

For communications professionals in the southern Asian region

SOUTH ASIAN WIRELESS COMMUNICATIONS

Q2 2018

Volume 11 Number 2

- Latest innovations for critical comms
- Wireless users: connecting the transport sector
- How artificial intelligence will help CSPs



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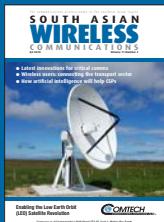
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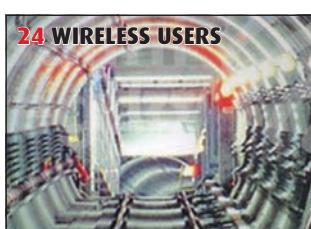
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BS-1 makes history for Bangladesh and SpaceX

SpaceX has successfully launched Bangladesh's first communications satellite. The mission represents a milestone not only for the Asian country but also for SpaceX's innovative use of reusable launch rocket stages.

Built by Thales Alenia Space (TAS) for the state-owned Bangladesh Communication Satellite Company Limited, *Bangabandhu Satellite-1 (BS-1)* was launched on board a Falcon 9 from the Kennedy Space Centre, Florida, on 11 May.

The full chemical propulsion satellite uses TAS' upgraded *Spacebus 4000B2* platform and is expected to have a mission life of at least 15 years.

BS-1's payload includes 14 C-band

and 26 Ku-band transponders to support DTH, video distribution, VSAT, broadband and trunking services. It will also support e-learning, telemedicine and remote office applications, as well as providing uninterrupted telecoms in the event of national or regional natural disasters.

From its orbital location of 119.1°E, the satellite will offer Ku-band capacity over Bangladesh and its territorial waters across the Bay of Bengal, as well as covering India, Nepal, Bhutan, Sri Lanka, Philippines and Indonesia. It will also offer C-band for the whole region.

BS-1 was the first satellite to be launched using SpaceX's *Block 5*, the final substantial upgrade to its

Falcon 9 launch vehicle. Over the last few years, the company has been striving to develop rockets that offer rapid reusability and extremely high reliability.

SpaceX says *Falcon 9 Block 5* is designed to be capable of 10 or more flights with "very limited" refurbishment.

Following separation during BS-1's launch, the rocket's first stage successfully landed on SpaceX's droneship – which is humorously named 'Of Course I Still Love You' – stationed in the Atlantic Ocean.

BS-1 was the first satellite to be launched using SpaceX's *Block 5*, the final substantial upgrade to its *Falcon 9* launch vehicle.



Intelsat to help boost wireless connectivity in Myanmar

Myanmar's Ministry of Transport and Communications (MOTC) has broadened its relationship with Intelsat to accelerate the deployment of the country's wireless communications infrastructure.

In May 2016, the ministry announced that it will utilise Ku-band services on *Intelsat 906* located at 64°E for VSAT network and cellular backhaul services, and C-band services on *Intelsat 902* which orbits at 62°E. These services are leased

from Intelsat by the government under the name *MyanmarSat 1*.

In 2019, MOTC plans to move to high power services offered by *Intelsat 39* which is scheduled to replace *Intelsat 902* at the 62°E orbital location. The satellite is due for launch in 2019 to provide broadband networking and video distribution services in Africa, Europe, the Middle East and Asia, as well as broadband connectivity for mobile users in the Indian Ocean region.

Under a new multi-year, multi-transponder agreement, the ministry will lease C- and Ku-band capacity on *Intelsat 39* which it will commercialise as *MyanmarSat 2*. By integrating satellite solutions into its own mobile networks, the government aims to dramatically increase its overall network bandwidth, speed and reliability as it expands 3G and 4G services into more remote areas. In addition, it will support the expansion

of e-government and e-banking services.

Intelsat adds that the deal will advance the expansion of affordable, high-speed broadband and internet connectivity to government agencies, businesses and communities throughout the country. It will also support and advance the MOTC's goal of ensuring that 95 per cent of its population will have access to broadband connectivity by 2022.

Singtel claims first with interconnection of mobile wallets

The Singtel Group plans to interconnect mobile wallets across different ecosystems through an interoperable platform. The first commercial launch is expected in mid-2018 between Singapore and Thailand where Singtel and AIS have obtained regulatory clearance.

The service will enable more than 1.5 million visitors travelling between the two countries each year to use the *Singtel Dash* and *my AIS* mobile money apps at more than 20,000 retail merchant acceptance points. Consumers will see transaction amounts in both foreign and home currencies before payment. Singtel says this will

Arthur Lang, CEO of Singtel's International Group, believes Asia's mobile payments scene is currently "fragmented".



help "avoid the hassle of physically carrying cash and the uncertainty of foreign exchange costs".

The company plans to progressively expand the service from the second half of 2018 to other regional associates, which include Airtel, Globe and Telkomsel, taking into

consideration the each country's regulations. It says this will enable the group's more than 590 million mobile customers to securely and conveniently pay with their mobile wallets when they travel in Asia.

Singtel adds that in the future, other mobile payment apps will be able to plug into the platform and gain access to the group's merchant and customer bases across the region.

Although some MNOs in Africa – such as Airtel, Tigo and Vodacom in Tanzania, for example – have been interconnecting their mobile money platforms for some years now, Singtel says its move

represents the first time that different mobile wallets across different markets are connected to offer seamless cross-border payments at physical merchants.

"The mobile payments scene in Asia today is fragmented with many different systems and this poses a challenge to the adoption of mobile payments," says Singtel's International Group CEO Arthur Lang. "Our vision is to unlock the growth potential of mobile payments in the region by providing customers with a convenient, seamless experience, and helping small merchants widen their reach to millions of consumers."

mu Space to bring broadband access to rural areas of Thailand

Rural communities in Thailand will soon have access to reliable broadband services delivered by mu Space Corp.

The company plans to use capacity on SES-8 and SES-12 (which has just been launched – see p9), as well as the JUPITER high throughput platform from Hughes Networks Systems to provide satellite-based broadband for telecom operators and businesses in Thailand.

Established last August, Bangkok-based mu Space is a space technology startup which aims to provide satellite services that are affordable, easy-to-install and offer widespread coverage. In the coming years, the company also plans to expand service coverage across the Asia-Pacific region by



mu Space aims to provide satellite services that are affordable, easy-to-install and offer widespread coverage in Thailand.

launching a high throughput and low latency GEO satellite.

“Our mission is to deliver nationwide and reliable connectivity to everyone in Thailand in order

to improve the quality of life of the local people,” claims mu Space founder and CEO James Yenbamroong. “As such, we have been searching for the ideal partners

to ensure that we can deliver reliable broadband services at the right price point. Together with the global experience of SES Networks and Hughes, we are confident of the high service quality that we will jointly deliver in Thailand.”

According to Thailand's telecom industry database, only 12 per cent or about 8.3 million of the country's 69 million population currently has access to broadband. As a result, the government has launched several initiatives, including a National Broadband Policy and its new ‘Thailand 4.0’ economic model in its quest to increase broadband penetration to 95 per cent of the population by 2020 and to transform the nation into an innovation-driven economy.

DAMM delivers mission-critical comms to Maldives

The Maldives National Defence Force (MNDF) will use a mission-critical communication system from Danish TETRA specialist DAMM.

The company will supply a TETRA network that will cover more than 300km² and nearly 1,200 islands, grouped in 26 atolls. The system will be used by the country's coastguard, marine corps, special forces, service corps and engineer corps for mission-critical tasks such as security and rescue operations, and border patrol.

The MNDF is responsible for defending the security and sovereignty of the Maldives. Due



to the country's location in the Indian Ocean, many of the force's activities take place at sea, making their operations expensive and logistically challenging.

With an IP65 encapsulated TETRA base station, DAMM says its offers a

system that is “ideal” for the Maldives' climate which is characterised by high heat and salty air.

The company has supplied the equipment in collaboration with its system partner Waves Group. UAE-based Waves specialises in delivering

mission-critical communications to customers in the public safety, military, transport, utilities and commercial sectors.

The company's CEO James Samuel says: “Providing a future-proof and secure mission-critical system with a low TCO was key to our customer. With its low weight and rugged design, the mast-mountable base station offers easy installation as well as low opex, and the easy remote management makes it ideal for an island country.”

Latest products for critical comms users – feature pp20-22.

Afghani ISP to deploy Isotropic's innovative broadband terminals

Neda Telecommunications has ordered 2,000 of Isotropic System's innovative broadband terminals to extend its national network in Afghanistan.

Neda was founded in 2003 as the country's first licensed ISP and then moved into wireless broadband services. It's claimed the company quickly established itself as Afghanistan's leading ISP with a presence in most major cities and plans for further rollouts.

Neda is working with Isotropic to develop self-installing, all

electronic scanning terminals to extend its single channel per carrier (SCPC) broadband capabilities for enterprise, government and consumer users nationwide.

Isotropic says it will deliver an “out-of-the box consumer web experience” for Neda that eliminates the need for skilled installation, and allows for remote repointing to alternative satellite capacity services when required. The firm says maintaining precise pointing accuracy is uniquely needed for Ka-band systems to

optimise the efficiency of the links in the service provider's network.

Isotropic has come up with a high throughput terminal that bends light to create new structures and highly adaptable form factors. It says this results in 90 per cent lower power consumption compared to conventional designs and fewer active feeds. The company adds that most importantly, the terminals are expected to be manufactured at 75–90 per cent lower cost than conventional phased-array and

flat-panel antennas.

“The innovation that Isotropic Systems provides is allowing us to install the flexibility to work with the best available capacity options at every point in time,” says Neda CTO Artem Belotski.

“[We] recognise the advancements of HTS, creating sweeping changes across the industry; our strategy is to embed Isotropic Systems technology into the network to allow ourselves the freedom to offer customers the best capacity at highly affordable pricing.”

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IoT helps to make truck tyres smart

Continental claims it is helping to make the world's roads safer with Vodafone's support through a new digital tyre monitoring platform that uses the IoT.

The *ContiConnect* platform is currently deployed in Malaysia and Thailand, as well as in North America with more markets in Asia and Europe to follow in 2018 and next year.

ContiConnect is connected to Vodafone's mobile network. Special Continental sensors continuously monitor tyre pressure and temperature data and transmit this information to a receiver unit. This then sends the data in real-time to a central web portal where a software



Fleet managers can continuously check truck tyre pressure and temperature levels from anywhere in the world using Vodafone's mobile network and *ContiConnect*.

program analyses it. It sends alerts via e-mail or SMS to fleet managers if tyre pressures or temperatures deviate

from the defined value, and suggests corrective measures where necessary.

According to Continental, the

regular data streams that are sent to the managers help them plan tyre changes and maintenance far more efficiently, improving the operational performance and lifespan of the tyres.

It adds that pressure monitoring also contributes to protecting the environment because tyres that are operated at optimum pressure save fuel and reduce a commercial vehicle's CO₂ output.

For example, the company says a tyre operating at just 80 per cent pressure uses around 0.9 litres more fuel for every 100km. Over an average distance covered of 120,000km per year, that adds up to 1,080 litres more fuel consumed for each tyre.

True promises IoT coverage across Thailand

True has proclaimed itself as an Internet of Things leader and says its narrowband network will cover Thailand in the third quarter of this year.

The telco started testing its NB-IoT network in 2016. The company claims it has conducted a study on how to find the right technology and build the "most integrated and comprehensive" ecosystem for IoT services, coupled with the "strength" of the TrueMoveH 4G+ network which offers nationwide coverage.

True says it now has NB-IoT base stations in 928 administrative districts, and that its LTE Cat-M1 IoT network is being expanded to cover the whole country later this year. The company adds that its IoT platform is strengthened by

Songtham Phianpattanawit, IoT MD at True Corporation, says more enterprises and consumers are now paying attention to using IoT technology.



partnerships with leading global players such as China Mobile, Ericsson, Huawei, OceanConnect, OneNET, amongst others.

True currently has more than 120 affiliates covering a wide range of smart services for health, home, office and lifestyle. It has also established a research community to expand knowledge to support

manufacturers, product developers as well as startups. This includes labs at 12 major universities, the Huawei Open Lab, open spaces at Siam Square, and the True Digital Park which is expected to be completed in late 2018.

Songtham Phianpattanawit, IoT MD at True Corporation, says: "From now till 2020, the global IoT market is expected to grow at an average rate of 28.5 per cent annually, and there will also be a heavy investment in a number of IoT related businesses like hardware, services and IoT network under the Thailand 4.0 policy. As a result, many sectors pay more attention to using IoT technology moving forward."

Wi-Fi project connects Philippines municipalities

More than half of the municipalities in the province of Camarines Sur in the Philippines now have free Wi-Fi access through the *Pipol Konek* project.

Launched by the Department of Information and Communication Technology (DICT) as one of its flagship projects in 2016, *Pipol Konek* is part of the government's aim of providing free Wi-Fi internet access in public places across the country.

With hotspots installed in 19 municipalities, Camarines Sur is now the province with the highest number of towns connected to the internet via Wi-Fi provided by the DICT. There are now more than 13,000 hotspots that are live nationwide under the free Wi-Fi initiative, covering public schools, universities and colleges, parks, hospitals and offices, libraries, etc.

Once fully deployed, the government says its free Wi-Fi project will serve 112,000 concurrent users with 256kbps each. It says this is deemed to be the lowest speed requirement for a 'broadband' service.

"We aim to reach out to those in the unserved and underserved areas in the country," says DICT project manager Eric Toledo. "The Department prioritises the Class 3 to 6 municipalities, followed by Class 1 to 2 municipalities and the cities."

Bharti Airtel to add one new site per hour

India's largest telecoms provider Bharti Airtel says it has "massive" network rollout plans to further expand its high-speed mobile data footprint.

As a part of its *Project LEAP* network expansion programme, the operator has been building out new infrastructure across the various telecoms circles it serves, such as in the states of Madhya Pradesh and Chhattisgarh, and Maharashtra and Goa.

In Maharashtra and Goa, Airtel says it will add more than 8,000 new sites and more than 4,200km of fibre across the states during the 2018-19 financial year. As well as increasing data capacities and

taking services deeper into rural and unconnected areas, Airtel claims the rollout equates to the addition of one new site per hour.

The company says the last fiscal year saw it deploy more than 7,000 new sites and more than 2,600km of fibre in Maharashtra and Goa, extending its mobile broadband footprint to 27,000 towns and villages. It adds that following the latest expansion, the number of its mobile sites in the region will increase to 38,000 while its fibre backbone will reach 21,600km.

"We are committed to offer our customers in Maharashtra and

Goa a seamless experience on the best smartphone network," claims Rohit Marwha, CEO Maharashtra and Goa, Bharti Airtel. "With our enhanced speeds, reach and coverage, we also aim to contribute towards the Government's vision of *Digital India*."

Airtel Maharashtra and Goa launched LTE services on 2300MHz in April 2012 and added 1800MHz in February 2017. VolTE was introduced later in the same year. Its network across the states currently covers 40,000 towns and villages via a network of 31,000 cell sites and a 17,400km fibre backbone.

SES-12 is one of the largest GEO satellites that SES has ever launched. PHOTO: SPACEX



Successful launches for SES-12 and 03b

SES has successfully launched a number of new satellites recently including SES-12 which left Earth onboard a SpaceX Falcon 9 rocket from Cape Canaveral on 4 June.

The new orbiter will join SES-8 at 95°E to meet the needs of video, fixed data, mobility and government customers across APAC and the Middle East. It will also replace and augment the services currently being provided from 95°E by SES' NSS-6, and operate under the authority of the Netherlands.

With six wide beams and 72 high throughput user spot beams, SES-12 is one of the largest GEO satellites that SES has ever launched. It was built by Airbus Defence and Space, and will use electric propulsion for orbit raising and subsequent in-orbit

manoeuvres. The spacecraft is also equipped with a Digital Transparent Processor that increases payload flexibility to provide much more customisable bandwidth solutions to customers.

In separate news announced earlier this year, SES has also successfully launched four new O3b satellites. They were sent into space via an Arianespace Soyuz rocket from Kourou on 9 March, and have joined O3b's existing constellation of 12 medium Earth orbit satellites.

This was the fourth O3b launch performed by Arianespace. The first 12 satellites were launched by three Soyuz launch vehicles in 2013 and 2014, and the company has been contracted to launch another quartet during the first half of next year.

Viettel unveils business strategy for Myanmar operations

Viettel Group has unveiled the business strategy for Mytel, its Myanmar mobile subsidiary which began operations on 9 June.

Mytel is the brand name of Telecom International Myanmar – a joint venture between Viettel Global and its two local partners, Star High Public Company and Myanmar National Telecom Holding Public. It was granted a 15-year telecom license to act as the country's fourth celco in 2016 (also see *Wireless Business*, Q117 issue).

Viettel said Mytel will be the first and only mobile network provider in the country to launch operations with 4G services available nationwide. The

company points out that this is unlike its local rivals who first launched services in big cities before expanding to smaller towns and rural areas.

In its first year of official operations, Mytel plans to build more than 7,000 4G base station sites and lay more than 30,000km of fibre.

Viettel adds that the operator is initially providing calling and texting at 50 per cent of current market rates and data at 37 per cent less. Calling will be billed in one second blocks instead of 15 or 20 second blocks.

Le Dang Dung, Viettel's deputy general director, said while Myanmar has experienced rapid

economic growth, mobile phone density in the country has remained low, creating opportunities for the telecommunications sector in general and Viettel in particular. He said that Mytel is targeting two to three million customers in 2018.

Mytel has a total investment capital of USD1.5bn, accounting for up to 66 per cent of Vietnamese-registered capital into Myanmar.

The celco will compete with state-owned MPT, which has a 42 per cent market share, Telenor which has 35 per cent, and Ooredoo which has 23 per cent.

From having the lowest mobile phone

Viettel's deputy general director Le Dang Dung said Myanmar's low mobile phone density presents opportunities for Viettel.



usage rate in the world just a few years ago, Myanmar has experienced SIM usage per capita growth from 10 per cent to 90 per cent after only three years of opening its economy. The total number of mobile subscribers in the country has risen from 600,000 to more than 16 million.

Grameenphone begins 4G roll out in Bangladesh

Grameenphone has launched 4G in selected areas of Dhaka and Chittagong, marking the beginning of its nationwide rollout of LTE services in Bangladesh.

In mid-February, the operator said 4G was now available in the Basundhara, Baridhara and Gulshan areas of Dhaka, along with Dampara, Khulshi and Nasirabad in Chittagong.

Grameenphone added that it planned to roll out its 4G network in the "fastest and widest manner" possible and cover all district headquarters in six months.

Deputy CEO Yasir Azman said: "We are working with different stakeholders to make the service affordable for our customers, starting with the launch of two co-

branded 4G-enabled smartphones."

Earlier this year, Grameenphone was granted an operating license for 4G services after it acquired 5MHz spectrum in the 1800MHz band which it says is the most suitable spectrum for LTE. The operator says it now holds the highest amount of frequencies in the 1800MHz band in Bangladesh.

Grameenphone claims this additional spectrum has placed it on a "firm footing" to provide the best 4G experience. It says technology neutrality across the company's entire spectrum will enable it to efficiently and flexibly assign voice and data services across its 900, 1800 and 2100MHz bands to offer customers an "even better" network experience.

Openet rolls out VoLTE



Sri Lanka Telecom (SLT) will work with Openet to enable control and monetisation of advanced voice services over its 4G network. As part of its plans to provide digital services to both consumer and business segments, the telco is rolling out VoLTE with the aim of enabling better quality voice and more optimal use of network resources. It has already been using a policy and charging system from Ireland-based Openet, and has now extended the use of the solution to support the VoLTE introduction.

Help with 4G phones



Bank Asia will provide micro financial support for Robi Bangladesh's customers to purchase 4G handsets. The support will be designed in a way so that women feel encouraged to buy handsets. Bank Asia and Robi recently signed an MoU which they said paves the way for them to work together in providing micro financial support to the underprivileged segment of the subscriber base. They plan to use Big Data solutions to target these subscribers.

Cambodia GDP growth



Cellcard says the rapid expansion of its 4G network across Cambodia in 2017 was a key driver for mobile data growth and in uplifting GDP. At the end of May 2018, the celco said a report published by Business2Business Cambodia highlighted a 17 per cent growth in unique mobile data subscriptions last year which could have contributed up to USD610m to the national economy. Cellcard added that the findings also revealed a 28.2 per cent growth in data customers in provincial Cambodia which coincided with its rollout of more than 3,000 new 4G sites nationwide.

Subisu builds FTTH for Nepal ultra-broadband services

Subisu will deploy a FTTH network in Nepal to provide ultra-broadband applications and services to its subscribers.

The ISP was selected by the Nepal Telecom Authority to build the FTTH network for eight districts in Province 2 in the southeastern region of the country. The new network will enable Subisu to deliver ultra-fast broadband services such as digital television, IPTV and high-speed internet up to 1Gbps.

The company will use Nokia's Gigabyte Passive Optical Network (GPON) solutions to help expand its network and reach new customers. This will also support the government's vision of providing a robust nationwide



communication backbone capable of delivering ultra-broadband services to households across the country.

Subisu CEO Binaya Mohan Saud says: "The latest technology, deployed by Nokia, will help us retain our leadership position in the market and bring down the cost of network deployment and management, which in turn will allow us to improve efficiency of the network and lower the cost of operations."

Among the products the ISP

will deploy are Nokia's 7360 Intelligent Services Access Manager FX (pictured). The vendor describes this as a high-capacity access node that simultaneously supports multiple PON technologies and high-density point-to-point services. It says the 7360 has a non-blocking backplane architecture that delivers 2x100Gb/s to each slot, 2x480Gb/s switching capacity and 160Gb/s uplink capacity.

Subisu will also use the vendor's 7368 Optical Network Terminals which are designed to deliver superior triple-play services, and can be installed indoors or outdoors for residential or business users.

Globe Telecom commissions prefab data centre from Flexenclosure

Flexenclosure has received a multi-million dollar order for its eCentre from Globe Telecom in the Philippines. The facility will be deployed on the southern island of Mindanao.

Sweden-based Flexenclosure specialises in designing and manufacturing prefabricated data centres and telecom site power systems. eCentre is a custom-designed, modular, prefabricated data centre building that can be fully pre-equipped and tested in the factory. The firm claims data centre projects that use its approach are typically five times shorter than a bricks and mortar facility.

Prefabrication of the eCentre began in early April at Flexenclosure's manufacturing plant in Vara, Sweden where it will also be tested before being shipped to the Philippines for construction on site. It is expected to be commissioned and fully operational early in the third quarter of this year.

Flexenclosure has teamed up with Malaysia-headquartered Orissa Wicomm to deliver the new facility. The company also has an office in the Philippines and will provide system integration and ongoing support



The modular eCentres are manufactured in Sweden and then built on site, such as this deployment for MTN Côte d'Ivoire.

once the site is operational.

Globe Telecom CTIO and chief strategy officer Gil Genio says: "Our new data centre in Mindanao is part of our network build to ramp up capacity and provide innovative services to our growing broadband, enterprise and consumer market

segments. Its modular architecture allows us to rapidly add infrastructure with growth."

While Flexenclosure's equipment has been deployed by service providers in Africa, Latin America and APAC, including Myanmar, this is its first project in the Philippines.

Eutelsat plans LEO satellite for IoT connectivity

Eutelsat has commissioned its first LEO (low Earth orbit) satellite.

Nano- and microsatellite specialist Tyvak International, a subsidiary of US and Italy headquartered Terran Orbital Corporation, will build the spacecraft for the operator.

Eutelsat LEO for Objects (ELO) will be used to assess the performance of low Earth orbit satellites in providing narrowband connectivity for the IoT. According to the company, low Earth orbit is particularly well-suited for this. It says LEO offers a satellite link anywhere in the world, is complementary to terrestrial IoT networks, and does not impact the cost or the energy consumption of the objects.

ELO is scheduled for launch in 2019. It will backhaul information from objects located in areas that are not served by terrestrial networks and offer redundancy on existing terrestrial network coverage.

Located on a sun-synchronous orbit between 500km and 600km in altitude, the satellite will collect data from connected objects across the globe equipped with the same omni-directional antennas already



ELO will be used to assess the performance of LEO satellites in providing IoT connectivity.

used by terrestrial IoT networks. Data will then be transmitted daily to a ground station located in the Norwegian archipelago of Svalbard in the Arctic Ocean.

Eutelsat will work with Sigfox which runs a global narrowband network dedicated to the IoT. Sigfox will analyse the spectrum used by the satellite in ISM frequency bands, and process data from objects.

ELO will also test connectivity in other frequency bands. Eutelsat hopes that the synergies developed through the partnership with Sigfox, as well as with other strategic

alliances in the telecom industry, should open up new opportunities in this fast-growing market.

"With the expansion of the Internet of Things, new services are being developed in a wide range of sectors including smart cities, the mining industry, agriculture and logistics," says Jean-Hubert Lenotte, chief strategy officer, Eutelsat. "By analysing the compatibility of LEO and connected objects, and working with recognised partners in the field, Eutelsat aims to provide an innovative solution which will meet the needs of future clients."

More action needed to advance universal broadband connectivity

Rwanda's president Paul Kagame has said Africa's economic transformation requires broadband infrastructure with an emphasis on both access and affordability.

Speaking at the Broadband Commission for Sustainable Development's 2018 Spring meeting held in Kigali in early May, Kagame said: "The reality is that all other digital services, whether in commerce or education or healthcare, run on top of broadband. Africa's size, geography and settlement patterns mean that we must rely on a variety of different technologies to deliver broadband including satellite, fibre optic and mobile."

During the two-day event, 34 commissioners – representing the broadband industry, governments



Rwandan president Paul Kagame said all other digital services run on top of broadband.

PHOTO: © ITU/M.JACOBSON - GONZALEZ

and UN agencies – convened to discuss key issues related to the role of broadband in advancing the sustainable development goals (SDGs).

Kagame told the gathering: "It is up to us to lead the way in driving

innovation both in policy and business models in order to speed up the provision of broadband where it has been slowest to reach."

Delegates also heard from the Broadband Commission's working group on vulnerable countries which issued a report on national development in four least developed countries (LDCs): Cambodia, Rwanda, Senegal and Vanuatu. It said that despite their different market environments, broadband coverage has increased notably and become more affordable for users in all four countries over the last few years.

However, the report also raises concerns that the demand for broadband and its productive use in LDCs has not matched the growing supply.

Subscriber numbers rise



China Mobile subsidiary Zong says it now has more than six million 4G customers. Around mid-May, the cellco announced that it had now launched its operations in the port city of Gwadar, a future international business hub which it claims has already seen foreign and local investment amounting to billions of dollars. Meanwhile Jazz (formerly Mobilink), reckons it has "further cemented" its position as Pakistan's leading digital communications company after announcing in early June that it now serves 55 million subscribers nationwide.

Telkomsel to use Sigma



Indonesia's Telkomsel will use a catalogue-driven OSS/BSS platform from Sigma Systems to underpin its evolving business. It will use the Canada-based vendor's Sigma Catalog system to enable the rapid creation of personalised, micro-segmented offers to customers. With more than 190 million subscribers, Telkomsel is currently the largest mobile operator in Indonesia. CIO Montgomery Hong, says: "Sigma's agile delivery methodology and product-centric approach ultimately supports Telkomsel's mission of building a *Digital Indonesia*."

MEASAT broadcasts SPI



Global media company SPI International/FILMBOX has signed a multi-year agreement with MEASAT Satellite Systems to distribute six 24 hour TV channels across the APAC region. According to MEASAT, SPI gains access to its 91.5°E hotspot which has an established video neighbourhood and "strong" affiliate base across Asia Pacific, Australia, Middle East and parts of Africa. Cable operators and DTH providers will be able to broadcast SPI's sports, documentary, movie and lifestyle channels, including a general entertainment channel that features native UHD content.

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Thousands of towers sold in India

India's tower market has seen a frenzy of M&A activity in recent months.

In April, Indus Towers and Bharti Infratel announced a merger which they claim creates the largest towerco outside China.

Indus Towers is currently jointly owned by Bharti Infratel (42 per cent), Vodafone (42 per cent), Idea Group (11.15 per cent) and Equity Partners (4.85 per cent). It operates in 15 telecom circles across India while Bharti Infratel's operations are focused on the remaining seven circles. Taken together, the two companies had more than 163,000 towers and 367,000

tenancies as at 31 March 2018.

The merged entity will change its name to Indus Towers Limited and continue to be listed on Indian stock exchanges. Bharti Airtel and Vodafone will have equal rights in the company.

The transaction will be structured with a merger ratio of 1,565 of Bharti Infratel shares for every one Indus Towers share. This gives Indus Towers an enterprise value of INR715bn (USD10.8bn).

Following completion, Indus Towers' board will comprise 11 directors of which three will be appointed by each of Bharti Airtel and Vodafone, one will be

appointed by KKR/Canada Pension Plan Investment Board, and four (including the chairperson) will be independent.

The transaction is subject to approvals from the relevant regulatory authorities and is expected to complete before the end of the financial year ending 31 March 2019.

In separate news earlier in April, Vodafone India said that it has now completed the sale of its standalone tower business to ATC Telecom Infrastructure for an enterprise value of INR38.5bn (USD592m). The deal was first publicised last November (see

Wireless Business, Q417 issue).

Following announcement of their merger in March 2017, (see *News, Q117 issue*), Vodafone India and Idea Cellular said that they both intended to sell their individual standalone tower businesses to strengthen the combined financial position of the merged company.

At the end of May, Idea confirmed that it had also completed its sale to ATC by divesting its entire stake in its 100 per cent subsidiary towerco, ICISL. The transaction was closed with an enterprise value of INR40bn (USD595m) for approximately 9,900 standalone towers.

RCom cleared to sell wireless business following Ericsson debt agreement

RCom (Reliance Communications) have started the process of settling a financial dispute that began last year.

The Swedish vendor says it is owed INR11.55bn (USD170m) from RCom and two of its subsidiaries following a seven-year managed services deal signed in 2014. Earlier in April, Ericsson filed three insolvency petitions against the operator in an attempt to recover the money.

RCom is planning to sell its wireless business to Reliance Jio Infocomm in order to reduce its debt (see *Investments, Mergers, Acquisitions table, Q118 issue*). Ericsson's petitions would have halted those plans. According to local reports, RCom was therefore keen to look at an out-of-court agreement with Ericsson.

While a quick settlement between the two companies initially looked unlikely because of uncertainty over the repayment terms, at the end of May Ericsson finally agreed to a plan whereby RCom will pay it INR5.5bn by the end of September.

The agreement paved the way for India's Supreme Court to give RCom the go-ahead to sell its wireless business to Reliance Jio Infocomm for INR250bn (USD3.85bn).

RCom announced that the court has vacated a stay on the sale of spectrum, media convergence nodes and real estate, and has ordered the National Company Law Appellate Tribunal (NCLAT) to vacate the stay on the sale of RCom's tower and fibre assets. The tribunal has complied with the order but has asked for the proceeds from the

tower and fibre sale to be deposited into an escrow account.

Telenor and Ant partner for financial services in Pakistan

Ant Financial Services Group will invest USD184.5m for a 45 per cent stake in Telenor Microfinance Bank (TMB) in Pakistan.

Under the strategic partnership, TMB will leverage Ant's technology in Alipay, which is said to be the world's largest digital payment platform, as well as other financial services to bring mobile payment and inclusive financial services to individuals as well as small and micro businesses in the country.

"Partnering with a world leading payment provider like Ant Financial will strengthen Telenor Microfinance Bank's future payment platform and set new standards in the digital banking business in Pakistan," says Telenor Group CEO Sigve Brekke.

As well as offering the Easypaisa mobile financial services platform, TMB also provides micro-finance and related financial services in Pakistan. According to the World Bank, there are currently more than 100 million people in the country who are unbanked, accounting for five per cent of the world's total unbanked population.

MyRepublic and StarHub form MVNO partnership

MyRepublic, the Singaporean company that claims to be the world's first telco powered by a proprietary cloud platform, has formed an MVNO partnership with StarHub.

MyRepublic first announced

its intentions to launch mobile services in 2015 but failed to win the license as Singapore's fourth operator in 2017. Despite that, the company remained keen to offer mobile services: "We promised that MyRepublic would bring a better kind of mobile service to Singapore, and we believe we can still do that," says CEO Malcolm Rodrigues.

The MVNO partnership deal with StarHub will benefit both companies, according to MyRepublic Singapore MD Yap Yong Teck. "Beyond having an excellent mobile network, it's important we work with an MNO partner that's well-aligned with us in terms of strategy. MyRepublic has resonated with Singapore's younger, more tech-savvy crowd, and that is where we will continue to focus with our mobility services."

In early May, the company said it expected to launch mobile services in Singapore "very soon", with details on its plans and bundles to come.

Just In Time signs alliances with FSS and EQUIIS

Sri Lankan ICT integrator Just In Time Group (JIT) is expanding its portfolio with the recent signing of two separate partnership deals.

Towards the end of March, Chennai-based Financial Software Systems (FSS) announced that JIT will provide regional banking knowhow, system integration skills, post-sales support and overall project coordination for the implementation of its products. FSS offers an integrated portfolio of digital payments platforms that can be deployed in-house, hosted

in its private data centre, or on a public cloud.

As part of their strategic alliance, FSS and JIT plan to offer a range of products in Sri Lanka, enabling banks and payment service providers to rapidly launch innovative and digital payment solutions.

Earlier in March, EQUIIS Technologies also announced a partnership with JIT. The Switzerland-based provider of secure mobile communications for enterprises says it will leverage JIT's "extensive knowledge" of targeting the financial, telecoms, government and private sectors to further develop relationships in new regions.

JIT head of sales Piumika Ranasinghe says EQUIIS brings to the group a "great understanding" of secure mobile communication technology. She adds "This partnership will strengthen our team further, and better enable us to provide cutting edge technology solutions to our customers."

Could US ban signal the end for ZTE?

The US Government has banned companies and individuals in the country from exporting products to Chinese telecoms giant Zhongxing Telecommunications Equipment Corporation, better known as ZTE.

On 16 April 2018, the US Department of Commerce's Bureau of Industry and Security (BIS) imposed a denial of export privileges in response to what it claimed was ZTE's "repeated false statements". The order prohibits any business or individual in the US to participate in any type of export transaction with

the company. ZTE reportedly spent more than USD2.3bn on imports from around 200 US companies in 2017, which includes vital components for its equipment.

According to the Department of Commerce, in March 2017 ZTE agreed to a combined civil and criminal penalty and forfeiture of USD1.19bn after "illegally shipping telecommunications equipment to Iran and North Korea, making false statements, and obstructing justice including through preventing disclosure to and affirmatively misleading the US Government".

In addition to these monetary penalties, it said ZTE also agreed a seven-year suspended denial of export privileges, which could be activated if any aspect of the

agreement was not met and/or if the company committed additional violations of the Export Administration Regulations (EAR).

The department said it now believes ZTE made false statements to BIS during settlement negotiations in 2016 and during the probationary period in 2017 related to senior employee disciplinary actions the company said it was taking. It added that the company's "false" statements only came to light after BIS requested information and documentation showing that employee discipline had occurred.

"These false statements covered up the fact that ZTE paid full bonuses to employees that had engaged in illegal conduct, and failed to issue letters of

reprimand," said US secretary of commerce Wilbur L. Ross, Jr. "Instead of reprimanding ZTE staff and senior management, ZTE rewarded them. This egregious behaviour cannot be ignored."

ZTE suspended operations following the ban. On 20 April, the company issued an online statement which said: "The Denial Order will not only severely impact the survival and development of ZTE, but will also cause damages to all partners of ZTE including a large number of US companies."

The firm said that export control compliance is regarded as the "foundation" of its operation, adding that in 2017 alone it had invested more than USD50m in its export control compliance programme with

more resources planned for 2018.

ZTE's statement continued by saying that the BIS had "unfairly imposed the most severe penalty" and that it was disregarding a number of facts. These included: ZTE self-identifying the issues in the correspondence and self-reporting them; the company having already taken measures against the employees who might have been responsible for the incident; the immediate implementation of corrective measures.

The firm said that it will not give up its efforts to resolve the issue through communication and, if necessary, through legal measures.

But even before the BIS had announced the denial of export privileges, president Donald Trump

NEW APPOINTMENTS

| Date | Name | New employer | New position | Previous employer | Previous position |
|---------|------------------------|-------------------------|--------------------------------------|------------------------|--|
| 6/3/18 | Rakesh Bhasin | CMC Networks | Chairman | Colt Group SA | CEO |
| 12/3/18 | Luis Jiménez Tuñón | Eutelsat Communications | Global EVP, data business line | Various | Technology entrepreneur & board director |
| 14/3/18 | Lars-Åke Norling | – | – | dtac | CEO – resigned. Will leave 1 Sep 2018. |
| 15/3/18 | David Sumi | Siklu | VP of marketing & product management | Proxim Wireless | SVP of engineering |
| 15/3/18 | Gerard Halimi | Siklu | VP of sales, rest of world | ECI | African market director |
| 27/3/18 | Chris Bowen | Digi International | VP of sales, EMEA | Macronix International | VP worldwide automotive & GM of Macronix Europe |
| 27/3/18 | Jean-Yves Charlier | – | – | VEON | CEO – resigned |
| 27/3/18 | Ursula Burns | VEON | Executive chairman | VEON | Chairman of the supervisory board |
| 1/4/18 | Vinod Kumar | Subex | MD & CEO | Subex | COO |
| 5/4/18 | Richard Staveley | ip.access | CEO | Stratto | Co-founder & COO |
| 6/4/18 | John-Paul Hemingway | SES Networks | CEO | SES Networks | EVP of product, marketing & strategy |
| 25/4/18 | Gisa Fuatai Purcel | CTO | Director of ICT development | CTO | Regional advisor for the South Pacific |
| 30/4/18 | Jan Frykhammar | Openet | Director | Ericsson | Special advisor to the board & to the CEO |
| 8/5/18 | Jatinder Sispal | CMC Networks | EVP of global sales | CityFibre | Head of carrier & national providers |
| 15/5/18 | Vittorio Colao | – | – | Vodafone Group | Chief executive – stepping down 1 October 2018 |
| 15/5/18 | Nick Read | Vodafone Group | Group chief executive-designate | Vodafone Group | CFO |
| 15/5/18 | Margherita Della Valle | Vodafone Group | CFO | Vodafone Group | Deputy CFO |
| 21/5/18 | Rolland Johns | CSG | CFO | CSG | Chief accounting officer |
| 31/5/18 | Maria Varsellona | Nokia Corporation | President, Nokia Technologies | Nokia Corporation | Retains her previous position as chief legal officer. Replaces Gregory Lee who is leaving. |

INVESTMENTS, MERGERS, ACQUISITIONS

| Date | Buyer | Seller | Item | Price | Notes |
|---------|----------|--------------------------|-----------------|---------|--|
| 16/3/18 | Nokia | Unium | Company | NA | Nokia has now completed its acquisition of Seattle-based Unium. The firm's specialist software is claimed to provide operators with an intelligent mesh Wi-Fi solution that constantly optimises in-home Wi-Fi connections through self-learning & self-healing capabilities. |
| 26/4/18 | Yahsat | Thuraya | Majority stake | NA | Size of stake & transaction value not disclosed. Thuraya's two satellites, which are said to serve more than 140 countries, will join the Yahsat fleet, expanding its constellation to five. It can now offer C-, Ka-, Ku- and L-band services to Africa, Middle East, Asia, Europe & South America. |
| 31/5/18 | Ericsson | European Investment Bank | Credit facility | EUR250m | Agreement will support R&D activities for 5G & is in line with Ericsson's focused business strategy. The disbursement can be made in any currency that is widely traded on forex markets, & the credit facility will mature five years after disbursement. |

looked set to intervene in the matter. In a Tweet on 13 May, he said: "President Xi of China, and I, are working together to give massive Chinese phone company, ZTE, a way to get back into business, fast. Too many jobs in China lost. Commerce Department has been instructed to get it done!"

A second Trump Tweet the next day said: "ZTE, the large Chinese phone company, buys a big percentage of individual parts from U.S. companies. This is also

reflective of the larger trade deal we are negotiating with China and my personal relationship with President Xi."

Cenerva to boost regulatory training in emerging markets

Telecoms consultancy Cenerva has acquired the Interconnect Communications Telecoms Regulatory Master Class (TRMC) training assets from InterConnect Communications, a wholly owned subsidiary of Telcordia

Technologies. Financial details of the transaction were not disclosed.

According to Cenerva, the deal will give its clients the opportunity to access courses on global best practices on a wide array of regulatory topics such as spectrum management, IoT, internet governance, etc. It said these will help regulators in regions such as Asia, Africa, Middle East, Central America and the Caribbean to develop frameworks and policies that make telecoms technology

work in their local environment. It claims this will also help enable operators to engage with regulation in a way that promotes both economic and social benefit.

Since its launch in 2000, TRMC has developed into a suite of 11 courses. These are said to have been attended by more than 2,000 students from operators and regulatory bodies from more than 60 countries. The courses have largely been held in the UK but under Cenerva they will also be run in-country.

LATEST COMPANY RESULTS

| Date | Company | Country | Period | Currency | Sales (m) | EBITDA (m) | EPS (units) | Notes |
|---------|----------------------|-------------|--------|----------|----------------|---------------|-------------|--|
| 21/3/18 | PLDT | Philippines | FY17 | PHP | 143.5 (bn) | 66.2 (bn) | (see notes) | Though 3% lower than previous year, service revenues stabilised as decline in quarterly wireless revenues moderated during 2017. Unlike 2016, when service revenues declined quarter on quarter, PLDT posted three quarters of modest sequential increases in 2017. 60% of 2017 core earnings of PHP27.7bn will be declared as dividends. |
| 17/4/18 | G+D | Germany | FY17 | EUR | 2.14 (bn) | 130m | NA | A YoY earnings rise of more than 2% means G+D (Giesecke+Devrient) exceeded the record revenue achieved in the previous year, with a rise of more than 2%. "In our four core areas – payment, connectivity, identities, & digital security – we are in the strongest position we've ever been," said CEO Ralf Wintergerst. |
| 24/4/18 | Bharti Airtel | India | 4Q18 | INR | 19,634 (crore) | 7,034 (crore) | 5.34 | Total revenues down 10.5% YoY with pre-tax profit crashing at -64.7% YoY. India revenues at INR14,796cr declined by 7.5% YoY (13.1% on reported) on an underlying basis. Africa revenues up 10.7% YoY. |
| 24/4/18 | Telenor | Norway | 1Q18 | NOR | 27,113 | 11,309 | 3.35 | Total reported revenues fell by 2% to NOK27.1bn. After a "soft start" to the year in Bangladesh & Pakistan, telco says growth picked up during the quarter & that it expects improved revenues in those markets going forward. 2.3GHz spectrum agreement signed in Thailand at end of April 2018. |
| 26/4/18 | Nokia | Finland | 1Q18 | EUR | 4.924 | NA | (0.06) | Reported net sales down compared to 1Q17 which saw EUR5.3bn. Networks division brought in reported net sales of EUR43m, an 87% fall from EUR324m reported in 1Q17. Net sales in MEA came in at EUR426m, a 6% rise from EUR403m in 1Q17. |
| 27/4/18 | Telkom Indonesia | Indonesia | 1Q18 | IDR | 32,343 (bn) | NA | 57.88 | Earnings up compared to IDR31,022 reported for 1Q17. |
| 1/5/18 | American Tower Corp. | US | 1Q18 | USD | 1,742 | 1,062 | NA | Total revenue increased 7.8% while property revenue increased 7.3% to USD1,710m. |
| 3/5/18 | StarHub | Singapore | 1Q18 | SGD | 561 | 152.2 | 0.4 | Total revenues for the quarter fell 4.7% while service revenue was 1.4% lower at SGD450.8m. Decline mainly due to lower revenue from mobile & pay TV services coupled with lower sales of equipment. |
| 14/5/18 | VEON | Netherlands | 1Q18 | USD | 2,250 | 854 | NA | On an organic basis, total revenue grew by 3.2%, driven by Russia, Pakistan, Ukraine & Uzbekistan, partially offset by continued pressure in Algeria & Bangladesh. But total group revenue & EBITDA decreased 1.4% & 0.8% respectively, mainly due to significant devaluation of Uzbek & Pakistani currencies. |
| 15/5/18 | Vodafone | UK | FY18 | EUR | 46,571 | 14.7 (bn) | 8.78 | Group revenue down 2.2% to EUR46.6bn, with earnings in MEA & APAC down 2.6% to EUR11,462m. Revenues from Vodafone India fell 20.2% from EUR5,853m in 2017 to EUR4,670m in 2018 as a result of "intense" price competition. Vodafone India now classified as discontinued operations for group reporting purposes following Idea Cellular merger. |
| 16/5/18 | Sri Lanka Telecom | Sri Lanka | 1Q18 | LKR | 19,762 | 6.1 (bn) | 0.65 | Group revenue grew YoY by 5.9%. Most of its recent investments have included expansion of the National Backbone Network, launching its new Tier 3 data centre, the SEA-ME-WE 5 undersea cable system, and establishing a new cable landing station in Matara. |
| 17/5/18 | Singtel | Singapore | FY18 | SGD | 4,326 | 1,235 | 0.17 | Record net profit of SGD5.45bn includes divestment gains from NetLink Trust. Operating revenue up 5% to SGD17.53bn. |
| 22/5/18 | Axiata Group | Malaysia | 1Q18 | MYR | 6,185 | 2,248 | (1.6) | QoQ revenue down by 6.5%. Company says "challenging 'EBITDA growth' KPI due to impact from forex volatility & start up investments in new businesses." |

Cenerva co-founder and principal consultant Professor H. Sama Nwana said: "We plan to bring high-quality, industry-ready training closer to our customers, conducting more in-house and regional courses to get to the heart of what they need to do to encourage digital transformation. These courses lay the foundation for us to expand to accommodate the growing need for training on areas like Blockchain, OTTs, Big Data and cyber security."

Linking India to Africa, Europe and the Americas

Mauritius registered IOX Cable and Angola Cables have signed a joint provisioning agreement aimed at developing and enhancing their respective network capabilities and services across India, Africa, Europe and the Americas.

By partnering with Angola Cables, IOX is said to be consolidating its position by extending its network to Europe, South America and North America for the benefit of its customers through cable systems operated by Angola Cables.

"The sharing of services between the complementing routing of the IOX Cable System and SACS will seamlessly connect customers and businesses across Asia, Africa and the Americas," said Angola Cables CEO Antonio Nunes. "This is a win-win partnership as it fuels expansion and growth for both our companies, more importantly though, it provides an information bridge that has the potential to accelerate and stimulate socio-economic investment and development between these important geographies."

Satellite capacity pricing continues to fall amidst oversupply

Satellite capacity prices have fallen for a third straight year, according to a new study published by Northern Sky Research (NSR).

In its *Satellite Capacity Pricing Index, 4th Edition (Q1 2018)* report released in mid-March, NSR revealed that on average, capacity price declines for 2016-2018 ranged from 32 to 57 per cent across various applications and regions. According to the research firm, the road ahead "appears unclear as greater supply enters the scene, demand lags in some markets and competition intensifies".

NSR stated that while operators are now deploying strategies such

as vertical specific market entry partnerships and framework agreements on discounts, these haven't stopped the impact of the widening gap in supply-demand economics. It added that this trend is exacerbated by competitive sales positioning by operators in each region. NSR reckons that despite expecting to see smaller price decreases in 2019, the industry must wait longer for them to bottom out.

"With video hotspots facing pressure from both global pricing declines and OTT opportunities for non-streaming content, along with consumer broadband over Ka-band HTS consistently in the USD150 per Mbps per month range, the chances of recovery remain uncertain," said NSR analyst and report author Gagan Agrawal. "However, with capex per Gbps for new satellites marking new lows, declining lease prices come as a blessing to service providers in data and mobility, so they can fund expansion of their businesses and create mini telco businesses backed by satellite in the scaling process."

Agrawal believes that the satellite operator segment is also likely to take advantage of this downstream opportunity where managed services are expected to represent 15 to 25 per cent of the entire business portfolio in the next three to four years.

Full RAN virtualisation will take a decade and could delay 5G

It will take operators ten years to achieve full virtualisation of the RAN once they begin the process, says Rethink Technology Research.

In its cloud RAN (C-RAN) deployment forecast 2017-2025, the analyst said that the move to a fully virtualised, cloud-based radio access network is being held back

mostly by the lack of interoperable standards. "This is one of the main things preventing C-RAN from happening earlier, and most shipments will not start until this has been ironed out, a process that could take another three years before shipments break the three million a year barrier," stated Rethink.

As a result, the company believes centralised and virtualised macrocells and microcells will be deployed at a CAGR of 23 per cent between 2017 and 2025. And although these will overtake new deployments of conventional cells in 2019, it said most of these deployments will still be centralised rather than fully virtualised. Once operators start to deploy RAN VNFs, usually conforming to ETSI NFV specifications, Rethink reckons there will be a sharp acceleration of growth in the number of C-RAN sites, adding that full C-RANs will remain rare until mid-2020.

"There is now a major dilemma for operators between simply using centralised RAN or going for a fully virtualised RAN," said the firm. "The former is simpler and delivers some efficiencies; the latter is very difficult and disruptive to implement, but we believe will revolutionise cellular economics."

According to Rethink, the two key barriers have been availability of fibre and the vendor "stranglehold" on the CPRI (common public radio interface). It said that this has meant most early C-RANs have had to be very localised.

"It is essential that new emerging standards, preferably from the IEEE, take hold to open up the ecosystem and accelerate adoption," said the analyst. "Operators which support full C-RAN will have a far easier, cheaper task to implement 5G."

However, the process of virtualising the RAN may delay 5G upgrades."

Rethink added that the biggest barriers to all types of C-RAN are related to fronthaul, mainly the availability of affordable, high-quality fibre and the need to use the CPRI. It claimed that the latter has been controlled by a small group of vendors that implement it in semi-proprietary ways. "This raises high barriers to entry for alternative equipment providers, such as those supported under the Facebook Telecom Infra Project, and threatens MNOs with lock-ins and high prices. It also makes many C-RANs economically non-viable because of the high cost of low latency fibre and CPRI."

IN BRIEF...



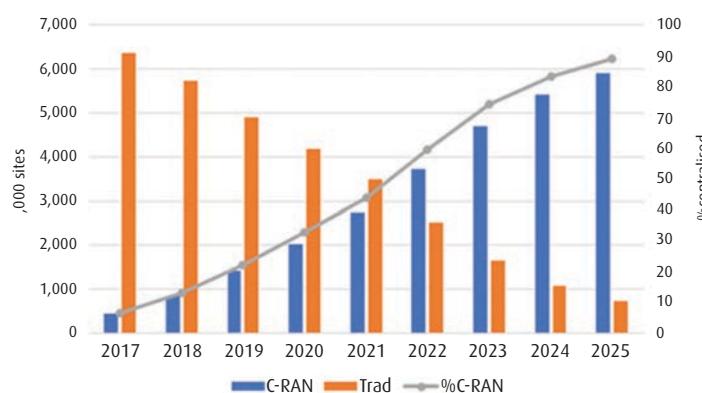
Mobile connectivity provider iPass has announced a seven figure deal with Lycamobile, claimed to be the world's largest international MVNO, to provide global Wi-Fi to its monthly plan customers. The service will be available to Lycamobile's subscribers through a white-labelled version of iPass SmartConnect which is said to provide "simple and secure" Wi-Fi access to millions of hotspots worldwide.



Global satellite services and solutions provider Marlink and engineering services company L&T Technology Services (LTTS) have partnered to deliver new IoT solutions that leverage the power of satellite networks for extended connectivity in the world's most remote locations. It's claimed LTTS' smart products and services will be reinforced by Marlink's satellite network and technology expertise through extended reach of IP connectivity for end-users worldwide.

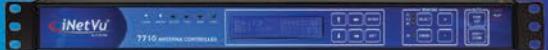


The GSM Association has halted the development of the eSIM standard. The latest version of the protocol was being conceived with a wide range of features including the option for the eSIM to be locked. However in the US, consumers would need explicit consent under specific commercial agreements with their mobile operator to do this. The GSMA said development is now on hold, and that it is cooperating fully with the US Department of Justice's investigation into the matter.



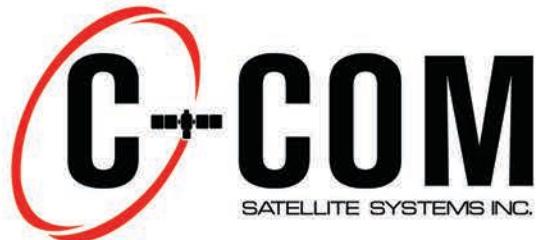
Centralised or virtualised site installed base versus traditional.

SOURCE: RETHINK RESEARCH



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Mimosa delivers “superior reliability” for urban backhaul links

Mimosa Networks reckons its *B24* is the first affordable gigabit-speed radio in the unlicensed 24GHz band.

The new device is engineered for a number of urban wireless applications including microPoP backhaul, rooftop-to-rooftop connections for enterprise, campus and multi-dwelling units, as well as video surveillance or smart city connectivity.

Mimosa says the *B24* delivers speeds of up to 1.5Gbps IP

throughput, automatically allocating traffic dynamically as needed. It claims the radio offers “superior reliability” for backhaul links of up to 3km, and leverages proprietary *Spectrum Reuse Sync (SRS)* technology. This is said to allow up to eight collocated *B24s* to share the same channel, on the same tower or rooftop, each running at 1Gbps.

For redundancy and flexibility, concurrent Ethernet and fibre

connections are supported. According to Mimosa, this is a feature that has never been available in products with similar price points.

The vendor adds that in video surveillance applications, the radio offers the “highest quality” video over a wireless backhaul. Its says the *B24*’s compact design means it can be placed at surveillance locations without fibre, thereby eliminating the cost and rights-of-way required here.



www.mimosa.co

Ruckus turns networks into single IoT platform

Ruckus reckons its recently launched *IoT Suite* enables organisations to consolidate multiple physical-layer IoT networks into a single and secure one.

It says the suite also speeds ROI and reduces deployment cost by allowing for the use of common infrastructure between the WLAN and the IoT access network.

The *Ruckus IoT Suite* consists of the company’s IoT-ready access points, such as the *ZoneFlex R510* pictured here. These accommodate Ruckus’ IoT modules to establish multi-standards wireless access for Wi-Fi and non-Wi-Fi IoT endpoints, and translate non-IP endpoint communications into IP. The modules are radio or radio-and-sensor devices that connect to the AP to enable endpoint connectivity based on standards such as BLE,



Zigbee and LoRa.

The platform also features Ruckus’s *SmartZone* controller that provides a single management interface for both the WLAN and the IoT access network. This is deployed in tandem with a virtual controller which performs connectivity, device and security management functions for non-Wi-Fi devices. It also facilitates endpoint coordination, and provides APIs for northbound integration with analytics software and IoT cloud services.

www.ruckuswireless.com

Beamforming APs deliver full benefits of Wave 2

According to Zyxel, although the 802.11ac Wave 2 standard uses offers faster speeds and better performance for more users, its MU-MIMO capabilities have been “difficult to achieve without compromising data rates”. It says the standard requires robust noise suppression capabilities, otherwise total network performance can be degraded by non-MU-MIMO clients in a group.

As a result, the company believes that early Wave 2 products “fell short” of the performance advances seen with the jump from 802.11n to the 802.11ac Wave 1 standard.

But thanks to what it describes as next-generation beamforming technology, Zyxel reckons its new *NWA1123-AC HD*, *NWA5123-AC HD* and *WAC6303D-S* APs deliver on the full potential of Wave 2 wireless networking. It adds that they enable

increased data rates not only for MU-MIMO-compatible clients, but for all existing ones as well.

The firm claims its devices deliver maximum coverage with increased data rates, and feature built-in filters to minimise interference from 3G/4G cellular networks.

The standalone *NWA1123-AC HD* supports a combined data rate of up to 1.6Gbps, as well as *NebulaFlex*, Zyxel’s licence-free cloud management system. The *NWA5123-AC HD* is a dual-radio 3x3 MU-MIMO unified AP and also offers a combined data rate of up to 1.6Gbps.

www.zyxel.com



EXFO Ontology automates network troubleshooting

EXFO has launched what it says is the industry’s first solution that automatically links performance measurements to network topology. The network test, monitoring and analytics specialist claims its new *Ontology* platform enables service degradation diagnosis in “record time”.

According to the company, CSPs have flagged the deficit of automation in service assurance applications and lack of integration of assurance across services and infrastructures as important

roadblocks on the road to network operations automation.

EXFO reckons CSPs can use *Ontology* to find the source of severe service disruptions quicker than ever, even those that arise from obscure network transmission problems that can take weeks to pinpoint and require a multidisciplinary team.

The platform’s automated common cause analysis module uses insights from EXFO’s *Xtract* network/service topology and

real-time performance analytics solutions to automate the most labour-intensive steps of the troubleshooting process. It has been designed to automatically detect KPI violations and automatically trigger a topology-driven common cause analysis of these violations. Operators then receive a list of related performance problems and their ranked possible causes.

The platform is powered by EXFO’s active graph-based topology engine. The company says this

actively tests more than 150 different protocols and services which identify affected populations of users, equipment and services.

Other key *Ontology* features include an ability to digest performance data from the analytics layer, and connect symptom sets from any performance management infrastructure. It also prioritises cause sets that widely explain the failure in the symptom set, then analyses KPI data to find root cause.

www.exfo.com

WiNDE enables fast, optimised mmWave network designs

Siklu says it's come up with a "breakthrough" software platform that automates complex mmWave network designs and accelerates time to deployment.

The gigabit wireless connectivity specialist's *SmartHaul Wireless Network Design Engine (WiNDE)* is part of the *SmartHaul SaaS* application suite that also includes financial analysis calculators and a range estimator tool.

Siklu says the suite of apps gives customers the tools they need to plan a mmWave network from a business case perspective all the way to an actual network design.

WiNDE has been developed to automate the many tasks involved in



designing a complete mmWave wireless network supporting both point-to-point and point-to-multipoint products in a mixed topology. According to Siklu, the "intuitive and easy to use" tool reduces "days of complex work and tedious details to mere hours".

The company says WiNDE features a five-step wizard that

guides a user with 40 years or 40 days of network design experience to the same "swift" conclusions.

It claims the software calculates thousands of possible designs in an iterative process to optimise the network for performance or cost. The user can specify where the wireline or fibre connections are and utilise this information to derive the optimal network design. The results are presented graphically and numerically for easy evaluation of the outcome.

Siklu says additional *SmartHaul* software tools will be announced over the course of this year.

www.siklu.com

SatixFy supports any antenna and any frequency

SatixFy UK is making some big claims about its recently launched full electronic steered multi-beam array (ESMA) antennas.

ESMA antennas use less power based on waveform duty cycle. If there is no traffic, no power will be needed from the antenna, such as in DVB S2X time slicing.

SatixFy, which describes itself as a designer of next-generation satcom chips and systems, says its scalable architecture supports any antenna size up to one million elements (in Kuband 10m x 10m), any frequency through a dedicated RFIC, any polarisation including

circular and linear simultaneously, any shape including conformal arrays, and up to 32 beams, both in receive and transmit.

The company adds that the antenna is based on fully digital beamforming technology and supports an instantaneous bandwidth of more than 1GHz, with an expected array efficiency of better than 70 per cent. ACU, self-calibration capabilities, and an on-chip trigonometric calculator are also included for what SatixFy says is fast tracking and beam steering.

With an integrated modem, the antenna supports various



operational modes such as TDD (half duplex) and FDD (full duplex). It also supports any external modem through L-band interface, but is said to be best utilised when coupled with SatixFy's current 500MHz baseband modem chips (Sx3000). www.satixfy.com

Security suite protects signalling network

Sparkle, the international service arm of Italy's TIM Group, has worked with enterprise security specialist Positive Technologies on a new and full suite of security services for signalling connectivity.

Positive Technologies says its research has shown that 4G infrastructure is vulnerable to the same attacks as older, SS7-based networks. It says critical vulnerabilities in signalling protocols (such as Diameter and GTP) along with network configuration errors provide the means for hackers

to perform attacks that can, for example, steal subscribers' data, spy on their locations, commit fraud, and perform DoS attacks.

The *Sparkle Signalling Protection Suite* is claimed to be a "sophisticated" all-in-one package that detects and blocks unauthorised traffic and therefore prevents potential privacy loss, operational instability and revenue losses.

It combines Positive Technologies' telecom security solutions with Sparkle's connectivity and roaming services, and signalling firewall. The companies say they will

provide customers with a set of advanced security services such as vulnerability testing, best practice compliance assessment, and security monitoring for real-time detection of anomalous activities.

According to the partners, all this offers complete protection of the entire signalling network perimeter, both national and international. They add that "rich" analytics and reporting capabilities will also enable mobile operators to act immediately and respond to threats in real-time. www.tisparkle.com and ptsecurity.com

Also look out for...



The compact OVAL sensor (left) can communicate over Wi-Fi to the gateway (right) from a distance of up to 150ft away.

Sensor promises to make any object or area instantly smarter

OVAL Digital has launched an all-in-one smart sensor that monitors and detects changes in motion, temperature, humidity, light and water, and quickly sends alerts to a phone or email.

Formed in 2014, the company's aim is to develop a smart sensor for everyone. It launched *OVAL 1.0* in early 2017 across 32 countries, which also included unspecified Asian nations, and said the product "worked well" in those locations. It has now developed a new sensor that is claimed to be smarter.

OVAL 2.0 can connect to smart home products such as *Amazon Echo* and *Google Home*, and also supports the IFTTT (if this, then that) web service, to connect to hundreds of other devices that provide home automation.

The system comprises small, wireless sensors that do not require home integration or installation, and are said to take only minutes to set up. These communicate to the new OVAL gateway which connects to a Wi-Fi network. Sensors can be positioned up to 150 feet away, and additional gateways can be connected to extend range.

OVAL says the latest version also uses an all new firmware system which has stepped up both the reliability and response time of the sensors, as well as increased their battery life from two months to six months.

In addition, the company has also redesigned the *OVAL* app. It reckons this now includes "powerful" new features such as a real-time view of the sensors and analytics to help users identify trends, and improve behaviours to help increase safety, conserve energy and save money.

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Looking for the future in critical comms?



Airbus demonstrates a VR solution to enable firefighters and police officers to “step into” emergency situations from remote location using secure communications infrastructure.

PHOTO © AIRBUS

RAHIEL NASIR rounds up some of the latest products to help first responders and other mission-critical users communicate in a crisis.

TETRA deployments increased globally by 16 per cent in 2017, according to data released in May by IHS Markit. The analyst attributed the growth to new TETRA users coming online as well as users in mature markets around the world continuing to refresh.

IHS said public safety accounts for around 60 per cent of all TETRA users, but added that the technology is becoming more popular with business-critical organisations, such as the transportation, utilities and industrial sectors.

The analyst also said that while some question TETRA's longevity, its presence on the world stage continues to grow, and forecasts that the technology will continue to provide mission-critical communications well into 2020 and beyond.

The TCCA (TETRA and Critical Communications Association) said that the 16 per cent increase highlighted by IHS was “well above” the average across LMR/PMR technologies, and that growth was strong in all major geographic regions, particularly Asia which saw deployments increase by 27 per cent in 2017 with airports, metro systems and other transportation hubs adopting the technology.

Francesco Pasquali, chair of the TCCA’s TETRA Industry Group, said: “The market is buoyant for TETRA, with new deployments and operators increasingly using their existing TETRA systems for new data applications to deliver significant improvements in operational efficiency. With the

assurance of TETRA being a safe and economic investment, and as dual mode TETRA/LTE terminals and infrastructure come to market, the standard has a strong and stable future.”

While plaudits for TETRA are only to be expected from the TCCA, the spotlight continues to shine more on LTE in the critical comms world. IHS Markit said that alongside the growth of LMR digital technologies, private LTE networks have emerged in a number of countries worldwide.

LTE fever

The vendors are certainly focusing on LTE if the raft of new products and innovations announced in the wake of *Critical Communications World* (CCW) that took place during mid-May is anything to judge by. For instance, Motorola Solutions has developed what it claims is a “groundbreaking” portable solution that enables first responders to establish high-speed public safety LTE coverage within minutes.

The *LXN 500 LTE Ultra Portable Network Infrastructure* is described as an easy-to-carry, miniaturised, full-power site that fits in a briefcase, backpack or vehicle. The fully functional, standalone LTE network is built on a platform that combines an eNodeB (eNB) and EPC. Motorola said it creates an on-demand LTE “bubble” with a reach of up to one kilometre which scales up to 100 subscribers. It added that with a setup and activation time of

around five minutes, first responders can use the system to instantly get the secure LTE coverage and capacity they need, anywhere and anytime.

The *LXN 500* is equipped with built-in GPS and Wi-Fi that can host software applications such as mapping, messaging and video streaming. Motorola said the equipment’s compact, IP54-rated design is made for harsh environments, and that roof-mounted external antennas with MIMO configuration provide extended range and performance.

CCW also saw the company unveil the *LEX L11* which is designed for global broadband networks and enables first responders to access secure apps for increased situational awareness.

The new device meets the MIL-STD-810G standard for drop and shock and is IP67 rated. It is equipped with a dedicated PTT and emergency button, as well as a talk group rocker switch and two programmable keys. Motorola reckons these features allow users to blindly access mission-critical capabilities while keeping their eyes up, their hands free and their focus forward.

The *LEX L11* also includes features for reduced distortion, background noise cancelling, and the suppression of feedback caused from other nearby devices using the firm’s *Howling Suppression* technology as used in its TETRA handhelds.

Meanwhile, Huawei launched what it said was an “end-to-end solution equipped with ultra-reliable multimedia communications capabilities



Above: Motorola Solutions' LXN 500 LTE Ultra Portable Network Infrastructure is a fully functional, standalone LTE network that fits in a briefcase. **Left:** the LEX L11 LTE handset is designed for use on global broadband networks.

tailored for the public safety sector". It said that the eLTE Multimedia Critical Communications System (eLTE MCCS) brings together platforms, networks and terminals to achieve comprehensive awareness of situations, multi-service collaboration, and capabilities enabling dispatching anywhere as required.

According to Huawei, the eLTE MCCS enables the creation of a unified service and closing of technological gaps by interconnecting narrowband systems, video surveillance and GIS systems through a mobile service convergence platform. It believes the eLTE MCCS will enable the gradual phasing-out of existing narrowband networks and upgrading to new networks, while maintaining provision of services and protecting the investments customers have already made in narrowband infrastructure.

The solution encompasses various series of terminals and equipment designed to be used for voice and video by individual users as well as those in vehicles. Huawei said that in consideration of the variety of conditions customers operate under, the eLTE MCCS provides differentiated network products that meet different standards such as those by 3GPP, ITU and MulteFire.

The platform is designed to add value to services on three levels.

Firstly, Huawei says its *Dispatching Anywhere* capability provides ubiquitous multimedia dispatching of voice, video and data that allows streamlining of the last kilometre in police cloud operations. It claims this enables smart policing and the agile use of resources such as cloud-delivered video and data.

Secondly, the *Comprehensive Awareness* product series includes equipment used by individual police officers, vehicle-mounted equipment, mobile control cameras, etc., that helps achieve comprehensive awareness of situations, along with a system of safeguards comprising voice, video and data. According to Huawei, synergising mobile video cloud, fixed video cloud and public social networks allows prediction of safety hazards rather than mere prevention, increases deterrence, raises efficiency, and provides trustworthy multimedia evidence for law enforcement.

Thirdly, the *Multi-Service Collaboration* solution

is said to make smooth connections among public communications networks and current narrowband trunking systems (such as P25/TETRA/DMR) possible. Huawei said that this safeguards installed base assets and allows convergence of data across different networks. It added that with eLTE MCCS, data no longer needs to be exchanged between officers repeatedly – instead, a one-off exchange with the system will suffice. The company claimed this simplifies the police's work and increases collaboration efficiency.

Converge and combine

Expway and Softil have integrated their technologies in a move that is claimed to bring to market the "most advanced" 3GPP standards-compliant end-to-end solution for mission-critical communications voice, data and video.

The new platform is built upon Softil's 3GPP standards-compliant *BEEHD* client framework and is now enhanced with support for eMBMS (evolved Multimedia Broadcast Multicast Services) capabilities via integration of Expway's LTE broadcast middleware. The partners said their mission-critical communications over LTE solution will have widespread applications in first responder networks, providing users with key eMBMS-based device features. These include mobile broadcast, group communication, PTT, push to video, file delivery and emergency alerts when using off-the-shelf and ruggedised smartphones.

With the addition of eMBMS support by Expway, Softil said *BEEHD*'s capabilities such as presence, video calling, video streaming, data sharing, and location services can now be utilised in the most efficient way over mobile data networks. It added that this is "extremely important" in high load scenarios, and that critical communication solution vendors will now be able to launch the next generation of products to help first responders handle emergency tasks "more efficiently".

Airbus showcased a number of new innovations at CCW, including a demonstration of new capabilities for its network monitoring application *Viewcor*. This can now not only check a TETRA system but also monitor the service quality of broadband networks. Airbus said this helps user organisations to



The eLTE Multimedia Critical Communications System from Huawei encompasses various terminals and equipment designed to be used for voice and video by individuals and on the go in vehicles.



Softil has teamed up with Expway to introduce what's claimed to be the "most advanced" 3GPP standards-compliant end-to-end solution for mission-critical communications voice, data and video.

control their secure group communications, whether voice or multimedia. It said that with only a glance at the computer screen, operators are able to check network coverage, capacity and the status of base stations at any time.

Operational managers can check two dissimilar networks on the same screen. They can receive information about the broadband network's service quality from user devices. *Viewcor* allows real-time monitoring and visualizes the networks on a map – for both networks together or separately. All data is fed into *Viewcor*'s analytics engine, and service reports or analyses are available after an operation.

Airbus said the application's new capability can be easily installed on top of existing narrowband network infrastructure. It also said that the solution was perfect for those who are thinking about upgrading their secure communications network with broadband services.

Last year saw the launch of Hytera's LTE-PMR Convergence Solution. It is said to include "cutting-edge" multi-mode advanced radio terminals, narrowband-broadband infrastructure, and management software.

Hytera said the platform also incorporates feature-rich broadband technologies while ensuring that critically important voice services remain reliably accessible using narrowband technologies such as TETRA, DMR, and PDT.

The company said its system enables emergency voice transmission over a narrowband network, as well as big data and video transmission over commercial or private LTE networks. The IP66 rated hardware integrates the BBU, RRU and core network, and is said to provide diverse terminal schemes as well as integrating video surveillance schemes for outdoor operations. Huawei added that the solution offers flexible deployment and can also be used to extend the coverage of a private network. It features E2E encryption between the PoC server and broadband terminals on the private network, and also supports APIs to meet individually tailored requirements.

The BBU itself supports 1+1 backup for key units, standalone mode to provide a stable service in the event of an eTC malfunction, and flexible switch over to upgrade and expand capacity. Hytera said the unit provides 150Mbps/75Mbps downlink/uplink throughout.

FEATURE: CRITICAL COMMUNICATIONS

Sticking with tradition

IHS Markit predicted that over the next few years, LTE will complement critical voice with data rather than replace LMR platforms altogether.

Hytera certainly continues to invest in more traditional critical comms technologies, and earlier this year it unveiled a DMR Tier 2 conventional radio designed for commercial users such as taxis, agricultural vehicles, delivery vans, etc. The *MD615* has a UHF range of 400 to 470MHz and a VHF range of 136 to 174MHz. It is said to offer high power and is capable of transmitting at up to 45W (UHF) or 50W (VHF).

The handset itself weighs 1,100g and measures 164 x 43 x 150mm. It features four programmable buttons and supports a channel capacity of 48 channels over three zones. The *MD615* is also equipped with an analogue and digital auto detect feature that recognises what kind of signal is being received and switches to the correct mode for audio output.

Other features include an emergency button on the front panel, a 4.6W internal speaker, audio/programming port, volume and channel controls on the front. Bluetooth capability is also built into the front panel or can be installed in the control head as a factory option, while the rear panel houses a connection port for an external GPS module. The radio is IP54 rated for protection against dust and water intrusion, as well as MIL-STD-810 G certified for shock and vibration.

Furthermore, the *MD615* supports Hytera's pseudo trunk technology which, it's claimed, enables two voice channels to be automatically assigned dynamically to allow several talk groups to communicate in the same frequency. The company says this increases the radio's capacity and enables more than two talk groups at no extra cost or frequency license.

Hytera subsidiary Sepura is also continuing to back more conventional critical comms technologies with the *SC21* which was launched in 2017 and hailed as a next-generation, high-performance, handheld TETRA radio.

According to the company, its customers had been looking for a compact radio that could be worn on a lapel or in a pocket, but had found that a smaller size often meant compromising on performance, usability or audio quality. The result is the *SC21* which is 25 per cent smaller than the *SC20* without compromising on audio quality. Sepura said the device has a "powerful" TETRA engine offering Class

3 RF transmission and "exceptional" receive sensitivity. It claimed the *SC21* allows users to continue communicating in areas where other small radios lose reception. It added that the audio capability is enhanced by unique waterporting technology which allows for superior audio clarity, even in continuous heavy rain.

New applications

As well as hardware, critical comms companies have also been busy supporting the development of specialist apps for their devices and users.

At CCW, Sepura announced its *AppSPACE* applications environment. It said this provides a more flexible approach to providing customer-specific applications, and enables firmware-independent deployment of bespoke applications that deliver added capabilities to its current generation of radios.

According to Sepura, *AppSPACE* allows rapid deployment of custom-designed solutions which meet specific end user requirements. It said this can be demonstrated in the delivery of application-based tools which automate manual processes and common critical tasks, ensuring that defined situation-based operations are enforced on the radio. Examples include radio location and geo-fencing, user health monitoring or automatic switching to emergency talk groups.

Sepura said a key feature of *AppSPACE* is its ability to support multiple applications running concurrently – whether as a background task or those which directly engage with fleet radio users. It said that alerts and notifications ensure that both user and control room maintain continual awareness of critical information.

Applications are deployed using the company's *Radio Manager* fleet management tool. Sepura said this ensures that the process is simple, and completed in a cost- and time-effective manner.

Motorola Solutions' new *Capture Mobile Camera App* has been designed to enable first responders to easily capture image, video and audio evidence using the *LEX L11* (see p21), or *Android* and *iOS*-based smartphones.

The company said that all content is securely uploaded to its *CommandCentral Vault* digital evidence management solution for storage and later use. Metadata like time, date and location is automatically applied to the captured file. Tags can also be added to the file after capture using the app, or later from within the *CommandCentral Vault*.

Motorola said that from the moment of capture, all evidentiary data is isolated from personal data, making it inaccessible for tampering by other apps. The chain of custody is established at the moment of capture, so devices do not need to be subpoenaed.

Airbus has been working with a number of different development partners to expand the range of applications that are now available for its *Tactilon Dabat* integrated TETRA radio and *Android* smartphone.

For instance, the digitalised *Triage* application from Exomi helps paramedics and other first



PHOTO: © AIRBUS

With more broadband devices now available for critical comms users, apps are becoming crucial. Sepura hopes to make their development easier with its *AppSPACE* framework (left), while Airbus has partnered with various developers to build apps for its *Tactilon Dabat* TETRA radio/smartphone.

responders in the field to send complex patient health data to the hospital. Airbus said the information can be easily shared not only via the *Tactilon Dabat*, but also on other platforms in control rooms or in the field.

Another example highlighted is *ES-Core* from Eye Solutions. This features a live video sharing function that is said to be secure and supports external video sources, such as from drones or vehicles. Airbus said that even with sparse radio coverage, transmission is of high quality. Moreover, footage can be stored as evidence or for the purpose of analysis.

Meanwhile *Steerpath* is an indoor positioning system that can be used to fill radio coverage gaps in public buildings. The app is said to create real-time situational awareness when communication groups move around, both indoors and outdoors. Based on a map configuration with a GPS function, Airbus said commanders and group members (TETRA and smartphone users) can easily follow each other on the *Dabat*'s display. It adds that no configuration is needed, and that the app works without a broadband connection.

Airbus also presented a glimpse into the future at CWC with a demonstration of a new pilot version of its real-time virtual reality technology.

For the demonstration, the company simulated a scenario with a firefighter wearing a 360° camera in a metro station. This enabled an officer at a remote command centre to virtually step into the situation.

Airbus said its VR system is based on 'Secure Mobile Virtual Network Operator' (SMVNO) infrastructure. The basic idea behind this is to provide secure and reliable broadband capacities, from network operators, to public safety agencies. In addition, SMVNO and VR features can be combined with other narrow- and broadband components from the firm's *Tactilon* product portfolio.

According to Airbus, firefighters and police officers will be able to use the solution to "effortlessly" carry out complex tasks from remote places through a secure communications infrastructure. In the future, it said VR will help firefighters or police officers to enhance their missions and enlarge their range of actions. ■

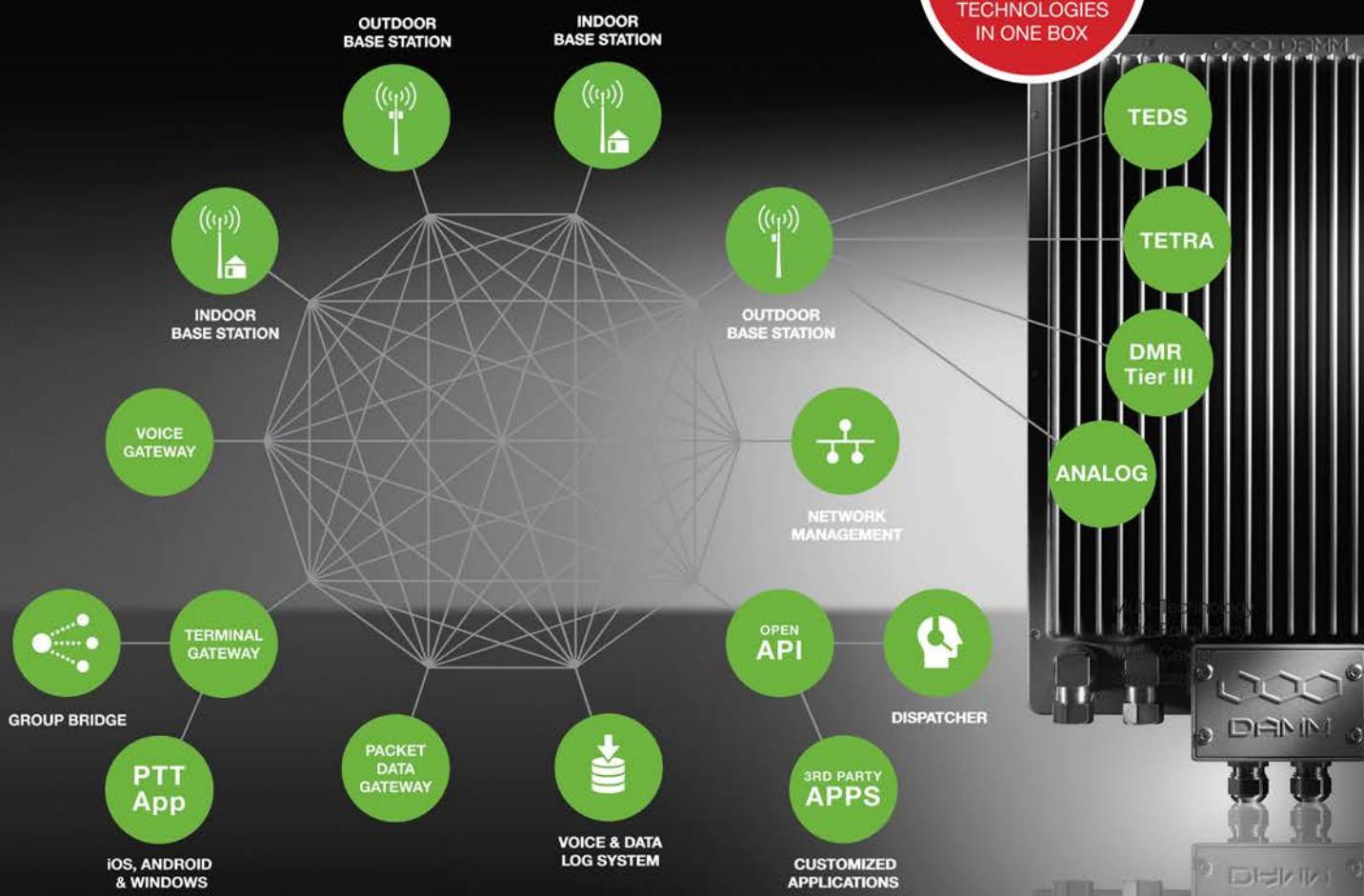


Left: launched last year, Hytera's LTE-PMR converged solution integrates the BBU, RRU and core network. Right: the MD615 DMR radio is aimed at commercial users.



4

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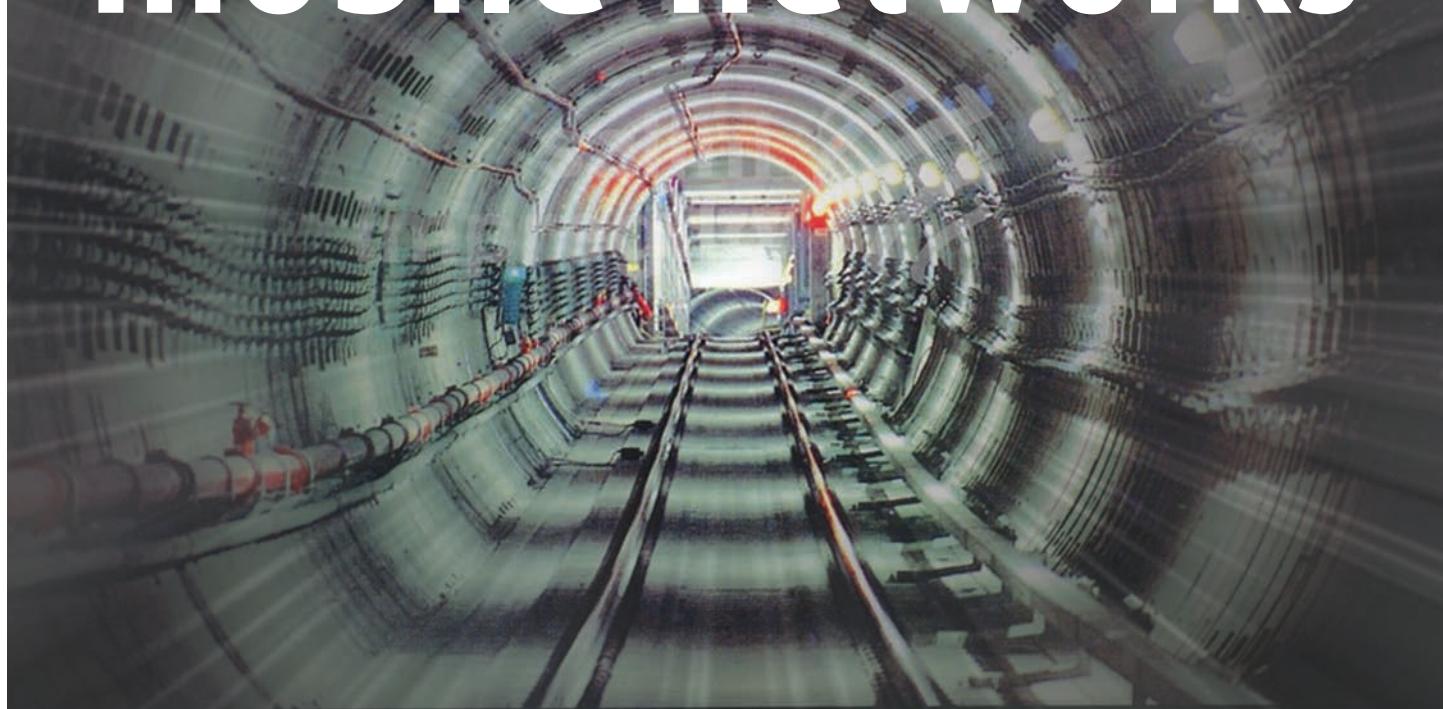
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Going places with mobile networks



Stations and tunnels such as those in Singapore's metro system are built from concrete and steel – two materials that naturally hinder mobile signals from the outside.

PHOTO: SALINI IMPREGILO

Building networks in dense public areas such as train stations and airports presents a unique set of challenges. Here's how they can be overcome.

Singapore Mass Rapid Transit (SMRT) has been carrying millions of passengers per year since it was established in 1989. The network's North-South and East-West lines (NSEWL) form the backbone of Singapore's transit system, and are the oldest and most heavily travelled routes. They are also the longest – when combined, the lines stretch for more than 85 miles.

In 2013, SMRT decided an upgrade was needed and a complex set of engineering projects were put in place to modernise the system. At the time, it was claimed that the renewal was the largest modernisation project on a live MRT system anywhere in the world.

When all the upgrade work is completed over the next few years, SMRT claims passengers will not only be served better with faster train

connections, but also with enhanced mobile communications.

The project of deploying a wireless system across the busy lines presented several challenges.

Firstly, it had to be robust enough to provide cellular communications in 18 underground stations and through miles of tunnels connecting them. But the stations and tunnels are constructed of concrete and steel – two materials that naturally hinder mobile signals from the outside.

Secondly, with millions of passengers using the trains every day, the wireless network needed to be capable of dealing with densification and high demand for connectivity.

Thirdly, it had to be flexible enough to support multiple carriers, numerous bands and the latest in mobile technology.

And finally, the transit system runs almost around the clock with just four hours every day when it is not operational. Work on the wireless system could therefore only be carried out during this short timeframe.

JMA Wireless' Teko distributed antenna system (DAS) provided the hardware solution. The modular platform comprises a main Master Unit (MU) which enables coverage for the EGSM900, DCS1800, UMTS2100, and LTE2600 bands. In addition, it supports Singapore's multiple operators such as SingTel, MobileOne, and StarHub.

Thirty-three four-band low power Remote Units (RUs) connect to the MU using a single optical fibre cable. These feature download and upload ports and are deployed across a 36 sector system. Eighteen sectors support the

tunnel while the remaining eighteen provide coverage for the underground stations. Each unit has been customised to support separate Rx and Tx ports.

In addition to the RUs, antennas and a leaky cable were also installed deployed to help enable cellular coverage in the stations and tunnels.

Two teams, which consisted of an installer, two supervisors and a safety officer from SMRT, worked on the project. The first phase of the installation took more than a year due to the limited number of hours each day the team could work on the roll out. Furthermore, their schedule depended on SMRT's schedule for each line.

Since going live in 2015, JMA says its DAS has met the mobile needs of the millions of passengers that travel on the metro each day. The first phase of the project supported 3G while phase two supported 4G. The vendor adds that the future-proof design of its system will also "easily enable" 5G when it becomes available.

Indoor connectivity boosted at Jakarta Airport

As with countries all over the world, mobile broadband is growing at a phenomenal pace in Indonesia, with increasing smartphone penetration, a surge in data traffic, and ongoing 4G/LTE investments.

That said, only 40 per cent of consumers are happy with their overall indoor connectivity experience, particularly in public spaces such as Jakarta Airport. It attracts around 50 million passengers every year, equating to many roaming subscribers in a limited space. But up until recently, they could only connect their mobile devices using an in-building antenna system designed for 2G, resulting in poor performance for 3G and LTE network users. What's more, there was a high rental fee for mobile operators such as XL Axiata who used the existing antenna ports installed at the airport.

As a result, XL Axiata installed a new system at the airport. It selected an LTE and 3G/WCDMA indoor small cell solution based on Ericsson's *Radio Dot System (RDS)* and *Micro Remote Radio Unit (mRRU)*.

According to Ericsson, RDS features an "innovative" antenna element which, together

with a distributed architecture and centralised baseband, enables the provision high performance voice and data for in-building environments such as airports. It adds that the solution was able to integrate seamlessly with XL Axiata's LTE and 3G/WCDMA network, enabling the operator to efficiently expand indoor app coverage and network capacity.

Representing the first commercial deployment of its kind in Indonesia, the two partners installed 43 *RDS* antenna points and eight *mRRU* spots in the arrivals area, as well as 53 antenna points and 14 spots in the departures lounge. The complete solution connected to the same baseband.

As a result, it's claimed overall data and voice traffic increased by up to 300 per cent throughout the terminal, highlighting a great improvement in users' indoor connectivity experience.

Furthermore, the solution utilised 118 antenna points, as opposed to the 170 needed previously. This reduced the overall rental cost to XL Axiata by 30 per cent which equates to a 23 per cent reduction in annual opex, and a 12 per cent reduction in total capex.

Comprehensive comms for metro extension in Malaysia

State-owned Prasarana is one of the largest public transport companies in Malaysia and operates bus and light metro services via its wholly owned subsidiaries, Rapid Bus and Rapid Rail.

The firm also operates the Ampang line light rail transit (LRT) system which was in severe need of an update and expansion. The aim was to extend Kuala Lumpur's public transport network to the suburbs of Puchong and Putra Heights, adding 18km of new track, 11 new stations, a control centre, a rolling stock depot, and 10 traction substations to the existing 27km railway line.

The extension project is expected to double the capacity of the network to handle more than 400,000 passengers per day, and significantly ease traffic congestion in the southwest areas of the capital.

In what it says was a first for the company, Huawei was contracted as the integrator for the telecoms systems, working closely with Selangor-based engineering firm George Kent.

To build the communications and transmission system, the vendor's *OSN3500* transmission products were deployed along the extension line to construct a 10G backbone network and deliver mission-critical services. This was coupled with Huawei's *S3700* switches which provide access to the specified services. In addition, *S5700* switches were installed to form four independent IP rings to carry non-mission-critical IP services.

This new backbone is able to interconnect and interwork with the existing transmission network using a TETRA trunk system manufactured by Sepura and provided by the integrator Comintel. This was deployed along both the original and extension lines to replace the legacy UHF-based radio system.

Huawei's IP PBX solution was implemented to provide VoIP along the original lines and extensions. The analogue telephone system used by the original line was migrated and replaced; interconnectivity was also established between the legacy analogue telephones and the new system which enabled the re-use of devices.

The company also integrated a third-party trackside telephone system that allows passengers to call customer service centres and dispatch centres with one click, and also connects to the CCTV system for recording any help calls in real-time.

The CCTV itself uses Huawei manufactured IP cameras which are installed at stations and trackside along the extension line. The cameras interconnect with the existing surveillance software platform and network video recorders used on the original line.

Other systems supplied or facilitated by the vendor include a voice recording service for the telephone and trunk radio systems, the integration of the existing PA and passenger information display services system from the original line, and the implementation of a new SCADA platform from Willowglen. The latter replaces a previous system and monitors all electrical infrastructures and power supply systems along the entire line in real-time, and even controls some of the electrical devices. Additionally, the system is able to collect alarm information from other subsystems by means of IP or dry contacts. According to Huawei, this assures comprehensive supervision.



Left: Around 50 million passengers use Jakarta Airport every year, resulting in many roaming subscribers in a limited space.

Right: Ericsson says its Radio Dot System enables the provision of high-performance voice and data for dense in-building environments.



Nok Air takes broadband to the sky in a first for Asia Pacific

Consumers expect to be connected to the digital universe everywhere they go, even at 30,000 feet when they're travelling on aircraft. With three billion passengers flying worldwide annually – meaning an average of 8.2 million people in the air each day – and six billion expected by 2032, that's a lot of potential web surfing while a mile high, says Thaicom. And, according to the Thai satellite operator, it is also an important connection for airlines looking to tap into a captive digital audience.

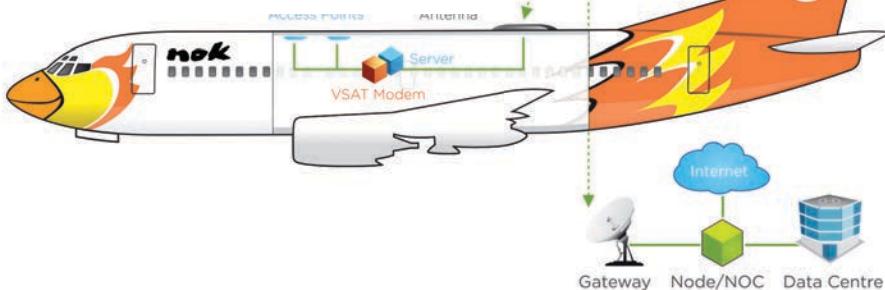
Nok Air is said to be Thailand's market-leading low-cost airline ('nok' means 'bird' in Thai). With 48,000 flights per year carrying around six million customers, it wanted to find a way to improve the passenger experience, meet growing consumer demands, show innovation, as well as increase its customer numbers. In 2013, the company decided that one way of doing this was to provide a free Wi-Fi connection on board its flights.

The following year, Thaicom claimed it had become Asia's first satellite operator to introduce a commercial in-flight connectivity service. Nok Air is using the operator's In-Flight Connectivity (IFC) broadband service which works with on-board hardware supplied by Global Eagle Entertainment.

Thaicom said its Ku-band satellite service is capable of delivering 3G-like speed for Nok Air passengers, offering download speeds of up to 8Mbps and uploads of 1Mbps (although Nok Air's website currently advertises upload rates of up to 768kbps). The service enables users to send and receive data from the aircraft, with data transmitted to and from the plane via the satellite to the ground station and back.

Nok Air's free onboard Wi-Fi service is currently available on five of its aircraft. Passengers connect to Wi-Fi via several wireless access points installed on board. Thaicom says "seamless" handovers between coverage areas are performed automatically as the aircraft moves through the air, while its NOC in Thailand

Low-cost airline Nok Air carries around six million passengers per year and many can now connect to Wi-Fi whilst in the air. Thaicom says "seamless" handovers between coverage areas are performed automatically as the aircraft moves through the air, while its NOC monitors each plane's usage to ensure reliable service.



monitors each plane's usage to ensure a reliable broadband service experience.

The company adds that scalability allows airlines to custom tailor services to their needs. The operator says its satellite broadband services cover the whole of the country while its footprint also reaches into other parts of the Asia Pacific region.

Connecting India's busiest airport

Mumbai is India's financial capital and Chhatrapati Shivaji International Airport (CSIA) therefore attracts business people who, like all consumers, expect to connect their mobile devices to a robust and reliable Wi-Fi network as they wait in departure lounges. The airport is also the country's largest and busiest. Each year, it reportedly handles 40 million passengers and one million tons of cargo.

When CSIA's owners wanted to implement a comprehensive network solution, they went looking for a platform offering differentiated wireless internet services to international and domestic passengers, staff, and visiting guests. The network also had to integrate with CSIA's existing telecoms infrastructure, and all access points and controllers had to be managed and monitored through a centralised system. Furthermore, they were looking for equipment that was lightweight, durable, and highly efficient to service a wide coverage area.

After a thorough study, site survey, and coordination with the airport's IT staff, CSIA opted for Wi-Fi equipment from Taiwan-based global wireless infrastructure specialist 4ipnet.

Several of the vendor's products were selected for deployment. They included the WHG707 GbE WLAN controller with combo SFP ports, and the OWL510 and EAP700 access points.

According to 4ipnet, the WHG707 and its built-in Service Zones feature provides differentiated wireless service for users with various needs at different parts of the airport. With Service Zones, the vendor says CSIA's IT staff can designate specific access control rules for each zone and define different user categories within each



Chhatrapati Shivaji International in Mumbai is India's biggest airport and handles around 40 million Wi-Fi hungry passengers per year.

one, creating multiple access networks (VLANs) with multiple user types. It adds that the airport's IT team is able to provide and manage differentiated services of all types, whether it be for casual internet browsing at an airport cafe, email and social media use in the boarding and waiting areas, or special access with tailored promotional content in VIP lounges.

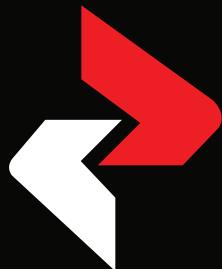
The new solution gives CSIA ownership of the network infrastructure. 4ipnet says entire Service Zones (subnets) can be leased out to telecom operators, allowing both CSIA and ISPs to inhabit the same WLAN infrastructure by residing in isolated, policy-controlled network subnets. This gives CSIA increased control over their network infrastructure, while third-party service providers can customise their own virtual network to suit their customer bases.

The WHG707 is designed to manage up to 500 4ipnet APs through a single, integrated platform. All configuration of network specifics – login portal, billing and payment settings, subnets – can be carried out from a central location. Furthermore, all user access and traffic information is monitored and logged (compliant with anti-terrorism laws.)

Meanwhile, the OWL510 is designed for long-range transmission and uses 802.11b/g WDS connections, point-to-point QoS, and AES encryption. 4ipnet says it ensures reliable and secure wireless connectivity, and that its IP68-certified metal housing keeps the device watertight, rust-resistant, and weather-proof.

The EAP700 is intended for in-wall installation, and features the 4ipWES Press-n-Connect function for "easy" WDS setup, according to 4ipnet. It says this is suitable for temporary installations or quick wireless extension through one-touch configuration and deployment.

The company reckons both APs blend "seamlessly" into the airport environment. They also feature built-in antennas and do not require an additional external one, allowing for ease of deployment and aesthetic integration with their environments. ■



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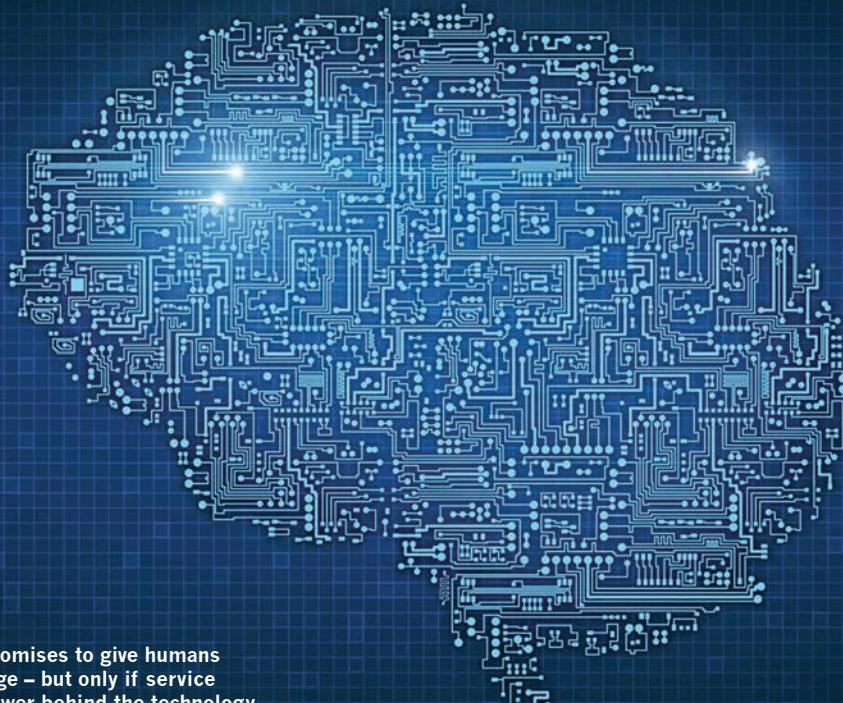


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The Internet of Everything promises to give humans unlimited access to knowledge – but only if service providers can harness the power behind the technology.

Connecting with the digital brain

How can communication service providers use artificial intelligence? MEL PRESCOTT, from analytic software firm FICO, discusses three areas where the technology could help.

According to Klaus Schwab, founder and executive chairman of the World Economic Forum, the advent of the fourth industrial revolution means that “the possibilities of billions of people connected by mobile devices with unprecedented processing power, storage capacity and access to knowledge are unlimited”¹.

This puts artificial intelligence (AI) and machine learning (ML) firmly into the spotlight within most communications service provider (CSP) boardrooms, as executives look to the technology to help improve customer experience and reduce operating expenses.²

So, where are the smart bets being placed for AI and ML to create business value?

Customer experience

Given that CSPs are generally not hugely popular with their customers compared to other industries when measured by the Net Promoter Score,³ and that a number of digital companies have created a ‘new normal’ for customer experiences, it is no surprise that many CSPs are examining how AI and ML can be deployed to improve customer interactions in areas such as marketing and sales, retention and subscriber support.

There is no doubt that ML can help CSPs take a wide range of inputs from the complex and continuous flow of data available from both network events and customer interactions. This data can

be streamed from multiple sources, capturing dynamic events from all customer channels, CRM information and the network itself in order to learn and find hidden combinations.

These insights can be used to drive the appropriate contextual action, including decisions that impact

¹ <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>

² TM Forum Trend Analysis Report, AI: The time is now, December 2017

³ <https://inform.tmforum.org/customer-centricity/2017/10/using-nps-measure-digital-success/#prettyPhoto>



Streaming processes data as it is being generated, enabling CSPs to identify risky behaviour as it occurs rather than after the event.

measures such as churn propensity and customer lifetime value.

For example, using AI & ML will enable CSPs to generate sophisticated, segmented, personalised offers in real time. These intelligent offers can fall into many categories, such as usage stimulation, loyalty programmes, device upgrades, household engagement and customer education.

Similarly, customers expect to interact with a CSP across a variety of channels, whether its directly through agent conversation, digital self-service or user communities. This is currently the most mature use case for AI, where virtual agents, chat bots and voice assistants are deployed to help automate the answer to customer queries, or even support human agents by helping them with cross-sell and upsell or making it easier to locate the required answer.

Network operations

Network operations automation is another area where AI and ML will undoubtedly be used, and it will have high impact to CSPs.

The burgeoning internet of everything (IoE) introduces unprecedented scale and velocity into how the network processes events at a level that becomes unfeasible to manage with manual processes. As SDN (software defined networks) and NFV (network functions virtualisation) become the norm, the complexity of these networks will require ML to learn how best to automate and manage the orchestration of network resources and capacity, amongst other functions, to ensure uninterrupted service availability.⁴

Operators such as Telefónica have already transitioned from a network operations centre to a service operations centre. The goal? To “maximise capacity and solve any problems before end users even notice anything”. The company adds that the aim is also to use data from the network to move from a scheduled maintenance model to one that enables predictive and proactive maintenance.⁵

Meanwhile, AT&T continues the adoption of its so-called ‘Domain 2.0’ initiative to also transition from hardware-centric to software-centric as it realises that the dynamic approach delivered by SDN and NFV results in greater flexibility

What's in the black box? Artificial intelligence comes with many challenges including trying to decipher what models that use the technology have learned and thus their decision criteria.

at a lower cost. Automating network functions provides a range of benefits to the business and facilitates an improved ability to give customers what they want. In an online article published in 2016, AT&T reportedly said that Domain 2.0 was like moving from devices to apps, adding that it had recently brought back unlimited data and that one of the reasons it was comfortable doing that was because it knew a software centric network could adapt to meet the demand.

Having the ability to analyse network data over time allows AI and ML to predict likely failures and the confidence level that failure will occur, thereby allowing for corrective action to be determined and executed. The end goal here is to combine advanced analytics with AI and allow networks to self-heal and operate autonomously.

Fraud and security

Security must be a key consideration in the advancement of AI and ML, particularly as IoT growth accelerates.

By applying streaming user and entity behaviour analytics (UEBA) that generate cyber security scores in real time, security teams can easily prioritise alerts associated with anomalous behaviours and actively respond to truly suspicious network activity. The ability to dynamically learn and adapt in real time means that fewer false positives are generated compared to more traditional, rule-based approaches.

Importantly, streaming data processes information as it is being generated rather than having latency or relying on large stores of historical log files – it allows CSPs to identify risky behaviour as it occurs rather than after the event. This is crucial for ensuring the protection of customer data and maintaining consumer trust.

As well as protecting themselves and their customers from cyber threats, CSPs are also beginning to use AI and ML to monitor CDRs (call data records) in order to learn what behaviour deviates from the norm in order to respond accordingly.

Additionally, there are substantial benefits to using AI and ML to identify fraud behaviour and take corrective action. For example, international revenue share fraud is characterised by large volumes of calls to a single destination in an attempt to artificially inflate traffic that terminates to international revenue share providers. This can be identified by examining CDRs, and instead of relying on retrospectively reviewing



**Mel Prescott,
Principal
consultant,
telecoms
practice,
FICO**

the records once the damage has been done, AI and ML can help prevent such fraud in real time.

Explainable AI

Artificial intelligence comes with many challenges, including trying to decipher what the models have learned, and thus their decision criteria. One of the major areas of exploration is ‘explainable AI’ (XAI), which attempts to crack open this ‘black box’ and explain how and why a model derives its decisions.⁷

XAI is required in regulated environments and also to build trust amongst customers and business leaders. This is especially true if CSPs are to really allow machines to make autonomous decisions around mission critical infrastructure such as network operations or security.

At the *FICO World 2018* event in April, Garry Kasparov – the chess grandmaster who was famously beaten by IBM’s *Deep Blue* computer and then went on to become an expert on human-machine collaboration – reinforced the importance of understanding how and why algorithms are making their decisions.

FICO has been pioneering XAI for more than 25 years. In our experience, we’ve seen various ways to explain AI when used in a risk or regulatory context and to crack open the black box. These include:

- Scoring algorithms that inject noise and score additional data points around an actual data record being computed. The aim here is to observe what features are driving the score in that part of decision phase space.
- Models that are built to express interpretability on top of inputs of the AI model.
- Models that change the entire form of the AI to make the latent (hidden) features exposable. With this approach, we are going to rethink how to design an AI model from the ground up, with the view that we will need to explain latent features that drive outcomes.

As communication service providers become more familiar with artificial intelligence and machine learning, and the benefits these technologies can bring to streamlining operations, they will be able to free up staff to focus on more value-added tasks. Together, people and advanced analytics can improve service, reduce churn, and keep businesses and consumers protected from criminal activity. ■

⁴ Ovum TMT Intelligence, How can AI support CSPs transformation programs? December 2016

⁵ Telefonica Integrated Report, 2016

⁶ <https://www.rcrwireless.com/20160712/fundamentals/domain-2-0-tag31-tag99>

⁷ <http://www.fico.com/en/blogs/analytics-optimization/explainable-ai-breaks-out-of-the-black-box/>



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Avanti grows in Africa with HYLAS 4

 Avanti Communications has successfully launched its third satellite for Africa. HYLAS 4 left Earth on-board an Arianespace rocket on 5 April 2018.

The satellite's payload includes 64 active Ka-band fixed beams and four steerable beams. It aims to expand capacity over East and Southern Africa along with Europe, as well as provide new capacity across West and Central Africa. Latin America can also be targeted.

HYLAS 4 will extend Avanti's coverage to 1.7 billion people across 118 countries, and support Bentley Walker's market expansion into West, Central and South Africa.

MainOne will host and manage Avanti's Gateway Earth Station (GES) at its MDXI data centre in Lagos. Avanti has already invested up to USD20m in the Nigerian gateway as it aims to ensure that services from HYLAS 4 are delivered efficiently in-country and interconnected with

other networks, ensuring access is available to enable high-speed internet everywhere, including remote and rural locations. The satellite can also support 2G, 3G and 4G backhaul services.

MDXI GM Gbenga Adegbiji says: "Our engineers have already implemented a bespoke colocation solution to support the largest GES in the region with uninterrupted power, connectivity and security to ensure 24/7/365 operations."

In a separate deal, UK-based Bentley Walker is aiming to "significantly increase" its EMEA coverage with Avanti's help. The firm plans to start service roll out across Africa utilising an initial USD1m bandwidth commitment on HYLAS 4.

Bentley Walker is said to be the largest supplier and operator of VSAT networks outside North America. According to an independent audit, the firm has so far sold and brought online more than 40,000 VSATs.

Colt and PCCW Global expand blockchain trial

 UK-based global network connectivity provider Colt Technology Services and PCCW Global, the international operating division of Hong Kong's HKT, have further progressed their blockchain proof of concept.

In March, the two companies worked with blockchain startup Clear on a trial that demonstrated how the inter-carrier settlement of wholesale international services could be automated through the use of blockchain. By using the technology, it's claimed they were able to reduce this labour intensive process from hours to minutes.

This trial used historical data as a test of the technology and its use case for the sector. The partners say they have now taken this step further by ingesting actual live data feeds into the ledger, enabling traffic to be automatically verified and settled between carriers.

Colt CEO Carl Grivner says: "Not only did the second iteration of the PoC do what was intended – accurately match and settle wholesale traffic independently with live information – but it also signals the future of telecoms, whereby previously intensive manual practices can be securely automated."

While Colt and PCCW Global are now using live data to verify and settle traffic, other members of the ITW Global Leaders' Forum (GLF) are also getting involved in the initiative. They include BT, HGC Global Communications, Telefónica and Telstra.

The two original partners say the ultimate aim is to expand their testing to encompass a multilateral series of relationships across the wholesale telecoms industry. Marc Halbfinger, PCCW Global CEO and GLF chairman, says: "Industry cooperation in this area will be incredibly powerful for the whole sector."

Vodafone and Huawei test IP microwave backhaul for 5G

 Vodafone and Huawei say they have completed lab tests indicating that traditional IP microwave links can be considered as viable technology for 5G backhaul.

The companies say because 5G networks will present new backhaul capacity, peak data rate and latency requirements, the ability of IP microwave in traditional bands to support the new technology is a positive development.

The trial tested both the capacity and latency that could be achieved using a traditional IP microwave link. Vodafone and Huawei say the tests showed that it is possible to deliver up to 2.7Gbps capacity from a single IP microwave link, aggregating 2 x 112MHz channels in a single vertical or horizontal polarisation. The companies claim this is the first time that a single RF outdoor unit has been capable of reaching more than 2Gbps in a single polarisation.

They further claim that enhancements made by Huawei engineers to the modem and RF unit enabled the team to achieve latency of as little as 50ms.

The partners now plan to test whether it is possible to achieve 4Gbps total capacity in one box with the support of dual polarisation. They say a single RF outdoor unit with dual polarisation can respond to both horizontal and vertical radio waves simultaneously. This increases the system's traffic handling capacity, dramatically reducing power consumption and halving the amount of space needed to house units providing that capacity.

The techniques mean traditional microwave should be able to support high-capacity microwave links already commercially deployed, such as E-band and Multi-Band (a combination of IP microwave and E-band technologies), in providing 5G backhaul.

Eutelsat to launch Very High Throughput Satellite

 Eutelsat Communications has commissioned a Very High Throughput Satellite system to support the development of its European fixed broadband and in-flight connectivity businesses.

KONNECT VHTS is due to enter into service in 2021 and will be built by Thales Alenia Space using its all-electric Spacebus NEO platform. The 6.3 ton satellite will deliver Ka-band capacity of 500Gbps, and it's claimed that it will also feature the most powerful on-board digital processor ever put in orbit, offering



It's claimed that KONNECT VHTS' all-digital payload will be the "most powerful" so far put into orbit.

capacity allocation flexibility, optimal spectrum use, and progressive ground network deployment.

Eutelsat has already agreed two key distribution contracts for the project. A retail partnership was signed with

Orange Group to address the fixed broadband market in European countries where it has a retail presence, while a deal with Thales will serve the connectivity services market, notably for the government sector.

Eutelsat CEO Rodolphe Belmer believes that the partnership agreements confirm the place of satellite-based solutions in the drive for enhanced high-speed internet coverage. "As a core complement to terrestrial broadband networks, high-speed broadband will be a critical driver of Eutelsat's growth from 2020 onwards. Over the next decade, VHTS satellites will bring enough capacity to serve high-speed internet and in-flight connectivity markets at scale, offering fibre-like services both in terms of price and speed."



ThinKom says its low-profile ThinAir Falcon-Ka2517 antenna eliminates aerodynamic drag.

ThinKom delivers new Ka-band systems for E-4B aircraft

The US government will use ThinKom's next-generation Ka-band aeronautical satellite antenna systems for its E-4B National Airborne Operations Centre.

With the project name *Nightwatch*, the aircraft is a specially modified Boeing 747-200B and is operated by the US Air Force. It is said to be a key component of the National Command Systems for the president, defence secretary, and the joint chiefs of staff, providing secure and "highly-survivable" global communications round the clock.

ThinKom's *ThinAir Falcon-Ka2517* fuselage-mounted phased-array antenna systems will be installed under a modernisation programme to replace the E-4B's legacy and less-efficient Ku-band ESA (electronically steered antenna) systems.

It's claimed the new system will enable more reliable and more cost-efficient higher-bandwidth voice, data and video connectivity as part of a low-profile subsystem that can exploit both military and commercial satellite assets. Installations are currently under way and the upgrades are expected to become operational by 3Q18.

ThinKom says its platform supports data rates up to 400Mbps on the forward link and 100Mbps for the return. It claims the phased-array antenna apertures are packaged in the industry's lowest-profile radome, eliminating aerodynamic drag in flight.

The company further claims that the unit's "superior" high skew angle performance ensures "highly efficient" connectivity in equatorial regions, while also being able to reliably close links along high-latitude/polar routes at elevation angles below 10°.

Jersey police cut down on paperwork with Motorola



States of Jersey Police will deploy Motorola Solutions' Pronto mobile solution as part of its new digital policing initiative, *SMARTpolice*.

Under a three-year contract, Motorola claims *Pronto* will allow officers on the island to "greatly improve" efficiency by replacing paperwork activities – such as witness statements, stop and search, and fixed penalty notices – with automated and "intuitive" digital forms on mobile devices. The system also provides mobile access to local and national databases for person and vehicle registration checks.

It's claimed Jersey's *SMARTpolice* project will enable officers to more effectively address crime, and more efficiently serve and protect the local community while reducing overall costs and budget.

This is the first deployment of *Pronto* outside mainland UK where Motorola says its mobile suite of policing apps is already used by 20 forces. Within these forces, the company says *Pronto* holds a "proven track record of generating more meaningful police engagement, simple and higher quality processes, improved collaboration as well as substantial cost reductions."



Frontline officers in one UK police force are using *Pronto*'s biometric application and can connect fingerprint scanners to their mobile devices in order to access the national database.

hiSky to offer affordable voice, data and IoT



hiSky will use its recently developed *Smartellite* satellite terminals and Spacecom's AMOS-17 to provide what it says are affordable, low-capacity voice, data and IoT services in the Middle East.

The company says its small, lightweight and portable terminals feature a built-in electronic pointing antenna that automatically locates the satellite in milliseconds. It says the system includes a compact portable satellite IoT device based on electronically steered antenna technology to provide low data rate services for various applications

such as connected vehicles, trains, the energy and agricultural sectors in remote areas, etc. hiSky adds that the secure integrated modem also includes "easy to use" management tools.

The company will use AMOS-17's Ka-band beams following its expected launch to 17°E in 2019.

"Our *Smartellite* family, together with AMOS-17, will provide significantly lower prices than the market currently offers," says Yaron Shachar, chief business officer, hiSky.

He also claims that the partnership will result in a "very appealing

alternative" in the voice and data mobile satellite services market, and especially for the IoT.

According to Jacob Keret, SVP of sales at Spacecom, AMOS-17's full digital HTS technologies will provide a wide array of service capabilities, enabling the company to combine its "classic" satellite bandwidth product offering with end-to-end communication services throughout the EMEA region. He adds: "hiSky's innovative offering is an exciting solution for applications in remote locations, for satellite on the move communications, and brings us into IoT markets."

Coal producer unearths network treasure



Shubarkol Komir JSC, said to be Kazakhstan's largest coal producer, has upgraded its IT infrastructure and mission-critical video-surveillance platform with the help of InfiNet Wireless.

The vendor's radios are now providing connectivity between 35 remote facilities that cover an area of more than 75km² within the territory of the Centralny and Zapadny open-pit coal mines.

InfiNet says its "record-breaking" *InfiLINK 2x2* point-to-point solution is providing data transfer rates of up to 70Mbps as well as rates of up to 35Mbps for point-to-multipoint subscriber units from the *InfiMAN 2x2*



The radios connect 35 remote mining facilities that cover an area of more than 75km².

portfolio. It adds that the system offers "significant room" to deliver even higher capacities well into the future using the same platform.

Shubarkol Komir uses its network for VoIP, internet and intranet access, as well as for CCTV monitoring of its industrial facilities, including

remote sites. InfiNet says all of its wireless units are guaranteed to remain fully operational even during extreme temperature ranges between -55°C and +60°C.

Furthermore, it says that the added challenge of high levels of humidity and the presence of solid dust particles that are commonly found in the air at open-pit coal mines has been eliminated thanks to its "robust" units and the use of a IP66-rated cameras for the CCTV system.

The project was implemented in conjunction with InfiNet's regional partner, Informsvyaz Kazakhstan, which is now a member of The Eurasian Group.

mmWave system trial

 Facebook and Qualcomm are working together to improve the speed, efficiency and quality of internet connectivity around the world at what's claimed to be a fraction of the cost of fibre deployments. Qualcomm will integrate its pre-802.11ay chipsets with Facebook's Terragraph technology. Their aim is to help enable manufacturers to build mmWave solutions using unlicensed 60GHz spectrum and provide FWA broadband in urban areas. The companies expect to begin trials of their integrated solution mid-2019.

Joint C-band proposal

 Intelsat and SES have agreed on a proposal for C-band frequencies (3700MHz to 4200MHz) to be shared between satellite and terrestrial mobile operators in the US. The proposal includes a framework to enable wireless operators to quickly access around 100MHz of nationwide C-band downlink spectrum to help accelerate 5G deployment. The companies say the aim is to ensure the continued and seamless distribution of broadcast services to over 100 million US households, the reliable provision of data connectivity in rural areas and emergency situations, as well as services delivered to the government.

Enabling faster development

 Chip-maker STMicroelectronics will include Sigfox's networking software in its tools that enable developers to bring their LPWAN-based products and solutions to market faster. The partnership ensures tool compatibility for STMicroelectronics' STM32 family of general-purpose microcontrollers as well as other suitable products such as the S2-LP ultra-low-power sub-GHz radio transceiver, the STSAFE-A1SX secure element that comes pre-loaded with Sigfox network keys, as well as a wide range of sensors, power and power-management devices.

GetSAT to provide US with compact satcom terminals

 In a multimillion dollar deal, the US Government will use GetSAT's satellite terminals to provide maritime and ground-based secure communications-on-the-move applications.

It will use the company's *MicroSAT* and *MilliSAT L/M* (land and maritime) micronised communications terminals. These are based on GetSAT's patented and fully-interlaced *InterFLAT* panel technology for transmitting and receiving signals on the same panel.

It's claimed the rugged terminals offer "significant savings" in size, weight and power usage. Constructed in a super-light compact installation, GetSAT says its platforms are easy to deploy and integrate, and can



GetSAT's MilliSAT and compact MicroSat (pictured) will be used by US agencies in ground and maritime applications.

be outfitted with various antenna sizes in accordance with bandwidth requirements of ground, air and marine applications. The firm further claims that its terminals feature a unique, all-in-one design that includes

a BUC and modem optimised for harsh environments, as well as "ultra-low" power consumption.

GetSAT says *MicroSat L/M* offers options for both Ka- and Ku-band, providing autonomous operation for transmitting and receiving bandwidth data rates at more than 10Mbps. It says the mid-sized terminal, which has a panel size of 248 x 135mm and weighs around 8kg (depending on option), can be hand-carried in any environment.

The *MilliSAT L/M* has a panel size of 500 x 135mm and is described as a medium lightweight (around 14kg depending on option) portable on-the-move terminal solution that also offers options for Ka and Ku.

TETRA gateway radio solution soars to success in airport emergency simulation

 Sysoco has successfully tested a TETRA gateway radio solution ahead of a planned roll-out at Lyon-Bron and Lyon Saint-Exupéry airports.

The France-based radiocommunications specialist firm took part in a rapid intervention exercise to demonstrate the synchronisation of communications between SSLIA (the aircraft rescue and firefighting service), the Fire and Rescue Service of Rhône-Alpes, and fuel company Total.

The simulation involved attending the scene of an accident between an



A Sepura SRG3900 and Colour Console in a fire command post vehicle.

PHOTO: SYSOCO

aeroplane and a fully-laden fuel tanker. It was set up to test the level of communications co-ordination between the services during an emergency.

Sysoco used Sepura's SRG3900

from the firefighter's command post vehicle as a gateway. This enabled communication in local mode between all portable radios within a one to two kilometre radius, dependent on the relief and height of the antenna on a telescopic tower.

The use of gateway radios allows Aeroports de Lyon to run a system that links the SSLIA to Saint-Exupéry airport's command post. Sysoco says the gateway solution will provide coverage into neighbouring areas of the airport and support nearby Lyon Saint-Exupéry airport thanks to the 12m high telescopic tower.

Enhanced customer service for Vipnet

 Croatian operator Vipnet is automating customer care and enhancing its network troubleshooting service with the help of Bulb Technologies.

As part of its digital transformation, Vipnet needed to replace its legacy troubleshooting systems across its mobile and fixed access infrastructure in order to enable the delivery of new services.

By using its *CEMPRESSO* platform, Bulb Technologies says the operator now has a "comprehensive" single diagnostics and troubleshooting tool

in order to automate customer care across its xDSL, FTTx, mobile, and cable access infrastructure.

The company says that over a deployment period of just four months, it implemented a customer care system that was integrated with multi-vendor infrastructure elements for fixed access, including xDSL CPEs and OSS/BSS. It says this was based on real insights from periodic performance data collected from all devices (such as cable modems, xDSL CPEs, etc.), and delivering diagnostics and remedy tools for

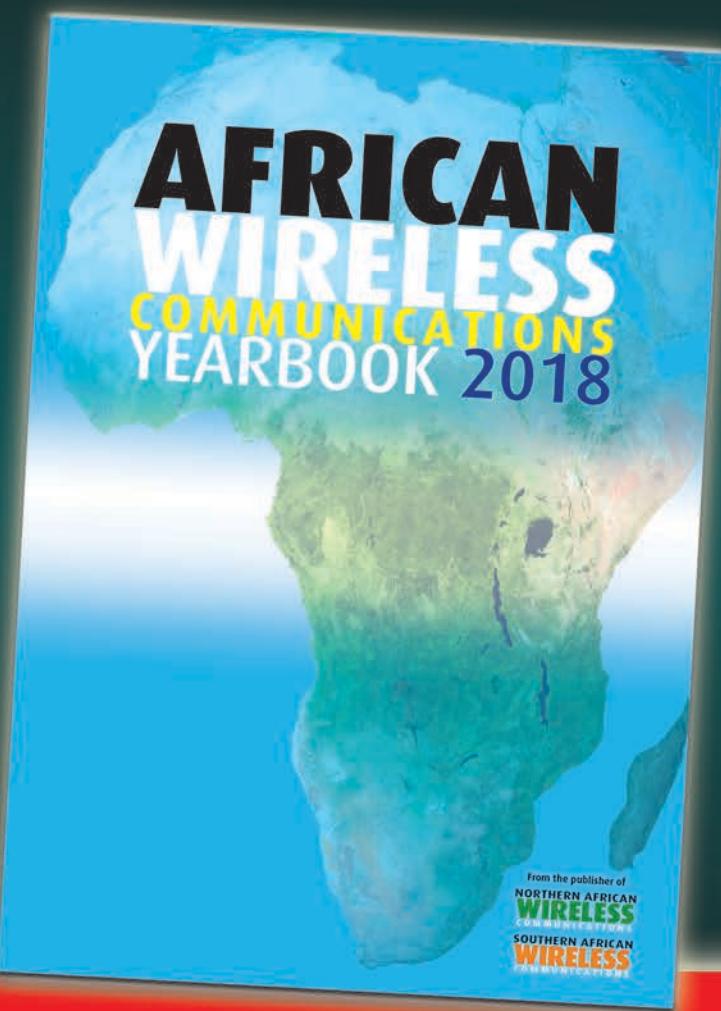
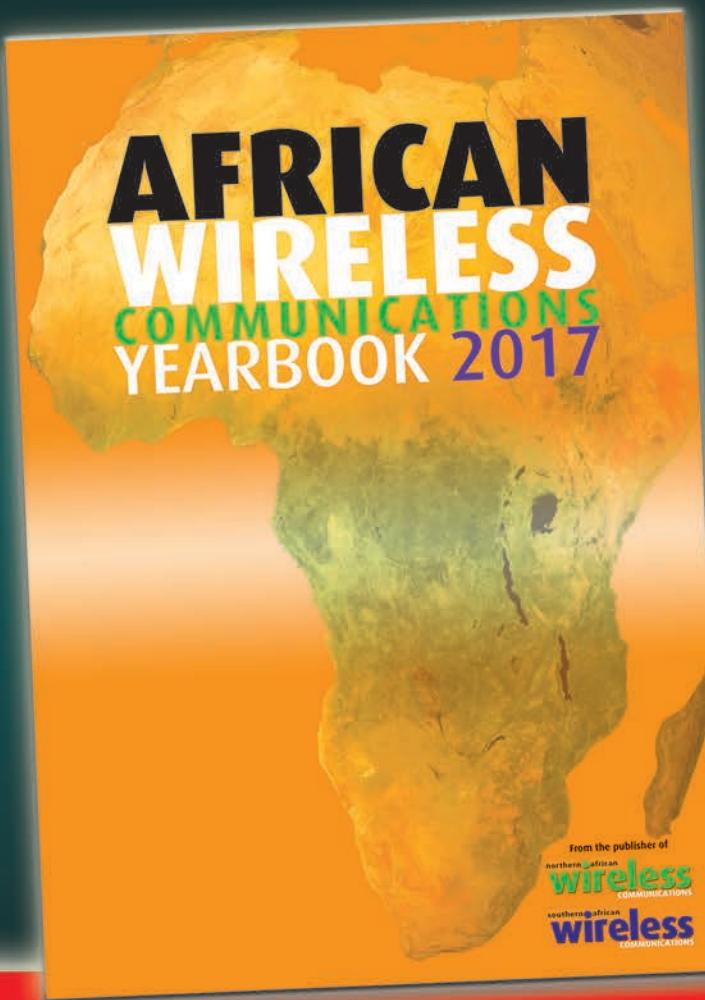
enhanced customer care.

Vipnet's chief digital officer Ivan Skender says digital transformation is no longer a "nice-to-have", but a fundamental driver for how the company's business will continue to serve, support and engage customers.

He adds: "Our ability to deliver personalised and enhanced customer service means that subscribers will now be able to interact with our service desks instantly at anytime and from anywhere through our mobile and web applications."

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