN controllers (right) and over 300 ZoneFlex 7962 APs from Ruckus Wireless' has enabled Wi-Fi access from every part of each building.



diagnostic supervision that will help to develop and build the country's medical capacity and resources. Through the link, several training courses are delivered monthly to professionals who otherwise would have limited (if any) access to training opportunities. Roshan believes these training sessions can play an enabling role in rebuilding Afghanistan's healthcare system. It adds that through the Roshan/Cisco Net Academies, Roshan Community also works to build technological capacity in the country.

According to the operator, the country's healthcare professionals are now more confident in their abilities to deliver a "superior" level of care. Hospitals can better serve communities, and patients no longer need to travel vast distances to seek care away from their support networks. Roshan Community has been considering extending telemedicine links to other provincial hospitals, and eventually to medical institutions in Europe and North America to maximise impact.

Digital front door to health

In South Asia, Telenor has operations and interests in Bangladesh (Grameenphone), India, Malaysia (DiGi) Myanmar, Pakistan (Mobilink) and Thailand (dtac). Telenor Health is a new venture using mobile technology to make high quality health information, advice, and services accessible for everyone. The Norwegian operator is now preparing to launch the service in Bangladesh.

Incorporated in 2015, Telenor Health aims to develop what's described as a "digital front door to health" that can be scaled to tens of millions of consumers across the operator's markets and beyond. Earlier this year in April, Telenor Health chief executive officer Sajid Rahman said the company had recently achieved several key milestones in preparation for its launch in collaboration with Grameenphone (GP). "The work that GP have already done with healthcare services was a big part of our decision to make Bangladesh our first market," he said. "It gives us an opportunity to prototype, test, and refine new features and services in the real world."

In April 2015, Telenor Health replaced a local value added services vendor as the delivery partner for Grameenphone's 789 Healthline service. Launched in 2007, the healthline provides Grameenphone



All the content on Telenor Health's *Mytonic* m-health website is in Bengali and is said to be backed by "rigorous scientific evidence".



The Swinfen House Telemedicine Centre in Khalte, Parbat District, central Nepal.

customers across Bangladesh with access to general practitioners over the phone at affordable rates, 24 hours a day, seven days a week. Initial results from the service are encouraging: during an eight month period, it delivered an average of 600-700 consultations per day, with customer complaints down and doctor satisfaction up.

In addition to leveraging the 789 Healthline, the Telenor Health team also saw promise in GP's 321 Health Tips, a paid-for service that provides daily SMS messages to customers on a wide variety of health topics. "There were about two million customers on the Health Tips service, so we knew that there had to be some consumer value in everyday health content," said Telenor Health CCO Matthew Guilford. "The big question was how we could 'go beyond' the existing format of SMS messages in English to offer something more dynamic and compelling."

In March 2016, Telenor Health released a first taste of its re-imagining of everyday health and wellness content with a new website: *mytonic.com*. The company said all of the content on the beta version of this site is written in Bengali and backed by "rigorous scientific evidence".

Leveraging the mobile web as a channel has allowed the team to experiment with new features to make content more relevant and engaging. For example, users can receive material that has been 'personalised' for their own wellness needs by inputting basic demographic details. They can also follow 'heroes' – local inspirational figures that have created motivational and instructional videos and articles for Telenor Health. The company adds that every piece of content is written in a tone of voice that has been refined through months of user research and testing.

Nepal clinic uses innovative video system

In 2013, Vemotion Interactive worked with the Swinfen Charitable Trust (SCT) on what was described at the time as an "innovative" telemedicine trial in Nepal. Vemotion specialises in the compression and transmission of live video

over wired and wireless networks including low bitrate GPRS and 3G. It said its technology enables cost-effective video transmission from a wide range of remote and mobile locations back to a central control facility which distributes it to the appropriate expert. The firm's products include software and hardware codecs, fully integrated deployable cameras, ruggedised deployment units, body-worn transmitters and video servers.

Working with SCT, Vemotion created a live video link from a remote hilltop village in central Nepal. It's claimed that the successful trial proved the ability of medical staff to communicate, in real-time, back to expert healthcare support across the Swinfen network using existing cellular infrastructure in the area. A medical consultant in the UK was able to visually assess and communicate with patients, and advise on treatment by nursing staff at the new Telemedicine Centre in the village of Khalte in the Parbat District of Nepal.

The clinic, which was opened in April 2013, has benefited from real-time remote diagnostic capabilities offering a level of medical consultation, advice and support that would otherwise be impossible in the remote region.

Vemotion donated a variety of devices based on *Android* to the SCT. They feature the company's encoders and viewers to allow video communication between remote healthcare workers and hospital-based medical experts.

SCT co-founder and director Roger Swinfen said: "We have proved that the technology works; what we have to do now is make it accessible and intuitive for those remote medical staff who might not be wholly familiar with smartphones and computer tablets and whose main language is probably not English. The secret of success will be to make it easy to use."

Vemotion distributed the *Android* devices to help establish a global video telehealth network. During a subsequent phase of the trial, doctors and nurses were connected at the centre in Khalte with medical teams at the Patan Teaching Hospital in Kathmandu, and the Burns Unit Zambales in the Philippines. ■

Data – the key to mitigating financial risk

Neural Technologies, a leading global software provider of OSS/BSS solutions including fraud, risk and revenue assurance products undertook a survey via an independent third party. The objective was to see how the telecommunications industry perceive risk today and what will be the potential threats in the coming years as new and innovative services and technologies are launched and the competitive landscape adapts and evolves.

Luke Taylor, Chief Commercial Officer at Neural Technologies, commented 'the survey results were from over 110 individual respondents and were from different levels of management within service providers evenly distributed in size and geography that would indicate an unbiased survey. The survey is freely available on request from our website but if we focus on some of the findings for Southeast Asia in particular (which represented approximately 11% of respondents), it is somewhat interesting,

1. When it comes to managing risk, sharing knowledge and experiences with the team or peers, it is seen as just as important as the underlying systems.
2. The CFO is the most senior individual responsible for Fraud, Credit Risk and Revenue Assurance in more than 50% of companies surveyed.
3. The average level of lost revenue is over 13% (with the Southeast Asia region estimated at nearly 9%)
4. Big data adaptation in risk analytics was seen by nearly 50% of respondents (with the Southeast Asia region reflecting the highest take up with nearly 70% adoption)
5. Mobile money being the highest saturation in the South East Asia region with over 75% of operators implementing branchless banking/contactless/e-wallet that was driven solely by customer demand

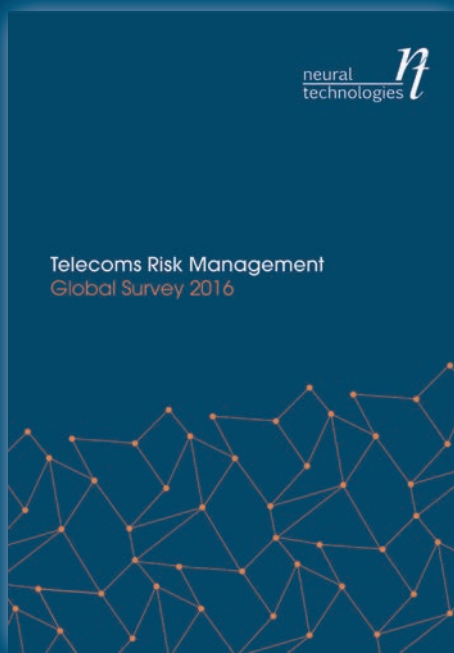
The responses from the survey were also enlightening and confirmed some of our own thoughts, experiences and opinions from being in this business domain for over 25 years.

Talking to our customers and presenting and attending numerous industry events around the world we have garnered an in-depth knowledge of the telecom industry as well as an in-depth understanding of the risk domain.

Two of the particular questions in the survey I want to highlight today are:

Did the respondents use any 'Big Data' tools to help you visually analyse and understand risk or threats in more detail?

Interestingly Southeast Asia and Eastern Europe were the leaders in this concept with over 75% of respondents stating they use some form of advanced big data acquisition and analytics tools to further improve their investigation process, compared to Western Europe only averaging 35% on respondents stating the same.



From the respondents of this question it was also clear that the larger the telecommunication service provider, the more likely that big data tools would be utilised.

This reflects our own experiences, as telecoms has evolved from simple analogue phone calls to offering IOT and OTT, streaming of films, internet browsing, online banking, social media to name just a few of the services that every consumer demands. With this change in telecommunications the volume and diversity of data has been exponential. The need to bring in data quickly, cleanly and efficiently has now become a critical issue for many CSP's where legacy systems and multiple IT systems means data has become disjointed and somewhat cumbersome. The need to retrieve data quickly and efficiently is crucial for both business performance and to ensure minimal financial loss whilst improving operational efficiency. Once there is consistent and reliable data can you then undertake 'big data' analytics to identify trends, relationships and possible threats and demonstrate enlightened intelligence. The saying 'garbage in, garbage out' is crucial in this domain.

What threats do the respondents see from offering mobile money services?

Out of the geographic regions, there was no differentiation. All clearly saw the threat from fraud being perpetrated within their mobile money services as a critical issue. The threat from fraud is both a financial risk, but also a reputational threat. If any CSP is hit hard by a fraud, be it an internal fraud or external, they need to be identified quickly and dealt with appropriately. From undertaking Know your Customer (KYC) initiatives to ensure that every subscriber is legitimate, to profiling dealers and transactions identify mis-use of the service and policies. Consistent, quality data is crucial for providing insightful fraud and risk analytics. It can provide a 360 degree view of the risk as well as in turn the capability of further analysis and intelligence that can be proactively actioned upon to look at risk today as well as the future. Not tackling such threats could be success or failure.

Luke Taylor continued: 'Fraud is here and here to stay, it is important that although it can never be eradicated, it can be managed through successful process, resources and systems working cohesively together and constantly adapting and evolving to the constant changes that are seen in the telecommunications industry. Neural Technologies are proud to be working with the likes of Maxis, Digi, UMobile, Starhub, and M1 to assist in their strategies to mitigate risk and revenue loss. We are in an exceptionally dynamic market and we have to ensure we stay one step ahead of the fraudster and be fully aware of the services and technologies being offered or launched, it could mean the difference from a service provider surviving in this extremely competitive marketplace, where every dollar and cent needs to be protected or maximised.

If you wish to have a copy of the survey, then please go to:
www.neuralt.com/globalsurvey2016

If you want to talk to us about how to address the problems and opportunities in this survey or contribute to future surveys, then please contact Luke Taylor via info@neuralt.com.

We look forward to hearing from you.

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Luke Taylor,
Chief Commercial Officer,
Neural Technologies Group.



The road to broadband: stuck in traffic?

DR NICOLA DAVIES looks at the challenges of developing ubiquitous broadband connectivity in South Asia, the breakthroughs made by service providers, and the way ahead.

Deep broadband penetration has proven to be quite a challenge in the developing nations of South Asia. Statistics show that internet penetration is just 18 per cent in India and 13.8 per cent in Pakistan. The scenario is even more dismal in countries such as Myanmar which, for now, has an internet penetration rate as low as 2.8 per cent.¹

According to often cited studies carried out by the World Bank, a 10 per cent increase in broadband penetration can increase GDP by 1.38 per cent in developing countries.² High-speed networks are therefore of utmost importance to revamp different socio-economic, administrative, commercial and technological platforms. It is estimated that the amount of global data will double in the next eighteen months, but without a proper broadband infrastructure in place, developing nations won't be able to enjoy the benefits of this data-driven growth.

Despite a number of government initiatives to build a robust internet infrastructure, the current scenario in South Asia is fragile and nascent at best. Mark Newman, chief research operator with analyst firm Ovum, says the challenge is even more pronounced when it comes to rural populations: "It is important to make a distinction between broadband in urban and rural areas. Mobile broadband services

are available in all major cities across the region. The main challenge is rural areas where operators need low frequencies and new solutions for backhauling traffic to justify their investments."

Roadblocks to universal broadband deployment

It is 2016, and yet the main drawback that most developing nations in the region are facing still remains the scarcity of fixed-line infrastructure. India, for example, reports only 1.1 per cent penetration of fixed line infrastructure.

In countries such as India, Pakistan, Bangladesh, Sri Lanka, Thailand, Laos, Indonesia, Vietnam and Myanmar, narrowband users and wireless network subscribers far exceed the number of broadband subscribers. MNOs have been fiercely competing with each other to dole out 3G and 4G networks in these countries, but they now have to look into strengthening their mobile broadband services in areas lacking fixed-line infrastructure.³

The average broadband speed varies across nations as well. According to a Q4 2013 study by Akamai, countries like South Korea and Japan lead the race with 21.9Mbps and 12.8Mbps, respectively. China has an average connection

speed of 3.4Mbps, whereas India, with an average speed of 1.5 Mbps, is at the tail end of connectivity speed in the Asia Pacific region.⁴

Challenges exist both on the supply and demand side of realising the goal of universal connectivity in South Asia's developing nations. Due to the political, geographical and socio-economic structure of individual nations, the intensity of these challenges might vary.

"The big challenge with fixed broadband deployment is cost and RoI, where there is no existing fixed line infrastructure," says Newman. Copper telephone lines are not an economic solution for expanding broadband networks criss-crossing the land. Furthermore, optical fibre networks haven't yet been deployed on a scale large enough to cater to the complete requirements of the region. For example, it is estimated that around five million route kilometres of fibre optic cables are required to extend broadband services to every village in China.

Moreover in many countries, a cocktail of political corruption, complex regulatory procedures and lack of transparency in bidding procedures detract telcos from investing heavily in broadband infrastructure. For example, right of way fees required to lay terrestrial fibre could be

astronomical and the process itself cumbersome. Foreign direct investment in network infrastructure is required, but investors might choose to stay away in the face of tax scams and bribery scandals.

Another challenge to building ubiquitous broadband connectivity across South Asia is limitation in digital literacy. Although several of the region's nations are considered to be global IT hubs, many government offices prefer to fill in manual paperwork and there remains public resistance to switch to online alternatives. This prevents the demand for broadband from acquiring a super-critical mass, which in turn results in a lack of political willpower, lack of profitability, and low investor confidence.

More affordable – but not for all

The cost of providing and subscribing to high-speed internet services in developing nations also continues to be high in South Asia. Although India and Pakistan were among the first in the region to announce a national broadband policy in 2004, these nations have yet to meet their envisioned goals.

Furthermore, in the case of fixed line broadband networks, the user needs to invest in additional compatibility devices like modems, taking costs beyond the range of villagers with limited means. A smartphone, even with limited speed access, could be perceived as the better option.

In its annual *Measuring the Information Society* report published in November 2015 (also see *The ITU's ICT Development Index*, p24), the ITU said: "In LDCs [least developed countries], the mobile-cellular price basket continued to fall, coming down to 14 per cent of gross national income per capita (GNI p.c.) by the end of 2014, compared to 29 per cent in 2008. The greatest decreases over the past year have been in mobile-broadband prices, which have made the service on average between 20 and 30 per cent more affordable worldwide."

However, while the union noted that broadband was more affordable, it was not *universally* affordable. One of the targets set by the UN's Broadband Commission for Digital Development targets states that the cost of services should be no more than five per cent of average monthly income. By early 2015, the ITU found that 111 economies (out of 160 with available data), including all of the world's developed countries and 67 developing countries, had achieved the goal. However, 22 developing countries still had broadband prices which corresponded to more than 20 per cent of GNI p.c.

The report also found that while "tremendous" progress had been made in terms of mobile-broadband affordability, fixed-broadband prices increased between 2013 and 2014, after falling consistently for a number of years.

"In the LDCs in particular, fixed-broadband services remain unaffordable, and most of the countries ranked at the bottom of the fixed-broadband basket are LDCs," said the ITU. "The 2014 average fixed-broadband basket corresponded to 98 per cent of GNI p.c. in LDCs, up from 70

per cent a year before, a sharp increase that will not improve the already very low uptake of fixed broadband in the world's poorest countries."

Issues regarding spectrum also remain. In several countries in South Asia, mobile broadband spectrum has not yet been awarded. In the Maldives, a national broadband plan has not yet been developed, while in Afghanistan and Nepal, these policies are in development. But a few welcome moves are being taken to reverse the scenario. For example In Nepal, telecom equipment imported for application in rural areas is tax-exempt.

Should the onus to develop a sustainable broadband infrastructure in South Asia be left to telcos already facing major profitability issues?

Ovum's Newman says: "When it comes to mobile broadband, the main challenge is spectrum availability and the saturation of the mobile market, which means that it is extremely difficult for operators to generate incremental revenues from mobile broadband networks and services."

CSPs cannot work in isolation. State-led intervention is therefore needed, and government policies facilitating broadband deployment is welcomed by operators. For instance in April, in response to the Indian Government's recent proposal of spectrum harmonisation, Vodafone India CEO Sunil Sood stated in a company press release: "Harmonising the available spectrum to offer additional quantum via auction is another progressive step by the Government (after spectrum trading and sharing), to maximise efficiency of this precious resource. With *Digital India* as the guiding vision and consumer demands evolving from voice to data, the telecom industry increasingly needs more of quality spectrum to be made available at reasonable prices."

Milestones

Despite the various constraints that exist, South Asian telecom providers have been gradually expanding their networks and have enjoyed some laudable achievements in recent years.

More progressive governments have formulated broadband policies and auctioned 3G and 4G frequencies which has stimulated competition in their countries' markets. For example Sri Lanka – one of the first nations in the region to award 3G spectrum – now has the second-highest penetration of mobile broadband users. The country also boasts high broadband speeds and one of the lowest tariffs in the region.

According to data released in March by the Global mobile Suppliers Association (GSA) and Ovum, APAC now has around 600 million LTE subscribers which represents a 54.3 per cent share of global users. Networks using the 4G technology have now been commercially launched in almost all countries across South Asia including: Bhutan, Brunei, Cambodia, India, Indonesia, Laos, Malaysia, Maldives, Pakistan, Philippines, Singapore, Sri Lanka, and Thailand. Rollouts in Myanmar and Vietnam are also expected during the coming months.



Infrastructure deployment in India – the lack of ubiquitous broadband connectivity in South Asian countries is not for want of technological solutions

PHOTO: SHUCHISMITA BISWAS

"On the mobile side, the introduction of LTE in the last five years now means that it is possible for mobile operators to offer broadband speeds that are comparable to mid- to low-end fixed broadband," says Newman. "In the fixed broadband market, there have been major breakthroughs in the development of new technologies for delivering faster broadband speeds over copper lines."

Although Asia is a huge continent, its international connectivity is heavily reliant on submarine cables. However, these fibre networks are susceptible to choke points located in Egypt, Strait of Hormuz, and Strait of Malacca. To add perspective, consider Bangladesh which is internationally connected through a single submarine cable link and is therefore highly vulnerable to network outages. A technical glitch all the way in Egypt might cause the entire nation of Bangladesh to lose international connectivity. (*Although this now looks set to change – see Sparkle to handle NOC and network administration for SEA-ME-WE 5, p.9; and Tier 1 telcos launch Bay of Bengal Gateway, p.10.*)

On the other hand, countries like India are well connected internationally through multiple submarine cables. The country's telcos such as Bharti Airtel, Reliance Communication and Tata Communication are active players in the global communication investment market as well.

However, the cost of bandwidth still remains on the higher side for India and, ironically, as the nation is reputed to be an outsourcing hub, it handles an astronomical amount of international data traffic that further increases broadband costs.

One important milestone in India's communication history was achieved when a terrestrial link was established between Tata

Communications in Amritsar and the PTCL's network in Lahore, Pakistan, via the border village of Wagah. However, when this link actually becomes operational has yet to be confirmed.

Another such instance of cross border camaraderie was the 2013 activation of a cable between Benapole in Bangladesh and Petrapole in India by Bharti Airtel. There is also the unique case of the Maldives which is supported by two distinct submarine links providing the region with diverse connectivity. *The WARF Telecom India-Maldives* cable was activated in 2007 by an alliance between Ooredoo Maldives (formerly Wataniya), Reliance Communications and Focus Infocom, and continues to be an example of successful network deployment in South Asia.

A few international links remain embroiled in politics. For instance, a connection between China and Nepal via Tatopani proposed in 2010 is still far from completion, and a terrestrial link between Afghanistan's Nahargarh province and Pakistan has been under construction since 2009. Plus, although countries like Bhutan have made decent strides in optical fibre network development, a report by the UN's Economic and Social Commission for Asia and Pacific suggests that the lack of competition in the domestic infrastructure market might hinder the country from achieving adequate connectivity at this point.⁵

The road ahead

The picture of network connectivity in South Asian nations is one of contrasts. For example, while Singapore has seen fixed line infrastructure double and its MNOs continue to push the envelope, people in Vietnam have to stare at white pages on their smartphone screens.

Nonetheless, telecom providers are gearing up to ride out the broadband wave in South Asia. Although public-private partnership, revolutionary government policies, adequate focus, and investor goodwill are all required to make the benefit of ICT available to the remotest villages, there is hope. Countries like India and Bangladesh with their national digital strategies are formulating policies in favour of ubiquitous broadband deployment, demonstrating political goodwill.

So the road ahead for broadband deployment looks promising. New technological breakthroughs, countries auctioning broadband spectra, telecom providers rolling out 4G networks, all add up to a number of exciting moves for the continent. The Asian Highway for avoiding optical fibre chokes is also in the pipeline. As the avalanche of data keeps growing in leaps and bounds, the indispensability of a broadband framework is likely to see major increases. ■

¹Internet users (per 100 people)/data/table; data. worldbank.org

²Kim, Yongsoo, Tim Kelly and Sidhhartha Raja. 2016

³Broadband The Lifeline of Digital India. 1st ed. Deloitte, 2014.

⁴Akamai's State of the Internet 2013.

⁵Economic and Social Survey of Asia And The Pacific. 1st ed. 2016.

THE ITU'S ICT DEVELOPMENT INDEX FOR APAC COUNTRIES

APAC rank	Global rank	Country	2015 IDI value	2010 IDI rank	2010 IDI value	Rank change
1	1	Korea (Rep.)	8.93	1	8.64	—
2	9	Hong Kong, China	8.52	13	7.41	▲
3	11	Japan	8.47	9	7.73	▼
4	13	Australia	8.29	15	7.32	▲
5	16	New Zealand	8.14	19	7.17	▲
6	19	Singapore	8.08	11	7.62	▼
7	24	Macao, China	7.73	14	7.38	▼
8	64	Malaysia	5.90	61	4.85	▼
9	71	Brunei Darussalam	5.53	53	5.05	▼
10	74	Thailand	5.36	92	3.62	▲
11	81	Maldives	5.08	82	3.92	▲
12	82	China	5.05	87	3.69	▲
13	84	Mongolia	5.00	97	3.52	▲
14	91	Iran	4.79	99	3.48	▲
15	98	Philippines	4.57	105	3.16	▲
16	101	Fiji	4.33	102	3.28	▲
17	102	Vietnam	4.28	94	3.61	▼
18	108	Indonesia	3.94	109	3.11	▲
19	110	Tonga	3.82	111	3.08	▲
20	115	Sri Lanka	3.64	115	2.97	—
21	119	Bhutan	3.35	128	2.02	▲
22	122	Samoa	3.11	121	2.43	▼
23	125	Vanuatu	2.93	124	2.19	▼
24	130	Cambodia	2.74	131	1.98	▲
25	131	India	2.69	125	2.14	▼
26	136	Nepal	2.59	140	1.75	▲
27	138	Laos	2.45	135	1.92	▼
28	139	Solomon Islands	2.42	139	1.78	—
29	142	Myanmar	2.27	150	1.58	▲
30	143	Pakistan	2.24	138	1.79	▼
31	144	Bangladesh	2.22	148	1.61	▲
32	156	Afghanistan	1.83	156	1.37	—

IDI rankings and values for the 32 ITU member states in APAC.

SOURCE: ITU ICT DEVELOPMENT INDEX 2015

Every five years, the ITU ranks 167 member countries according to their level of ICT access, use and skills. In its 2015 ICT Development Index (IDI) published in November, the Republic of Korea, Denmark and Iceland occupy the top three global places respectively. Only six South Asian countries covered by this magazine are ranked in the worldwide top 100: Singapore (19); Malaysia (64); Brunei (71); Thailand (74); Maldives (81); and the Philippines (98).

Among some of the region's other leading nations, Indonesia's global ranking is 108 (up one place from 2015), Sri Lanka is 115 (no change), and India is 131 (down from 125). Myanmar (142), Pakistan (143), Bangladesh (144) and Afghanistan (156) are among the lowest ranking South Asian ITU member states indexed.

In its annual *Measuring the Information Society* report released at the same time as the IDI last year, the ITU said Asia-Pacific is the most diverse region in terms of ICT development, reflecting stark differences in levels of economic development. While six economies in the region have IDI rankings in the top 20 of the global distribution, the region also includes ten of the index's least connected countries, including India, Pakistan, Bangladesh and Afghanistan.

But the union added that countries throughout the region, particularly middle-income ones, have shown "considerable" improvements in their IDI values between 2010 and 2015. The most dynamic improvements in the region were achieved by Thailand, Mongolia and Bhutan, with respective rises of 18, 13 and 9 places in the global rankings. The average growth in value for the region was 0.85 points, just below the global average.

Overall, the report found that 3.2 billion people globally are now online, representing 43.4 per cent of the world's population.

The data showed that growth in internet use had slowed down, rising 6.9 per cent globally in 2015 compared to 7.4 per cent in 2014. Nonetheless, the ITU said the number of internet users in developing countries had almost doubled in the five years from 2010-2015, with two thirds of all people online now living in the developing world.

The union added that the fastest growth continues to be seen in mobile broadband, with the number of worldwide subscriptions here having increased more than four-fold in five years, from 0.8 billion in 2010 to an estimated 3.5 billion in 2015. The number of fixed-broadband subscriptions has risen much more slowly, to an estimated 0.8 billion today.

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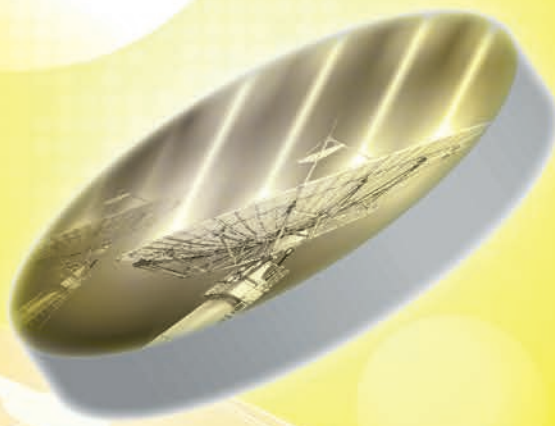
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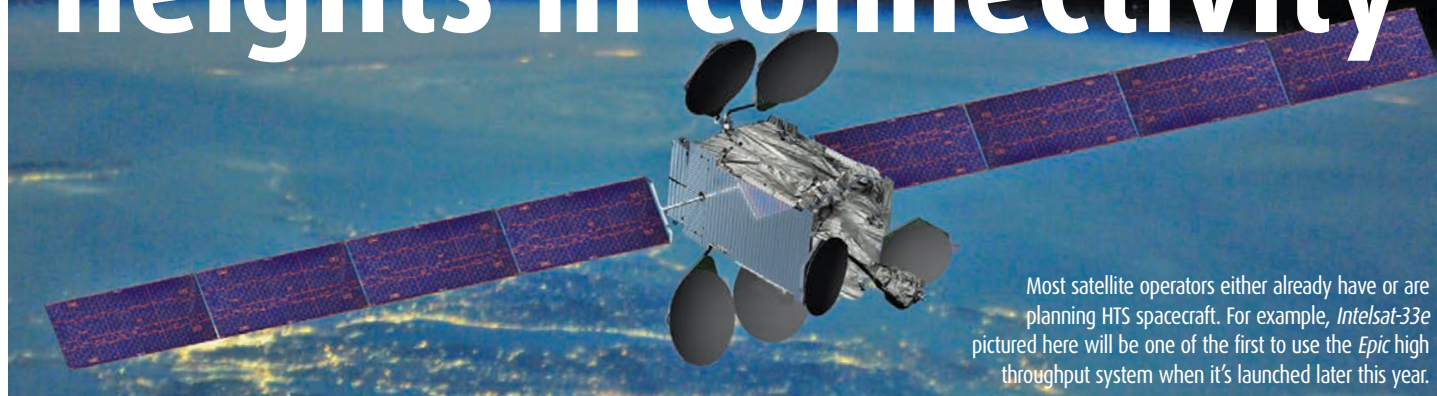
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Reaching for new heights in connectivity



Most satellite operators either already have or are planning HTS spacecraft. For example, *Intelsat-33e* pictured here will be one of the first to use the *Epic* high throughput system when it's launched later this year.

Do HTS platforms now represent the future for satcoms in South Asia? JO DE LOOR reckons that when it comes to solving the region's connectivity problems, we should all look to the skies.

The first generation high throughput satellite (HTS) systems were mainly focused on consumer and SME broadband services, and often tied into a vertical integration model which saw the satellite operator also act as the service provider.

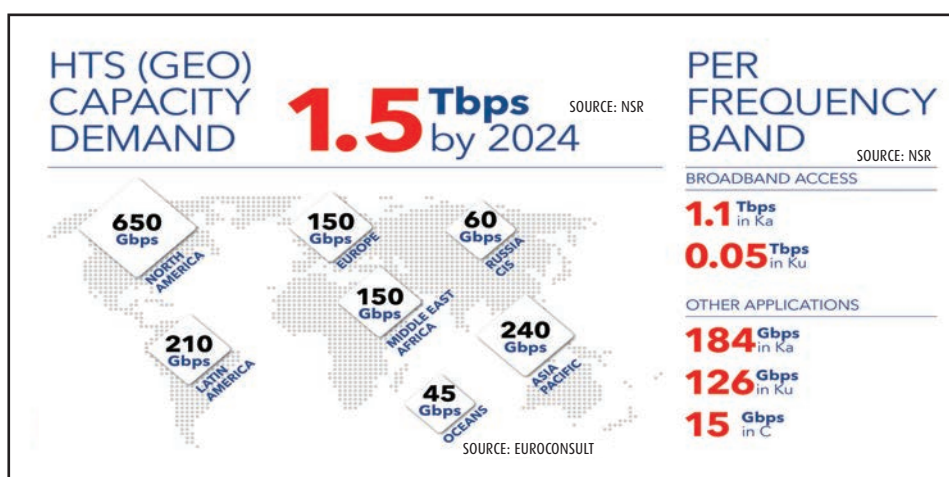
But the real global breakthrough has happened in the last five years, with new entrants such as Avanti and Yahsat launching a fleet of Ka-band high throughput satellites to start offering high throughput services. This also opened up some HTS space segment for other business models such as MHz capacity sales.

The traditional satellite operators quickly followed and also started to put HTS capacity in orbit. Today, most satellite operators have or are planning HTS spacecraft. While initial HTS were focused on optimisation of the cost per bit delivered, we are now also seeing HTS payloads, often in Ku-band, which are optimised for flexibility and reliability for a large variety of satellite services and markets.

Not all services are equal

According to studies from NSR and Euroconsult, the market demand for global GEO HTS services will reach 1.5Tbps by 2024. As far as can be seen, demand is largely present in all regions: North America, as a mature and growing market, is leading but is followed by emerging markets in Asia Pacific, Latin America and Africa (see chart above right).

The majority of the demand is for broadband services, with forecasters predicting that 1.1Tbps of broadband services will be delivered using



Ka-band. Meanwhile, 'only' 50Gbps will make use of Ku-band HTS capacity. Other applications, alongside broadband, represent about 325Gbps of service capacity demand, distributed over Ku- and Ka-band but also including some C-band HTS.

If we look further into the distribution of services after broadband, the largest market is enterprise services, with 115Gbps demand, followed by cellular backhaul, plus government and mobility services using 76Gbps to 57Gbps, respectively. The broadcast market, with 18Gbps, has lesser demand where it is used for regional DTH using spot beams, but HTS also fits well for occasional use services such as SNG.

It becomes more interesting still if we also include the service revenues forecasted for each vertical (see chart overleaf). Broadband makes up 79 per cent of

HTS capacity demand but represents 'just' 24 per cent of revenues. Broadband is a high volume, low margin business, which explains the lower revenue and margin per Gbps. The other applications represent 76 per cent of the HTS revenues but only account for 21 per cent of the service capacity. Markets such as mobility and government represent the highest service value per Gbps capacity.

From this we can conclude that it will be key for HTS operators to address the demands for these various markets and verticals. The broadband demand is large but will take time to grow the customer base gradually.

On the other hand, the higher value verticals are a good complement. These markets can yield fast ROI on HTS capacity as they involve

less sites but more bandwidth demand per site. However, demand here may be subject to more fluctuations over time, such as the current slowdown in demand for oil and gas services. Supporting a good mix of customers in different verticals will maximise HTS service revenues. It will also limit the business risk, both during initial ramp-up and in the long term, as demand from various verticals may change over time.

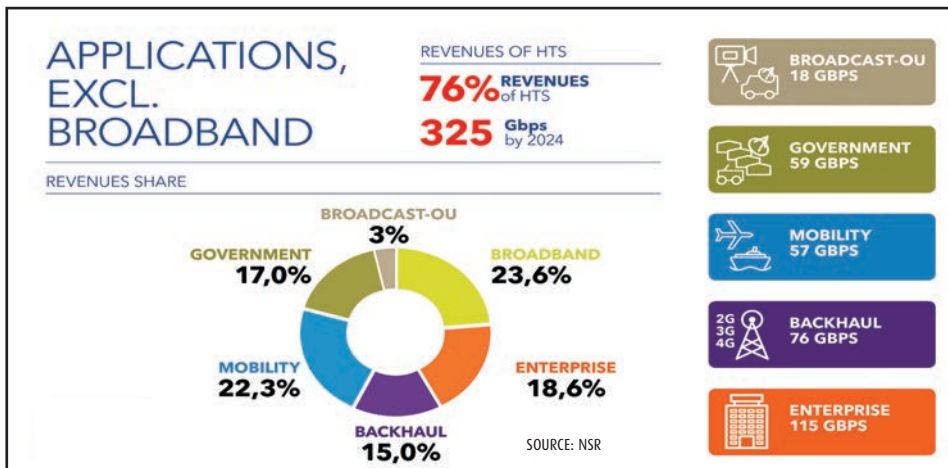
VSAT 2.0 – the future

Next-generation VSAT platforms addressing the HTS services mentioned above will be required to support a wide range of verticals and applications with unprecedented scale.

High-performance spot beams require the most advanced transmission standards. DVB-S2X forward link with wideband carrier support is one of the key elements to leverage HTS payload resources. Using high efficiency MODulation and CODing schemes (MODCODs) of up to 256PSK, it can leverage the spot beam link performance, enabling high service availability.

The large high throughput wideband carriers result in optimal statistical multiplexing, enabling delivery of very high throughput services to individual terminals. Also, the return link performance allows the use of 32APSK transmission schemes, providing unprecedented inbound IP efficiency as high as 4bps/Hz.

Dynamic bandwidth allocation schemes will need to be more efficient and scalable in speed in order to sustain the next wave of growth. Modem hardware must be more powerful and future-proof, supporting higher data rates and extending upgrade cycles while still meeting the customer



required price points. Satellite networks should also be more transparent and integrate more seamlessly with terrestrial networks.

Serving the higher value markets also requires highly reliable services even during rain fade conditions. Features such as Automatic Uplink Power Control (AUPC) and Adaptive Coding and Modulation (ACM) are essential, but need to be implemented in a sophisticated manner to enable delivery of the service reliability and QoS required by the customer.

Furthermore, powerful spot beams will also create new challenges for mobility. Beam switching logic must become multi-dimensional, allowing network operators to continually manage factors like load balance, regulatory restrictions, cost and weather.

The value chain for HTS-based services is evolving to more managed services, driven by the required economy of scale to roll out HTS infrastructure. While there has been much debate

over the effectiveness of the so-called 'closed' and 'open' business models, our industry has been adopting commercial innovations which enable various players in the satellite services value chain to focus on their own strategies and strengths. Satellite operators will increasingly deliver a managed service (wholesale) to the service provider which will be operating as a VNO. It will be able to deliver tailored products according to the end-customer requirements, and still have all tools available to roll out new services and manage Mbps capacity and terminals.

In the near future, VSAT platforms will also need to extend their reach into space, integrating directly with satellite payloads to optimise service delivery.

Orbital trends

On the space segment, we see two key further trends: the emergence of Low Earth Orbit (LEO) constellations and more flexible, high-capacity GEO HTS payloads.

LEO constellations will further complement the GEO HTS capacity in orbit. On the ground segment, one of the key technologies to enable commercial success of LEO satellites is the availability of cost-effective, electronically steerable flat panel antennas (FPAs) to track the spacecraft's movement and handover between two satellites.

For GEO satellites the trend is to introduce new concepts that bring more flexible and software-enabled satellite payloads. Most of today's HTS have a fixed capacity and footprint allocation. Future HTS will be able to allocate the available capacity according to where demand is located geographically at any given time. Along the same lines, Newtec is innovating the ground segment so that services can be delivered in an optimal and very cost-effective way. ■

BUILDING NEW FRONTIERS IN SPACE

Newtec's *Dialog* solution is a scalable and flexible multiservice satcoms platform that allows satellite operators and service providers to build and adapt their networks easily and in a flexible manner in-line with market requirements. We believe *Newtec Dialog* will secure the future of operators, giving them the ability to offer a variety of different VSAT-based services while making hassle-free decisions on the most appropriate technology to be used.

The platform is optimised for the delivery of broadband and managed services for specialised verticals such as enterprise, cellular backhaul, mobility, government and broadcast. They can either be offered directly as managed service profiles for end-users, offered to a group of end-users (e.g. government network), or as wholesale capacity via other service providers. These providers



will be able to define and sell their own services to end-users without the need for additional capex investment in hub infrastructure based on the elaborate VNO functionality included in the *Newtec Dialog* elaborate network management system.

Wideband carrier in DVB-S2X delivers an optimised forward link, while the return link with three supported technologies can make use of the most optimal technology: MF-TDMA, SCPC and *Mx-DMA*, Newtec's unique return link technology. Together with Newtec's latest *HighResCoding*, *Mx-DMA* combines the best of MF-TDMA and SCPC, enabling services up to 75Mbps to operate far more efficiently while delivering best in class service availability during rain fade in Ku and Ka-band.

The *41F Hub* is part of the *Dialog* system which Newtec has developed to enable operators to offer a variety of different VSAT-based services.



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Gogo is anchor tenant for world's first GEO/LEO shared network



Gogo is partnering with Intelsat to leverage the first shared GEO/LEO satellite network for in-flight connectivity. The company will use multi-layered Ku-band capacity on Intelsat's *Epic* high throughput geosynchronous satellites combined with OneWeb's planned low earth orbit (LEO) satellite constellation.

The Gogo 2Ku airborne terminal is designed to be compatible with

multiple networks. The company's network infrastructure will initially include the use of traditional wide beam services and Intelsat's HTS *Epic NG* platform which is expected to enter service later this year.

When the network is fully deployed with the launch of OneWeb's LEO satellites in 2019 (see *News, Jun-Jul 2015*), Gogo says its 2Ku systems will be able to dynamically route traffic across

a fully global 10Tbps shared network based on coverage, latency, throughput and other performance criteria.

The firm says customers will benefit from the continuous planned upgrades of the shared network, including up to 250Mbps per plane on Intelsat's *Epic NG* fleet. It adds that One Web's LEO satellites are expected to be the first to enable high-performance services at high latitudes and on polar flights.

"OneWeb's unique constellation will enable broadband connectivity in the polar-regions and at high latitudes," says Gogo CTO Anand Chari. "It will also have low latency because the satellites are much closer to Earth. By using this shared network, Gogo's 2Ku solution will be capable of delivering hundreds of Mbps per aircraft over every part of the globe."

Teltronic provides critical comms for Rio



Teltronic has been chosen to provide critical communications at this year's Summer Olympic and Paralympic Games.

As part of the EUR10m contract with the the Public Security Secretary of Rio de Janeiro State, the Spain-based critical comms specialist will cover several areas. These include the Barra da Tijuca, Copacabana, Deodoro and Maracanã competition venues, two airports as well as several key transport routes in the Olympic area.

This latest agreement for Teltronic (which is now part of the Sepura Group) will see an extension to the traffic capabilities of its existing network currently used by the Rio police. The existing network was originally provided for the Pan American Games in 2007 and, after some upgrades,



Teltronic will upgrade and extend its existing TETRA network at Olympic venues.

now supports more than 100 dispatch operators and over 18,000 radios.

As part of the upgrade for the Olympics, the company will install more of its *Nebula* base stations to provide additional coverage for the state police, emergency services, and the Olympics organisation workforce.

The deployment will also feature: two extra TETRA carriers for each site to update the capacity of the existing

network; BSTs with up to 12 TETRA transceivers to support high traffic loads throughout the event; Teltronic's *CeCoCo Control Centre* to accommodate a further 50 dispatch operators; and an additional 6,000 terminals with the vendor's *Synchronous Data Manager* application to pare down the GPS refresh time in AVL applications. Teltronic will also provide round-the-clock support during the games.

HGC deploys mobile fronthaul



Hutchison Global Communications (HGC) will use Infinera's *TM Series* system to provide mobile operators with high-capacity active mobile fronthaul services in Hong Kong.

As well as offering fixed line and IT services, HGC is a carrier's carrier and one of the country's largest-scale Wi-Fi service providers. The company is said to own an extensive fibre optic network in the Hong Kong region, and its four cross-border routes integrate three of mainland China's tier-one telcos with an international network.

With the rapid deployment of 3G and 4G, Infinera says mobile operators such as HGC's sister company 3 Hong Kong are transforming their networks by driving fibre to the cell tower and moving to a centralised or cloud-RAN architecture using fronthaul. It adds that this this new architecture prepares HGC and its mobile operator customers not only for the growth of 3G and 4G, but also for a smooth transition to 5G services.

According to Infinera, the *TM Series* mobile fronthaul system supports all of the CPRI (common public radio interface) and open base station architecture initiative rates, with HGC's initial services in Hong Kong ranging from 2.5Gbps to 10Gbps.

The vendor believes that with these services, HGC's customers can reduce their opex while improving RAN performance.

Connected cones protect road crews



A European Union-funded project is leveraging the Internet of Things (IoT) to help save lives during roadworks in the UK.

Using motion sensors that are placed on existing traffic cones, highways contractors can monitor the location and status of the cones on a map, as well as receive alarms when one has been struck and workers may be in danger.

'Intellicone' is the result of a unique collaboration between New Wave Innovation, Highway Resource Solutions, ETI Software Solutions, Philips, Eldes, and Colas which is a major contractor for highways maintenance in the UK.

ETI's Beamfly software is used to manage Intellicone. The remote



Intellicone is claimed to be easy to deploy because it operates in conjunction with existing traffic cones.

device management system provides a web portal which logs the status of each device as well as its location and displays this on a map in real time.

The vendor says remote monitoring and automatic reporting

features make it simple to obtain accurate time and date stamps for any incidents, as well as providing a rich data set to report on deployments.

Most importantly, ETI says alarms are instantly activated when a cone is struck, improving the ability of workers to move to safety. In addition, near misses can be investigated in further detail to improve future working conditions.

"This is a timely example of how the Internet of Things can impact an industry," says Nick Wilcox, CEO of the UK division of ETI Software. "It is more than making a 'dumb' traffic cone 'smarter'; it's the ability to use the data collected to affect the greater good."



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World's first bike lock with IoT connection



Mobilock is claimed to be the world's first bike lock that is connected to the Internet of Things (IoT).

In big cities such as London, New York, Paris, Hangzhou and others, public bike sharing systems play an important role in attempts to make transport more sustainable. To simplify these systems, Dutch company Mobilock has developed a bike lock that uses a smartphone app as a key. It says the lock can be used without check-out stations, parking docks or storage facilities.

The locks integrate low power, long range (LoRa) WAN technology. Mobilocks says because LoRa chips and sensors need little power, the system hardly uses energy. It adds that a device connected to a LoRa network is able to send data and commands for fifteen years, using only two penlite batteries.

The firm says the use of the technology enables bikes to be localised and monitored in real-time, even when they are in use.

In the Netherlands, Mobilocks uses a LoRa network provided by Dutch telco KPN. Mobilocks co-founder and MD Walter Nieuwendijk says: "Thanks to LoRa, rental companies can locate their bikes at any time and see who's riding it. Also, the system barely needs energy, while old GPS systems – for instance used in cars – need a lot of power. With this addition, Mobilock becomes the most complete and compact bike share system in the world."



The Mobilock bike lock uses a smartphone app as a key.

Power, water and connectivity



A clean-tech start-up firm claims to have developed a solar-powered machine that can bring internet connectivity, clean water, and electricity to communities across Africa.

Watly uses a combination of photovoltaic and thermal energies to power the *Watly 3.0* thermodynamic computer which, according to its developers, can sanitise more than 5,000 litres of contaminated water (including ocean water) a day, as well as generate electricity and Wi-Fi connectivity. The machine uses solar heat collected by super efficient vacuum-tubes to vaporise and therefore sanitise the

water. The process also includes the use of graphene technology.

Photovoltaic panels on the roof generate off-grid electricity to power *Watly's* internal electronics, and can also be used for recharging external devices such as mobiles.

Each machine can be deployed as standalone infrastructure, but several can also be used as part of an "Energynet" which, it's claimed, can power entire cities and countries. They can all communicate with each other and be controlled with the *Central Network Management* platform via radio links, 3G or 4G networks, and/or satellite.



Watly 3.0 was developed after the successful trial of a smaller machine in Abenta Village, Ghana.

Watly has been funded from *Horizon 2020*, the European Union's programme for innovation. The development of the system follows the successful trial of a smaller machine, *Watly 2.0*, in the village of Abenta, Ghana.

In April 2016, the firm launched a crowd funding campaign to create another *Watly 3.0*. Contributors are allowed to decide where the first model will be placed, with the options being Nigeria, Ghana, or Sudan.

Satellite-based IoT combines driver safety system with 'black box' capabilities



South Korea's PLK Technology will use a Telit GNSS IoT module to deliver positioning functionality for *Optian*, a new product that combines the features of an advanced driver assistant system (ADAS) and a high-end automotive black box.

PLK was established in 2000 as an in-house venture firm as part of Hyundai Motor Company but was spun off in 2003. Its ADAS uses camera image sensors to recognise lanes, vehicles, light sources, traffic

lights and pedestrians. The company claims it was the first to develop a lane departure warning system based on colour image recognition.

Its new *Optian* system takes the functionality of a typical black box capable of post-processing accidents, and adds ADAS capabilities. PLK says this enables it to implement accident prevention measures, delivering lane departure warning and forward collision warnings, as well as front car departure alert functions. It does this by using Telit's *SL869-V2*

module to sense displacement from which it derives speed and distance between cars to warn the driver about the risk of collision.

According to UK-based IoT specialist Telit, the *SL869-V2* is a sub-miniature multi-satellite receiver module that can be installed in vehicles, industrial, wearable and portable digital devices. It's claimed to deliver a high level of stability for navigation applications by tracking GPS and GLONASS at the same time, relaying accurate and fast-refreshing positioning data.

Tanzanian operators "failed" on security



Tanzania's regulator has accused the country's operators of ignoring repeated requests to secure their networks against malicious and spoof callers.

The TCRA (Tanzania Communications Regulatory Authority) claims consumers are being endangered by fraudsters sending deceitful and misleading messages aimed at tarnishing the targeted person's reputation or exhorting money.

Over a two-month period towards the end of last year, 42 incidents are said to have been reported to the regulator and the police, including one case where a victim stood to lose

around TZS25,000,000 (USD11,435).

The TCRA said it reminded service providers last October of the requirement to put in place legal and technical measures to safeguard against the use of their networks in sending spoofed messages and to immediately block them.

Following an investigation carried out in mid-December, which also included an SMS spoofing test, the authority said the country's operators were still not complying with statutory regulations.

In a statement on its website signed by director general Dr. Ally Y. Simba, the TCRA noted that Airtel,

Halotel, Smart, Tigo and Zantel have "failed, neglected and refused" to heed its directive to ensure a secure connectivity environment and protection mechanism against information security threats.

As well as being warned that they were in breach of the Electronic and Postal Communications Regulations 2011, the operators were ordered to put in place measures for a secure environment that will prevent spoofed messages and related security threats in their networks. They were also fined TZS25,000,000, and face the threat of further legal action should they continue to be in non-compliance.

LTE-APro in Namibia



Namibian operator MTC has claimed a first in

Africa with a 4.5G trial. During a closed session held in mid-April attended by the country's president Dr. Hage Geingob, MTC worked with Huawei to demonstrate 4.5G or LTE-AdvancedPro. Compared to 4G, the vendor says 4.5G has much better network performance in terms of bandwidth, capacity and latency, and will allow for speeds of up to 1Gbps over mobile and latency of less than 10 milliseconds. It adds that 4.5G will be better for developing the IoT with its ability to support up to 100,000 connections per cell.

PCCW MEF certified



PCCW Global has become the world's

first service provider to receive MEF 100G CE 2.0 certification for E-Line and E-Access services. The Metro Ethernet Forum says certification represents a milestone for the industry, as the previous upper limit for CE 2.0 services certification was 10G per second. PCCW Global's newly certified service is based on network equipment supplied by Huawei which is one of the first six technology vendors to offer 100G CE 2.0 certified equipment.

Congestion awareness



Ireland-based BSS specialist Openet says

it has deployed the world's first 3GPP RAN Congestion Awareness Function (RCAF) for a tier 1 North American operator. The unnamed telco is using the solution to help intelligently manage and reduce congestion across all its networks. Openet's *Congestion Management Solution* will act as an RCAF, enabling the operator to receive notifications from network probes, detecting those subscribers who are contributing most to cell site congestion.

Cable system to connect Angola and Brazil



Angola Cables and NEC

will build the southern hemisphere's first subsea fibre optic cable to link Africa and South America.

The USD160m *South Atlantic Cable System (SACS)* will connect Luanda to Fortaleza in Brazil 6,200km away. From there, it can join the 17,800km *America Movil Submarine Cable System-1 (AMX-1)* which stretches to Miami, enabling Africa to connect directly to the USA.

It's claimed the system will feature the latest optical technologies to provide the most advanced submarine telecoms system. It will also be integrated with a control plane based on SDN technology to serve

bandwidth-intensive applications.

SACS will have an initial design capacity of 40Tbps (100Gbps x 100 wavelengths x four fibre pairs) and is expected to go live by mid-2018. Angola Cables says it will enable high-speed and large capacity international data transmissions, and also help to boost global trade and growth in both continents.

"Our main objective is to improve the quality of communications between Africa and the Americas," says company CEO António Nunes. "[We will create] a totally new route in the south hemisphere, providing term and peak capacity product offerings and support for the region's

expanding data requirements of today and for tomorrow."

The project will be partially co-funded by the Japan Bank for International Cooperation and Sumitomo Mitsui Banking Corporation with the support of Nippon Export and Investment Insurance through the Banco de Desenvolvimento de Angola.

Founded in 2009, Angola Cables' core business is selling capacity in international circuits for voice and data through submarine cables connecting Africa to Europe and the Americas, and also between South America and North America. It also runs a data centre in Luanda which hosts the Angonix, Angola's largest IXP.

VimpelCom begins to virtualise networks



VimpelCom plans to build a complete virtual network infrastructure providing 4G, 3G and 2G mobile data services to customers across five markets in 2016.

It will use ZTE's virtual Evolved Packet Core (vEPC), and started implementing the technology in Laos and Kyrgyzstan in February. Following these markets, the operator plans to introduce fully virtualised networks in Uzbekistan, Armenia, and Tajikistan during the course of the year.

Once virtualised, ZTE says VimpelCom's operations in the five countries will move from a legacy-

heavy network made up of separate elements to a common, software-driven and lean infrastructure.

VimpelCom Group CTO Yogesh Malik adds: "The reinvention of the current network to one that is software-driven and asset-light plays an important part in our digital transformation, and is a leap forward in bringing the digital world to customers as they navigate their digital lives."

In separate news, ZTE has helped AIS, Thailand's largest mobile operator, migrate 38 million customers from their existing home location registers to a new platform.

Before going live with the system, ZTE says its *Universal Subscriber Profile Platform (USPP)* was fully vetted in a series of strict proof-of-concept tests conducted with AIS.

This included overloading protection capabilities with up to nine times normal traffic, simulating a 30 per cent packet loss in IP network transmission, repeated plugging/unplugging and switching of single board computers and hard disks, and other "extreme" tests and verifications.

According to ZTE, its *USPP* simultaneously supports all GSM and UMTS subscribers, and "smoothly" achieves VoLTE and VoWiFi services.

Energy and communications both powered from space



TerniEnergia will use Ka-band satellite technology

from Avanti Communications to provide high-speed broadband connectivity to its photovoltaic renewable energy plants in South Africa.

Part of the Italeaf Group, TerniEnergia claims to be Italy's first smart energy company operating in the renewables and efficiency market.

It will use Avanti's satellite service to provide high-speed broadband connectivity to its solar power plants

in Paleisheuvel in the Western Cape, and Tom Burke in the Northern Province. The sites cover a huge area ranging from 195 to 240 hectares, and are being constructed for an unnamed major Italian utility firm.

TerniEnergia has deployed a VPN using Avanti's *HYLAS 2* satellite which offers complete coverage of South Africa. It will deliver high-speed internet connectivity that will facilitate vital data exchanges between the photovoltaic plants,



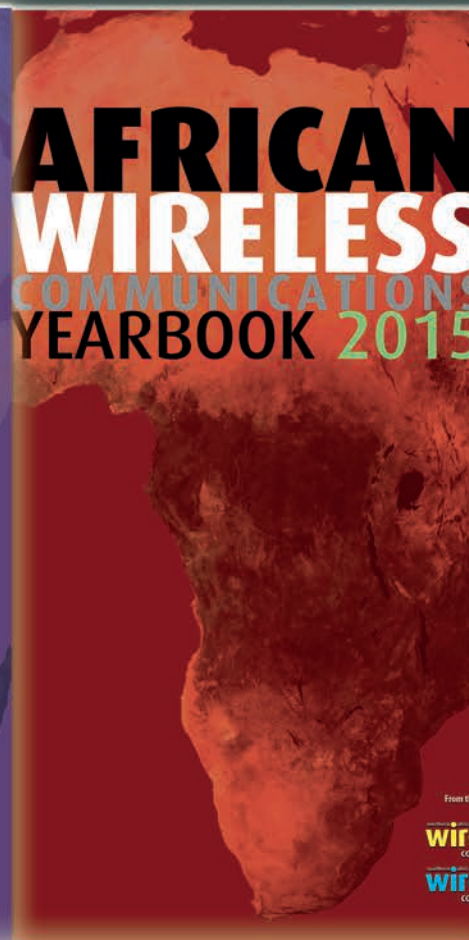
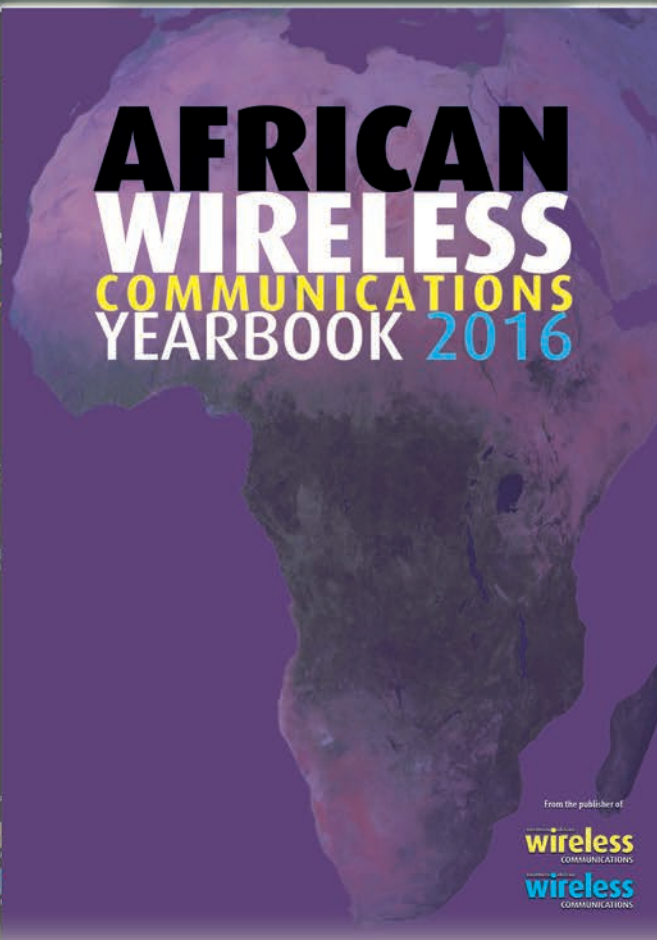
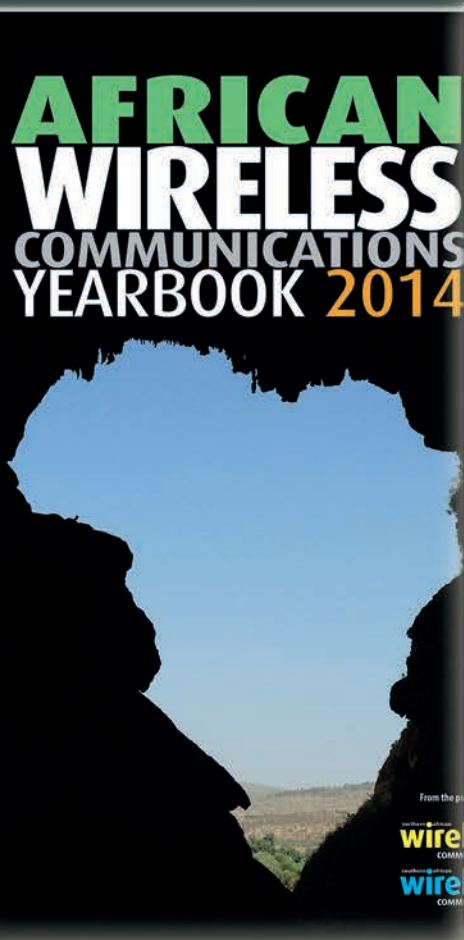
TerniEnergia builds huge photovoltaic plants, such as this 70 hectare site in the Lanuvio municipality near Rome.

whilst providing operational support and remote reporting capability.

Avanti adds that its service will ensure IP traffic remains secure and encrypted from end to end.

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