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To find out more about Flexenclosure, turn to pages 18-19.

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### PEACE project enters into cable and material manufacturing stage

The cable and material manufacturing stage has begun for the *PEACE* (*Pakistan & East Africa Connecting Europe*) subsea fibre system that will connect Asia, Africa and Europe.

*PEACE* is scheduled to go live during the first quarter of 2020. Once completed, the 200G, 16Tbps per fibre pair system will connect Pakistan, Djibouti and Kenya, with a northern expansion to Egypt and further southern expansion from Kenya to South Africa during a second phase.

The cable will facilitate connectivity from China to Pakistan via existing terrestrial cable networks, and it's claimed that it will create the shortest route from China to Europe via Africa. According to those behind the project, this network topology "substantially reduces" existing network lengths by up to 50 per cent, and will provide a "cost-effective", diverse route between the three continents. They also believe *PEACE*'s open access and carrier neutral data centres will have a "big impact" in the countries connected to the cable system.

PEACE is a subsidiary of Chinese technology and industrial giant, the Hengtong Group. It will cooperate with PCCW Global to steer the overall project which is backed by investors Tropic Science, China-



ASEAN Information Harbor, China Construction Bank, and Huawei Marine. They will use cables and materials from Hengtong Marine Cable Systems whose products have also been used in recent global projects such as *FOA* in Chile, *NaSCOM* in the Maldives, *IGW* in Peru, among others.

Hengtong and its backers say Africa has the fastest-growing youth population in the world and is a market "particularly ripe for investment" because of the rapidly growing number of internet users and increasing demand for connectivity to and across the continent. PCCW Global adds that the project also paves the way for it to collaborate with Hengtong on other regional connectivity projects as well as the establishment of smart cities across multiple continents. Towards the end of October, Orange announced that it will work with PCCW Global to land *PEACE* in France. The mobile operator said the cable will give it additional capacity between Marseille and Mombasa, therefore providing – together with the existing *EASSy* and *LION* subsea cables – boosted resilience to its voice and broadband traffic in the Indian Ocean, particularly for the islands of Réunion and Mayotte.

#### MDXI and Asteroid launch carrier-neutral IX in West Africa

Nigeria-based data centre and fibre operator MDXI has partnered with Asteroid to launch a carrier-neutral internet exchange point (IXP) for West Africa.

The West African Internet Exchange (WAF-IX) will be located in MDXI's Tier III data centre in Lagos. The partners say the WAF-IX's three major objectives are accessibility, lower costs and reduced latency for the region's internet users. It is based on what's described as Asteroid's "lean and efficient" IXP platform which, it's claimed, enables service providers to optimise the delivery of enhanced end-to-end network performance while reducing overall IP transit costs.

According to MDXI, the new



exchange will facilitate improved interconnection, collaboration and peering between players with access to its data centre, and will enable an ecosystem that allows customers to connect to multiple networks, cloud and content providers.

Vremudia Oghene-Ruemu, product manager at MDXI and peering

Asteroid CEO, Remco van Mook (left) with Vremudia Oghene-Ruemu, product manager, MDXI/peering coordinator, WAF-IX.

coordinator at WAF-IX, believes the new internet exchange will complement national IXPs, improve regional traffic, and ultimately foster the creation of digital economies across West Africa.

"Given the size of its markets and status as home to some of Africa's biggest economies, West Africa is uniquely positioned to scale up its digital transformation efforts via Internet traffic growth," says Oghene-Ruemu. "WAF-IX will enable more Africa-focused global and local carriers take advantage of the growing internet penetration to enable services originating and terminating within the region."

Asteroid CEO Remco van Mook adds that while West Africa's digital economy is on the rise, huge gaps still exist in in-country interconnection. He says: "We believe that the internet sector across West Africa has incredible potential for growth and will be greatly enabled by the WAF-IX. Together, we can provide a gateway for West African networks to peer with international content providers."



#### **ON THE NETWORK**

#### Cloud over Africa

While the mission to connect the unconnected remains vital, of equal importance is the need to keep the connected, *connected*.

Without locally relevant content, mobile network operators (MNOs) run the risk of being mere providers of a type of dumb pipe that just carries bits and bytes instead of genuinely useful applications that keep users engaged. And one of the areas that some of the big name MNOs I have spoken to struggle with here is the enterprise market.

But things are changing rapidly.

In a seemingly very short space of time, the likes of Liquid Telecom, Microsoft, Oracle, SAP, et al, are now ramping up the provision of cloud services in Africa to such an extent that experts are predicting the continent will rapidly move from a 'Cloud 1.0' model to 'Cloud 2.0'. Where 1.0 enabled organisations to focus less on infrastructure, 2.0 eliminates the need to focus on virtualisation, automation and software – instead, the emphasis is purely on data and applications. So where are the mobile

operators in all this? MNOs are by their very nature cloud platform providers and so it seems logical, at least in theory, for them to use their networks to also provide dedicated enterprise services.

But arguably, they have been held back by a lack of infrastructure, particularly fibre and data centres. Some have even invested in their own data centres. But mobile network operators are precisely that: they build and run mobile networks, not data centres, which is a step away from their core business.

So if the last couple of decades have been about building infrastructure on the ground, the next few years will be about creating services in the cloud. And mobile operators who do not rise to the challenge better watch out – the cloud specialists who are looking to deliver Africa's future have already arrived on the continent.

# Kenyan regulator reports positive outlook for ICT

The total revenue earned by mobile service providers in Kenya increased by 8.5 per cent to KES252.3bn (USD2.47bn) in the twelve months to June 2018, according to the country's Communications Authority (CA).

In its ICT sector statistic report released in mid-October, the regulator said voice is still the dominant revenue generator at 41.7 per cent. But it also pointed out that research predicts data and mobile money services are more promising revenue streams for the mobile services providers in the future. As at 30 June 2018, the number of active mobile money transfer subscriptions and agents stood at 29.6m and 206,940 respectively, while the value of goods and services transacted over mobile platforms amounted to KES1.4tn.

The number of mobile subscribers in Kenya currently stands at 45.5 million, a 13.2 per cent rise when compared to the 40.2 million recorded in June 2017. This represents a 9.1 per cent increase in penetration.



All Kenya's ICT indicators are on the up, including increased internet usage.

The CA found that satellite subscriptions have also increased significantly since the last fiscal year. The authority attributes this to its USF *School Broadband Connectivity* project which partially requires satellite technology and saw more that 800 public secondary schools connected during 2017/18.

The number of broadband subscriptions rose by three per cent to 20.5 million, up from 19.9 million recorded in 3Q18. The CA said this is due to increased 4G network rollouts as well as expansion of last mile fibre networks. By the end of June 2018, broadband penetration was at 43.9 per 100 inhabitants.

"2017/18 was a year marked with growth in all areas indicating a [prosperous] sector," said the CA. "With the growing appetite for internet in the country, the horizon is bright considering the available international bandwidth capacity of 3,277.720Gbps and the underutilisation of the same to date."

The report shows that at the end of the year on 30 June 2018, only 931.370Gbps was in use.

### Africa Mobile Networks and Intelsat partner to connect ultra-rural areas

Africa Mobile Networks (AMN) and Intelsat have teamed up in an effort to accelerate the deployment of mobile connectivity to unserved communities across multiple countries in sub-Saharan Africa.

AMN provides a network-asa-service (NaaS) solution to help mobile operators expand their networks into remote and rural areas. It funds, builds and operates the ultra-rural network for the operator, enabling them to extend their coverage with minimal opex and capex risk, grow their subscriber and revenue base, and better serve all their customers.

At the core of AMN's solution is what's claimed to be a low-cost, small cell solution that is powered by a highly reliable solar-based system that can be rapidly deployed and installed in less than six hours. As part of its long-term agreement with Intelsat, AMN will leverage



Intelsat's Jean-Philippe Gillet says bringing mobile connectivity to the most rural parts of Africa requires hybrid networks.

what it describes as "the power, performance and efficiencies" generated by the company's *EpicNG* high-throughput satellites, as well as its 23 other satellites that cover the continent. AMN reckons this will provide the optimal balance between coverage and high-throughput for the enabled sites.

Once installed, the sites will connect over the Intelsat fleet to the core of the mobile operator's network and deliver 2G services with the ability to upgrade the base stations to 3G and 4G according to data demand. Intelsat believes that bringing mobile connectivity to the most rural parts of Africa requires hybrid networks and innovative business models to truly close the business case. Jean-Philippe Gillet, the company's VP and GM of broadband, says: "By investing in and partnering with AMN, we can rapidly, and cost effectively expand an MNO's reach and deliver critical connectivity to communities who many thought were impossible to connect."

AMN CEO Michael Darcy adds: "Intelsat shares our view that mobile coverage is not spreading quickly enough and as such, invested in AMN's vision of installing a cell site in every African village. Together, we can accelerate the deployment of mobile connectivity and work to ensure that communities, wherever they are located, have equal access to high quality, sustainable and affordable broadband connectivity."

# ICOSNET selects Tejas optical products for global connectivity

ICOSNET is using Tejas Networks' Converged Packet Optical (CPO) products to serve the growing demand for its high-speed internet access and VPN offerings in Algeria.

The ISP has deployed the Indiabased vendor's *TJ1400* converged broadband access and optical aggregation platform at multiple POPs in Algeria as well as in its international exchanges in London and Madrid.

ICOSNET CTO Ahmed Zerkouk says: "Over the past twelve months, we have been experiencing a dramatic rise in internet and VPN traffic in our network that is driven by a faster adoption of higher-speed Fast Ethernet and Gigabit Ethernet connections by our enterprise customers."

Zerkouk says the *TJ1400* is designed to "seamlessly" scale and will address ICOSNET's escalating capacity demands in a flexible and 'pay-as-you-grow' manner. "Moreover, as an MEF-certified CE2.0 compliant product, *TJ1400* is purpose-built to carry SLA-driven premium and mission-critical enterprise data traffic with carrierclass availability and performance."

Tejas claims its "unique" platform combines high-capacity PTN/OTN-based packet optical transmission with high-speed GPON-based fibre broadband in a dense and power-efficient chassis. Sanjay Nayak, the company's CEO and MD, adds: *"TJ1400* is a best-inclass product that is ideally suited for service providers like ICOSNET that operate in high-growth telecom markets since it can deliver high-quality internet access and business connectivity services in a scalable and cost-efficient manner."

Founded in 1999, ICOSNET is a full-service operator holding ISP, VoIP and WiMAX licenses. It is said to have a large customer base that includes several Algerian companies as well as multinational groups established in the country. According to Tejas, the company offers a "comprehensive" suite of telecoms services that broadly covers connectivity, unified communications, data centre hosting and related business solutions.



Tejas says its TJ1400 packet optical platform will address ICOSNET's escalating capacity demands in a flexible and 'pay-as-you-grow' manner.

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### SatADSL and Avanti partner to launch commercial Ka-band service

SatADSL claims it will bring costeffective broadband coverage to communities and businesses in sub-Saharan Africa following the launch of its commercial Ka-band service.

Utilising Avanti's HYLAS-4 high throughput satellite, SatADSL says it will provide connectivity that ISPs will be able to "easily" offer to customers via its *Cloud-based Service Delivery Platform* (*C-SDP*). The company says this includes VNO and voucher-based services that are not currently available via other Ka-band offerings in the region.

SatADSL says its aim is to "significantly improve" the penetration of high capacity internet in the region, offering connectivity

in regions barely covered by mobile operators and where fibre access remains unavailable. The new services are expected to be fully up and running by the end of this year. The company's COO and co-

founder Caroline De Vos says: "Providing fast, reliable and affordable connectivity is at the heart of what we do, and our latest solution empowers ISPs in Africa to cost-effectively provide satellite broadband to entire communities."

According to SatADSL, C-SDP provides a complete OSS/BSS, carrier-grade, fully redundant platform to deliver satellite services via the cloud, eliminating the expense of deploying physical infrastructure. It reckons the PaaS solution enables satellite and teleport operators to readily offer any service, including pre-paid, post-paid, volume-based, customer VNOs, contention-based, multicasting, and more, independently of the communications technology used.

#### UBA launches WhatsApp chat banking with Clickatell

In what's been hailed as a "first for Nigeria", United Bank for Africa (UBA) has launched its *Leo* chat solution on *WhatsApp*. It's claimed customers can now conduct their banking activities in a "secure and convenient" manner by communicating with UBA in a verified chat.

The bank has enabled this by using the Transact system from authorised WhatsApp Business Solution provider, Clickatell. The system includes the vendor's .Control chat platform which has been integrated with the WhatsApp business API. Clickatell says .Control allows banks to roll out commonly used banking activities like checking balances, money transfer and purchasing digital products and services across popular communication channels like USSD and now WhatsApp. Additional channels are planned for 2019.

It also claims that the platform

offers flexibility, reliability, fraud and risk management for banks, as well as a convenient on demand banking capability for consumers wherever they are.

Austine Abolusoro, group head of UBA online banking, says: "United Bank for Africa is a technology-driven institution with vast knowledge in the business that we do. *Leo*, being a tested, dependable and intelligent personality, will replicate on *WhatsApp* the success it has experienced on the *Facebook Messenger* platform. It is a solution that is from the customer's standpoint, easy to use by anyone regardless of demography."

According to Clickatell, Nigeria is recognised as "ground zero" for global financial inclusion with a rapid accelerating move from the informal economy to the formal sector. Citing a Central Bank of Nigeria survey from 2016, it says 46.9 million people in Nigeria or 48.6 per cent



UBA has already been successful with chat services on Facebook Messenger and now hopes to replicate that on WhatsApp.

of the adult population are now formally served by banks or similar.

The company states: "The introduction of chat banking from Clickatell is accelerating the banking adoption curve by eliminating the business and operational overhead required to roll out convenience banking across popular communication channels and in different countries."

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# Globacom winning market share from the competition in Nigeria

Globacom was responsible for the highest number of new mobile data subscribers in Nigeria, according to recent market data from the Nigerian Communications Commission (NCC).

In its statistics for July, the regulator said the total figure of data users in the country increased to 103.67 million, up from 102.81 million during the previous month. Of the 866,656 new data users, 574,821 had signed up for Globacom's services. The operator added that this represents a 66 per cent increase from June where it recorded 26.57 million new users to July which saw 27.15 million.

Airtel came in second with 375,724 new data customers for the period, while MTN also gained with an additional 134,197 users. However, 9mobile (formerly Etisalat) lost 218,086 data subscribers.

Citing opinions from industry analysts, Globacom says its increases are linked to a "gamut of attractive and user-friendly packages" which give pre-paid and post-paid users a variety of benefits on the network. These include the recently-launched *Glo Yakata* and *Oga* SIM. While the

#### MTN to use TIP technologies

MTN plans to use network technologies developed as part of the Facebook-backed Telecom Infra Project (TIP) to connect users in ultra rural areas.

Companies such as Open Cellular, Parallel Wireless, Fairwaves, among others, have developed equipment based on TIP specifications. These have been designed to be more costeffective than traditional networking technologies.

Once MTN has selected its first TIP RAN suppliers, it will reportedly conduct two trials in Nigeria and in Zambia, with 60 cell sites in each trial. Technical evaluation will be made before the new networks are commercially launched. former offers a 2,200 per cent bonus on every NGN100 recharge and above, the latter gives 125 per cent bonus on every data subscription.

The NCC's report also showed that Globacom has maintained consistent growth in its subscriber base. Its total network subscribers were 38,169,780 at the end of 2017 but by the end of July 2018, this had grown to 40,323,154.

Airtel's came in second with a 149,880 additional customers so far recorded for 2018 giving it a current

total subscriber base of 40,048,328. However, MTN and 9mobile both lost customers within the period under review – MTN's subscriber base fell by 999,891 subscribers, while 246,221 customers walked away from 9mobile.



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#### SES supports AfricaXP

TV audiences in Nigeria will now have access to 13 new free-to-air (FTA) channels branded as PREMIUM.FREE. The bouquet's launch channels will be supplied by AfricaXP. an independent channel network, content distributor and producer which owns and operates more than 20 different themed channels supplied to major African broadcasters and African diaspora platforms worldwide. They will be delivered via SES' ASTRA 2G satellite which orbits at 28.2°E and is claimed to reach more than 9 million DTH households across West Africa. SES media subsidiary MX1 is providing the necessary ground services.

### **Telecom Egypt gives Airtel** rights to use subsea cables

Telecom Egypt has agreed to grant Airtel indefeasible rights of use on its Middle East North Africa (MENA) and TE North cable systems.

Over the years, Telecom Egypt has built a global network through investments in international submarine cables which, as well as the systems named above, also include: ALETAR, SEA-ME-WE-3, SEA-ME-WE-4, SEA-ME-WE-5, IMEWE and EIG. Egypt's location on the Red and Mediterranean seas is said to have enabled Telecom Egypt to connect

more than 11 systems from the east and 13 from the west. This has led to the creation of the so-called 'Red-Med Corridor' which comprises seven diversified routes across Egypt.

Under its agreement with Telecom Egypt, Airtel has been given the right to use fibre pairs from the MENA Cable from Egypt to India with access to Saudi Arabia and Oman, and other fibre pairs from Egypt towards Italy. In addition, Airtel will also take large capacities on a long-term basis on two new

cable systems, SMW5 and AAE-1.

"The partnership will be a good addition to our global network portfolio and provide us with a high quality and diversified new route to Western Europe and the rest of the world," says Airtel Business CEO Ajay Chitkara. "In particular, it will provide impetus to India's emergence as a major regional internet hub serving customers across the [South Asian Association for Regional Cooperation] region, with seamless global connectivity."

#### MTN Sudan applauded

The MTN Group has announced its Sudan operation as the winner of its annual 21 Days of Y'ello Care employee volunteerism programme. MTN Sudan partnered with key stakeholders to uplift small enterprises. They included an online shopping and logistics platform which created a merchant account for one of its beneficiaries that works with disabled people. offering them services for free. Another partner offered training at a discounted rate to beneficiaries for 12 months. MTN Sudan was awarded the group president and CEO prize of USD100,000. The money will go to community projects.

#### **4KUNIVERSE** launches

Ultra HD TV channel 4KUNIVERSE has just launched services across North Africa, the Middle East and Europe on Eutelsat's HOTBIRD video neighbourhood. The 24/7 general entertainment channel airs original TV series, movies, documentaries, sports and primetime programming, all in 4K HDR. It was due to commence services on HOTBIRD as from 1 November, giving it the capability of reaching tens of millions of subscribers via cable and IPTV networks.

#### Parallel Wireless to provide LTE in Ghana



It's claimed that a virtualised 4G Open RAN enables rapid deployment of wireless broadband

Parallel Wireless and Telesol are collaborating to connect citizens and businesses in Ghana with 4G wireless services

Parallel will deploy an Open RAN solution which it claims offers low cost, a small footprint and virtualised multi-technology solution to make deployments "easy and affordable" to install.

According to the vendor, its platform offers unique advantages. It features a carrier-grade Converged Wireless System (CWS) base station which, says the firm, connects to any backhaul technology available today or tomorrow. It reckons the all-in-one compact CWS maximises data and voice coverage for "superior" quality of experience for

Telesol's 4G customers. It adds that the CWS can be easily

says this enables much more costeffective networks for places where business models are challenging, and allows faster return on the network investment for operators.

The platform also includes a 2G/3G/4G/5G Wi-Fi hetnet gateway with security gateway. Parallel says this will enable Telesol to configure, optimise and automate its network, and to provide "seamless mobility for the best subscriber experience".

Christoph Fitih, the vendor's sales director for Africa believes that an Open RAN ecosystem will help eliminate the digital divide. He says: "African countries need to adopt new technologies to prevent a further marginalisation of Africa from the world economy, and to eliminate the widening of the current digital divide between Africa and the rest of the world."

installed and maintained. Parallel

#### Africa's first iDirect DVB-S2X network

Internet Solution says it has launched

Africa's first iDirect DVB-S2X network. Currently live across more than 300 sites in Nigeria, the pan-African telecoms services provider hopes the network will enable it to expand into new markets, such as finance and energy, delivering "greater" satellite throughput efficiencies to its customers. It's claimed companies will benefit from cost efficiencies as they expand their sites, presenting more opportunities for smaller companies to enter the market.

The DVB-S2X network uses an iDirect Universal Hub chassis and the iQ Desktop remote. The vendor reckons it gives Internet Solutions a "significant competitive advantage" as demand from the region's markets continues to grow.

Richardt Dannhauser, COO for Internet Solutions Nigeria, said: "We know that the reach of cheaper terrestrial connectivity increases in Nigeria daily, but these terrestrial networks are still prone to frequent and lengthy outages. [This] is why

we invested in more efficient satellite solutions that are best suited for applications like backup, retail and ATMs, at a more competitive price."

In congratulating Internet Solutions for being the continent's first provider to launch a DVB-S2X network, iDirect's SVP of global sales John Arnold said: "The timing is advantageous as the Africa market is growing and more enterprises and organisations are demanding higher performing and more efficient satellite networks to enable their operations."

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### AIRBUS



### Airbus brings professional communication to the next level

To improve the world of secure communications, Airbus has developed the Tactilon Dabat, a smartphone and Tetra radio in one. In just a few years time, hundreds of secure apps will be running on this device to make daily work easier for police, rescue teams, and security personnel in Africa.

Policemen and security experts know the situation: After a theft or robbery, investigators must hear witnesses and, if necessary, evaluate video recordings for days. Until there is a clear profile, valuable time goes by to find the suspect.

But this time-consuming routine could soon be over. By using a secure smartphone that also contains a Tetra radio, security services and the police would have the ability to shorten this tedious research to a few minutes. The Airbus "Tactilon Dabat" device offers for example the real-time application from Facewatch to synchronise real-time photos and videos of potential offenders with police and other databases. In only a blink of an eye, police officers could clarify who has committed the theft. Even policemen in the United Kingdom are already using this app and verifying biometric data.

Or think of the "secunet bocoa" application: police officers can not only check the identity cards of passers-by within a few seconds, but also verify

biometric data. The officer takes the Tactilon Dabat camera and scans the suspect's ID card. Also, he puts the ID chip containing biometric information to the back of the Dabat. Within seconds, finger prints, facial shots, residence and ID data are reliably compared with police databases. As a result, the policeman can check whether or not someone is on the wanted list and detect if the ID card is genuine or not.

#### **Greater security for business**

For businesses, public safety, and security forces common broadband applications are not sufficiently secure and reliable. However, they could link broadband with secure narrowband (Tetra or Tetrapol) networks that comply with highest security standards. Airbus bridges both technologies with hybrid solutions combining secure narrowband networks with commercial broadband infrastructures. This allows the transmission of videos, photos and complex data. The Tactilon Dabat plays a pivotal role in this infrastructure.

"There are countless application ideas in the emerging

world of communication for public safety and businesses. However, our customers require certified secure apps," explains Jens Thostrup, Head of Business Development of Secure Land Communications at Airbus. This is the reason why Airbus has created the application developer programme SmarTWISP in order

to grow its ecosystem. The objective is to gather and certify the most relevant apps for public safety organisations and industries. The aim of new apps is, for example, to accelerate rescue missions and to improve coordination between various security services of airports, the police or fire brigades. These applications incorporate existing databases, voice, video, Augmented Reality and geolocation.

#### **Real-time group communications**

Thanks to the Tactilon Dabat, policemen, investigators, and even social workers could be integrated in real-time group communication and organise themselves with essential information (videos, photos, data). They can easily coordinate their actions whether to prevent incidents or accompany large sports or other events.

The application ES-Core from Eye Solutions Ltd features a live video sharing function that is secure and supports external video sources, such as drones or vehicles. Even with little radio coverage, the transmission is of high quality. Moreover, footing can be stored as evidence or for the purpose of analysis. Clearly, this is a tool which helps police officers to deter or hunt down culprits. At the same time, paramedics could master operations at the scene.

Airbus wants to make sure that every application really facilitates operations for those who use the Tactilon Dabat. "We believe that policemen's daily work in Africa can be improved with meaningful applications," says Olivier Fischer, Account Manager Africa for Secure Land Communications at Airbus. First pilot trials in Europe have proved that end users in companies and public safety organisations are happy to carry fewer devices and have the option to process more tasks with only one device.

The delivery of the Tactilon Dabat will begin this year, and soon, public safety users will be able to test which applications work best for their everyday lives.

Website: www.securelandcommunications.com Contact: Olivier Fischer, Account Manager Africa: olivier.fischer@airbus.com



#### WIRELESS USERS: ENERGY



Fluid network: working with its partners, SolarNow now has a complete and secure IoT solution that offers enhanced customer service.

How SolarNow, Eseye and Amazon Web Services are enabling life-changing IoT solutions.

Based in Uganda and with offices also in Kenya, SolarNow provides sun-powered equipment, appliances and services to remote or off-grid homes, farms, schools, health centres and business locations. To make a deployment achievable and to expand access to solar energy in Africa, the company offers affordable and flexible credit with every solution.

In order to gain better oversight of remote equipment and to be able to communicate with clients (for example, when payments are due or if there is an issue with a device), SolarNow wanted to integrate M2M in its solutions.

It turned to IoT connectivity specialist Eseye to deliver highly secure and reliable global cellular network data through the *AnyNet Secure* SIM. Seamless integration with Amazon Web Services (AWS) cloud is said to have simplified the project setup and deployment by reducing the need for investment in specialist in-house infrastructure and development resources.

The integration of Eseye's SIM means when SolarNow creates a new customer and device on its customer management system, the AWS IoT service is automatically informed that a new connected 'thing' exists. AWS then creates a certificate with all the required security material and device information and, through its integration with Eseye, delivers it directly and securely into the device. Working with developers at SolarNow, Eseye has also created software and supplied a reference design which the company can simply copy onto the circuit board of the microprocessor that sits on a solar controller and manages SolarNow's solutions. Previously, the microprocessor only had the ability to communicate locally on the circuit board. However, by wiring Eseye's new *Hera 100* reference design to the existing microprocessor, messages can be instantly sent, and the data delivered directly onto AWS IoT cloud.

SolarNow also wanted to ensure that its business is protected from disruptive, malicious and potentially costly service interruptions. It has therefore also deployed *AWS loT Device Defender* to monitor and control its connected solar powered equipment. Eseye creates device



IoT connectivity has enabled remote monitoring of devices, enabling a proactive resolution prior to a major fault or failure.

metrics in real-time from the cellular network so that Defender can monitor normal behaviour of the device, such as how many ports are open, who it can talk to, where it is connecting from, and how much data it sends or receives. Any deviation from a set of predefined security profiles and behaviours will trigger a violation.

"SolarNow's business reputation and revenue model is built on a zero-tolerance for any controllable service disruption," says Peter Huisman, CTO, SolarNow. "*AWS loT Device Defender* and Eseye global *AnyNet* Secure connectivity is the easiest, quickest and most cost-effective way for us to achieve and scale a high level of device security and anomaly detection. This protects our customers from service interruptions and SolarNow's reputation for excellent customer service."

The company now has a complete and secure loT solution that offers enhanced customer service. Previously, if a client had an issue with his or her system they would have to phone and report the problem. Remote monitoring of devices reduces this by predicting and detecting problems much earlier, enabling a proactive resolution prior to a major fault or failure.

Eseye adds that its SIM's enhanced also enable SolarNow to remotely and securely activate, provision, authenticate and certify deployed devices over-the-air, in up to 190 countries.

### **Global investors back Airtel Africa**

Singtel is one of six global investors that are backing Airtel Africa through a primary equity issuance valued at USD1.25bn. The Singaporean telco already holds a 39.5 per cent effective stake in Bharti Airtel, and will invest USD250m in the company's subsidiary which has operations in 14 African countries.

Temasek, Warburg Pincus and Softbank Group International are named as some of the other firms involved in the primary equity issuance in Airtel Africa which will give the operator a post money equity value of USD4.4bn. The proceeds will be used to reduce Airtel Africa's existing debt from USD5bn and grow its business ahead of an intended initial public offer towards the end of 2019.

Local reports in India state that Airtel could raise a further billion dollars or similar amount through the IPO. This will help it to cut consolidated debts of more than USD15bn, release cash to better compete with relative newcomer Reliance Jio in India's hotly contested mobile market, and expand in Africa.

After the pre-IPO primary share issue, Airtel's stake in its Africa unit will be around 65 per cent, a dilution of more than 28 per cent. Singtel's USD250m will give it a 5.7 per cent direct stake.

"Our investment into Airtel Africa reflects our confidence in the long-

term growth potential of Africa with its young and growing population," said Singtel International Group CEO Arthur Lang. "As Airtel continues to execute on its transformation strategy to become a leader in data and mobile money in Africa, we believe [Airtel] is in a strong position to benefit from increasing smartphone penetration and mobile money adoption."

With a combined customer base of around 91 million subscribers, Airtel Africa is said to be the continent's second largest MNO. It operates in Nigeria, Chad, Congo Brazzaville, DRC, Gabon, Madagascar, Niger, Kenya, Malawi, Seychelles, Tanzania, Uganda, Zambia and Rwanda, and is said to rank among the top two cellcos in most of these markets.

In its consolidated results for 2019 ended 30 September 2018. Airtel said that in constant currency terms, its African revenues increased by 10.8 per cent year-onyear led by "strong" growth in data and mobile money (also see Latest company results table, below). Data customers reportedly rose 32.1 per cent to 27.1 million during the quarter from 20.5 million in 2Q18. The number of active subscribers of Airtel Money also increased, with 12.9 million users boosting the total transaction value on the platform by 31 per cent to USD6.3bn.

#### Facebook to help build shared backhaul network in Uganda

Facebook is helping to build a backhaul network in northwest Uganda. When completed, the 770km fibre system will provide connectivity to support more than three million people and also enable future cross-border connectivity to neighbouring countries.

According to Facebook, the new backhaul capacity created will reduce costs for mobile operators as well as increase capacity. It said this will help improve performance and support upgrades to 3G and 4G in areas where operators are bandwidth-constrained.

As part of its mission to connect the world, Facebook claimed it is always exploring new ways to collaborate with operators and other partners. In an announcement made earlier this year, it said: "We believe one of the most-effective ways to scale efforts in infrastructure, such as fibre, is to first engage with operators to understand their priorities. Many operators have told us they need more capacity when it comes to shared backhaul infrastructure."

The company is working with Airtel Uganda and Bandwidth & Cloud Services Group (BCS), a wholesale bandwidth provider focused on deploying infrastructure in East Africa. Facebook said its investments are focused on addressing shared backhaul capacity so multiple service providers can benefit from the infrastructure. "This is why we're working with multiple operators and welcome others to join us through an open access and shared infrastructure framework," it said.

The company added that based on the learnings and results from its work in Uganda, it plans to engage with other operators in other countries to scale the model, with the ultimate goal of helping local operators provide "robust" network coverage.

#### MzansiSat promises "superfast" satellite internet with "competitionshattering" pricing

MzansiSat believes satellite connectivity is the only way to give the continent's citizens equal access to high-speed internet. It says the technology offers low upfront and running costs and "extremely high" reliability, giving independence from existing infrastructure.

The Cape Town-based company's mission is to launch an African owned geo-stationary broadband satellite to provide cost-effective, high-speed, reliable internet that is "unhindered by telephone line locations or wireless hotspots, or any other ground-based facilities".

MzansiSat CEO Bart Cilliers says: "We have been working on this concept since 2013 with the primary goal of connecting South Africa to the world through new infrastructure anchored by the first South African owned and operated telecoms satellite."

MzansiSat claims its concept will

have the ability to deliver cheap and ubiquitous broadband capabilities. But so far, the company has not publicly announced any specific details about its business model, partners, technology details, financing, etc.

The firm is currently gathering information as well as garnering interest for its venture following attendance at the ITU *Telecom World* conference held in Durban in September, as well as the recent *Africa Aerospace and Defence Expo.* It is hoping to receive public sector buy-in to launch its first satellite, MzansiSat-1, and debut its offering to the African market in 2022.

However, Cillers says the biggest challenge his company faces is securing the legislative and political approval needed to launch. "Once this box is ticked, superfast, supercheap satellite internet offering competition-shattering pricing and military grade encryption can be a reality, ensuring greater access to technology and the opportunities that come along with it.

"While the infrastructure required to provide the service has the potential to lay the basis of a new African economy, consumers will not be required to pay for this infrastructure – members of the public will just be paying for their own connection service," he explains.

MzansiSat CTO Bernard Greyling adds that the infrastructure surrounding the company's concept will not only support South Africa's national broadband development framework but will also act as a foundational "breakthrough" in terms of providing a new way of sharing applications and services with the African public.

#### MiRO to distribute microwave systems from NEC XON

NEC XON has appointed MiRO to distribute its *iPASOLINK* microwave system in the region. Under the agreement, MiRO will support mid-tier ISP customers with an end-to-end solution for microwave transmission that includes finance, installation, approved applications, training and after-sales support.

Nicholas Krul, account executive at NEC XON, said MiRO will hold stock of NEC's *iPASOLINK* equipment in its warehouse and claims this facilitates faster deployments. "We supply them multi-band in single unit equipment that reduces stockholding requirement. The equipment is vendor type-certified with ICASA, which speeds up the deployment process, and meets all the legislative requirements to protect spectrum frequencies for interference-free use in dense transmission environments."

According to MiRO, the NEC equipment offers a number of advantages, such as the way it handles sub-bands which means the company can keep reduced stocks of units for the radios and modems.

NEC XON was created earlier this year through the combination of NEC Africa and South Africa-based systems integrator XON. It has head offices in Gauteng with a footprint that covers all nine provinces in South Africa as well as 16 countries in sub-Sahara Africa.

In a bid to expand its business in Africa, NEC first made an investment in XON in 2015 with a 25 per cent stake. Following what it described as the creation of "successful synergies and value", earlier this year NEC increased its stake in the merged XON-NEC Africa business to 59.1 per cent, making it a subsidiary through NEC Europe.

"While capitalising on the large number of advanced IT engineers employed by XON, NEC will bolster its capacity to provide integrated solutions covering consulting, systems construction and maintenance," said Hironobu Kurosaki, president and CEO, NEC Europe. "Thereby, NEC will aim to expand its social solution business in the Sub-Saharan region and in the rest of the African region."



Account executive Nicholas Krul said NEC XON's equipment is ICASA certified which speeds up the deployment process.

#### Ooredoo joins forces with BICS to combat telecoms fraud

Ooredoo Global Services (OGS) has adopted BICS' *FraudGuard* to block fraudulent telecoms activity targeting its international traffic. The solution was deployed following a successful two-month trial and marks the latest expansion of a long-term partnership between the two companies.

BICS said the database underlying *FraudGuard* consists of crowdsourced details of suspicious network activity across its' global base of more than 1,200 customers. As a result, it claimed the platform is able to recognise and pre-emptively block activity from known fraud numbers that have been identified from a list of more than 50 million that have been previously linked to criminal activity.

The company said this proactive approach reduces the time and cost required to react to fraud attempts, protecting operators' networks, subscribers, and reputation. Since its launch in 2013, BICS said *FraudGuard* has blocked more than 600 million fraudulent call attempts and saved around EUR2bn in wholesale exposure for its customers.

According to the company, the lack of an effective, universally-used fraud

intelligence platform, coupled with insufficient sharing of knowledge and resources, has allowed fraudsters to move from one operator to the next, employing multiple means of attack. It said such criminal activities cost operators more than EUR28bn in lost revenue last year.

#### Cryptocurrency has "potential" in East Africa

The need for investing in cryptocurrency is steadily rising in East Africa, according to Paxful which has recently launched its peer-to-peer cryptocurrency platform in Kenya.

Citing estimates from Citibank analysts, Paxful said Kenya has one of the largest bitcoin holdings and that they represented around 2.3 per cent of GDP in 2016. As a result, the company reckons more people are "primed" for the cryptocurrency market in East Africa.

US-based Paxful has built a peerto-peer cryptocurrency marketplace using open source bitcoin and blockchain technology. The company claims it sees USD15m in bitcoin global transactions per week, and said it helps connect buyers and sellers to "easily" exchange bitcoin, accepting more than 300 different payment methods. It adds that for businesses, online shoppers can pay using bitcoin with no buyer fee and a one per cent seller fee, no deposit fee, no withdrawal fee, and "speedy" transfer deliveries.

Paxful said its entry into the East African market coincides with the launch of a bitcoin device that can be used with Safaricom's M-PESA system. With one-in-three people in Kenya now owning a bitcoin wallet, Paxful believes it is now "more convenient" for locals looking into buying and selling bitcoin on peer-topeer cryptocurrency marketplaces.

The firm added that it has also just completed a second *#BuiltWithBitcoin* project in Rwanda. The charitable initiative involved the construction of a school for students aged 6-15 in the Nyamata Sector, Bugesera District. Earlier this year, Paxful launched its first bitcoin-funded school which is in the same district and serves children aged 3-6.

The company continued by saying that since cryptocurrencies are so new, they are also very volatile and this is one of the main reasons mass adoption is taking longer than it should. But it said the future appeal of cryptocurrencies lies in giving users "ultimate" control over their money, with fast secure global

INVESTMENTS, MERGERS, ACQUISITIONS					
Date	Buyer	Seller	Item	Price	Notes
7/9/18	Various investors	Үосо	Series B funding	NA	Yoco launched in 2015 as a specialist company providing mobile points of sale in South Africa, enabling merchants to accept card payments using a smartphone or tablet. It has now raised a total of \$23m following this latest round of funding. Investors include Partech, FMO, Quona Capital, Velocity Capital & Orange Digital Ventures.
2/10/18	Vista Equity Partners	Fortissimo Capital	Starhome Mach	Financial details withheld	Vista will merge Starhome with its existing portfolio company, interconnect business optimisation specialist Telarix. It's claimed the merger will create the "first & only" end-to-end technology solution provider enabling telcos to "optimise global connectivity in the digital transformation era". Combined company will be headquartered in USA & led by current Telarix CEO Marco Limena. Starhome Mach CEO, Itai Margalit, will become president of roaming & clearing services.

NEW APPOINIMENTS								
Date	Name	New employer	New position	Previous employer	Previous position			
4/10/18	Martin Savitt	MATRIXX Software	Chief revenue officer	Resolve Systems	CEO			
4/10/18	Bill Highstreet	MATRIXX Software	VP of operations & chief of staff	Hewlett Packard Enterprise	Director, WW channel operations			
4/10/18	Terry Wong	MATRIXX Software	VP of HR	Nimble Storage	Senior director, HR			
9/10/18	David Heard	Infinera	CO0	Infinera	SVP & GM			
15/10/18	Yann Delabrière	IDEMIA	Group CEO	IDEMIA	Chairman of the supervisory board			
16/10/18	Gary Donnan	Eutelsat Communications	Chief innovation officer	Technicolor	EVP for technology & standards			

#### WIRELESS BUSINESS

transactions, and lower transaction fees when compared to all existing currencies. "When used properly and fully understood it would be the initiator of many emerging systems that will fundamentally change the African economic system," stated Paxful.

#### Rohde & Schwarz on course for growth

During its 2017/2018 fiscal year which runs from July to June, test and measurement specialist Rohde & Schwarz (R&S) said its earnings surpassed the two billion euro mark for the first time. At EUR2.04bn, it said revenue was 6.7 per cent higher than in the previous year, while incoming orders rose by 7.4 per cent to EUR2.21bn.

The Germany-based firm added that its number of employees worldwide climbed from around 10,500 to 11,500 by the end of June 2018.

According to R&S, its decision to focus on key, high-growth markets of the future with four strategic pillars is "paying off". These pillars include:

test and measurement; broadcast and media; aerospace, defence, security; and networks and cyber security. In terms of the latter, at the beginning of the new fiscal year R&S increased its stake in LANCOM Systems, the German manufacturer of network solutions for enterprise customers and the public sector, to 100 per cent. The firm's new networks and cyber security division was formed as a result. with LANCOM founder Ralf Koenzen heading the new division as well as continuing to manage LANCOM.

R&S believes that by providing test and measurement solutions for mobile and wireless applications, it is playing an active role in the advancement of future technologies such as the IoT and 5G. It claims to currently offer the widest range of test and measurement solutions for 5G, including signal generators and analysers covering the newly specified millimetre wave bands, unique over-the-air measurement solutions, and a production tester for series production of 5G modules.

"Rohde & Schwarz has aligned all of its business fields to meet future challenges," states the firm. "By focusing on the high-growth market segments of communications, information and security, its leading-edge product portfolio and its strong business performance, the company is looking ahead to the coming years with confidence."

#### LeoSat reaches major commercial milestone

LeoSat Enterprises, which is on a mission to launch the fastest and widest coverage data network in the world via a constellation of low Earth orbit satellites, claims to have now secured commercial agreements valued at more than USD1bn. The France-based company said these pre-launch agreements span a wide range of data and mobility sectors including, enterprise, telecoms, government and finance.

CEO Mark Rigolle said: "These commercial agreements clearly

demonstrate LeoSat's progression from a new networking concept to a unique solution which not only resonates with our customers but has also attracted the firm backing of two leading satellite companies -SKY Perfect JSAT and Hispasat."

LeoSat has also announced the first details in the development of its ground system with an agreement with Phasor Solutions which specialises in enterprisegrade electronically-steered antenna systems.

Whilst the perception of satellite for data communications is often seen as a "last resort", Rigolle claimed LeoSat will change that by pairing the speed of fibre with the ubiquity of satellite and adding a new dimension of ultra-security.

"We will not only bring a paradigm shift in expanding the existing satellite services market, we will open up new markets for space-based data networking for enterprise, telecoms and government communications across the globe," he said.

LATEST COMPANY RESULTS								
Date	Company	Country	Регіод	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
15/10/18	C-COM	Canada	3Q18	CAD	4.00	NA	0.0125	Generated CAD641,93 of CAD2,34 per share a 393%, resp quarterly d payable on
18/10/18	Ericsson	Sweden	3Q18	SEK	53.8 (bn)	NA	0.83	The turnard & sales adj President & global radii negative g to benefit i get all part remain con operating r
25/10/18	Nokia	Finland	3Q18	EUR	5,458	NA	(0.02)	Reported n EUR5.5bn i grew by 19 EUR4,888m seen in 3Q in 3Q17 to
25/10/18	Bharti Airtel	India	2Q19	INR	20,422 (cr.)	6,343 (cr.)	2.5	Consolidate YoY (report currency te strong grov mobile ser earned in 2 *In India, co
25/10/18	Orange	France	3Q18	EUR	10,307	3,687	0.30	The 1.3% g that of FY1 million of 4 increase Yo 3.7% increase
25/10/18	ZTE	China	FY18	RMB	(6.2bn to 7.2bn)	NA	(1.48 to 1.72)	Net profit of according t results for same perio fine of USD

revenues of CAD4,002,223 & a net after tax profit of 0 or 2 cents per share. This compared with revenues 1,016 & a net after tax profit of CAD130,183 or 0 cents s reported in 3Q17, representing an increase of 71% & ectively. Company announced payment of its eligible ividend in the amount of CAD0.0125 per common share 12 November 2018 to all recorded shareholders.

ound continues as reported sales increased YoY by 9% usted for comparable units & currency increased by 1%. CEO Börje Ekholm said: "There is strong momentum al 5G market with lead markets moving forward. The o access market is recovering from several years of rowth & our investments in R&D have positioned us well rom this development. More work remains, however, to s of the business to a satisfactory performance level. We fident in reaching our long-term target of at least 12% nargin beyond 2020."

et sales for the period were EUR5.5bn compared to n 3Q17. On a constant currency basis, reported net sales 6 YoY. Net sales in the Networks division came in at n for the quarter – a slight increase from the EUR4823m 17. But division's MEA income fell 10%, from EUR478m FUR478m in 3018.

ed revenues for quarter at INR20,422 crore\* grew 0.5% ed drop of 6.2%) on an underlying basis. In constant rms, Africa revenues increased by 10.8% YoY led by vth in data & Airtel money transaction value. African vices brought in INR56,472m, a rise from INR52,029m Q17.

ne crore (cr.) equates to 10 million.

rowth in revenues in first nine months of 2018 exceeded 7 (+1.2%). In Africa & Middle East, company reached 15 IG customers at the end of 3Q17, representing a 57% Y. MEA responsible for EUR1,310m during the quarter, a ase compared to EUR1,263m in 3Q17.

ecreases expected to be around 235.72% to 257.61% o preliminary annual results. The substantial decrease in he period from January to December 2018 compared to d last year was mainly attributable to US Government 1bn (see Wireless Business, May-June issue).

### **Moving Wireless Forward**

Mobile Mark is a leading supplier of innovative, high performance antennas to wireless companies across the globe. We've been in the wireless industry for over 30 years and have our roots in the early Cellular trials. We have grown and evolved over the years, along with the industry.

Today, we benefit from enhanced design capabilities and expanded production capacity - along with a greater understanding of new and emerging markets - all of which have allowed us to become one of the best antenna developers in our field.

Our customers have been our partners throughout the years. We believe in taking the time to understand our customers' individual needs. Through close consultation with clients, we are able to deliver innovative, tailored solutions that meet specific antenna requirements.

Rapid prototyping capabilities allow us to take our designs from concept to reality in an extremely short time span, and to verify the performance of the antenna. A variety of network analyzers and an anechoic chamber enable us to conduct measurements up to 13 GHz, and ensure that the antennas designed meet or exceed customer requirements.

We have onsite injection molding equipment and a fully equipped modeling shop staffed with skilled model makers to assist in the design phase and help us come up with a superior product - an antenna that not only meets the customer's electrical specifications, but is also very attractively packaged.

Mobile Mark antennas are used in many sectors of the wireless industry. Here are just a few examples:

#### **Asset Tracking & RFID**

Managing and tracking important assets can be a challenge in the field, and both RFID and WiFi offer effective wireless solutions. RFID / WiFi technology allows us to identify, monitor and track items ranging from medicine to fruit to parcels to people. Since each application has its own challenges, Mobile Mark offers a range of antennas so network developers can choose the right mix.



#### We are now looking for distributors throughout Africa

#### **Commercial Fleet Management**

Mobile Mark has consistently lead the industry with the most extensive and innovative range of antenna solutions that combine multiple wireless technologies: from simple GPS & Cellular antennas to complex 6-cable antennas combining LTE MIMO, WiFi MIMO, DSRC and GNSS in the same antenna housing. This combination of wireless technologies allows fleet owners to track and/or redirect their fleets of cars and trucks for optimum efficiencies. Mobile Mark antennas are rugged enough to handle tough environments and efficient enough to maintain reliable connections.

#### **Public Transit & Bus Management**

From monitoring the location of the bus to monitoring the condition of its tires, wireless has become an essential part of professional bus management. Mobile Mark's multiband antennas allow the system to capture that information and transmit it back to a central monitoring station with real-time connectivity. For an added touch, real-time WiFi service can also be added for the passengers. That's why companies like INIT have selected Mobile Mark antenna to complete their product offerings. And they have made the following endorsement:

"INIT GmbH - as a worldwide leading supplier of integrated planning, dispatching, telematics and ticketing systems for buses and trains - uses Mobile Mark bus antennas in public transportation projects all over the globe.

For example: INIT has installed Mobile Mark antennas in projects located in Abu Dhabi, Hertfordshire UK, Turku Finland, Oslo Norway, Montreal Canada, Luxembourg, as well as several German projects.

In 2017, a fleet of more than 1,500 buses will have Mobile Mark Antennas installed in one of INIT's

current major projects for National Express, West Midlands, UK."

#### **Remote Monitoring & Surveillance**

Surveillance plays an important role in maintaining secure settings. Network deployments need to be low maintenance and weather resistant. Broadband surface mounts offer flexibility for multi-frequency coverage and are rugged and dependable. YAGI antennas provide practical point-to-point coverage. Our antenna solutions are designed to handle tough conditions while providing the reliable wireless connection you would expect from a Mobile Mark antenna.

#### **Mining & Exploration**

Modern mining operations rely on a battalion of vehicles, ranging from massive extraction vehicles to modest-sized material transport trucks. These vehicles operate in tough environments where high vibration is a frequent wear and tear challenge. Mining companies throughout Africa have relied on our rugged, foam-filled mobile antennas for consistent connections. Mobile Mark's infrastructure antennas have been used for rapid deployment and redundancy coverage for effective wireless coverage in isolated settings.

#### **Smart Cities & Smart Highway**

For cities and highways, the lynchpin of a successful "Smart" system will be dependable wireless connections. Companies like Kapsch understand this, and have worked with Mobile Mark to find ideal antenna solutions. Wireless networks must reach seamlessly into hard-to-cover corners of city intersections and along vast expanses of highways. They must be carefully embedded in city lighting and electrical meters. Mobile Mark offers both small network infrastructure as well as embedded antenna elements to help network designers tie all the pieces together.

#### Let us know how we can help

We understand the RF wireless world and are ready to help you evaluate your options. Contact us by email, phone or fax and let us know how we can help.

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### Flexenclosure Powers Ahead in Burkina Faso with eSite x10

A major pan-African mobile operator was rapidly expanding its network in Burkina Faso. It selected Energy Vision to deploy power systems at a large number of its new tower sites and to be responsible for ongoing site power delivery under an Energy as a Service (EaaS) contract. Energy Vision turned to Flexenclosure for help.

#### The Challenge

All the tower sites at which Energy Vision needed to provide power were new, with no pre-existing telecom-specific power supply that could be used. While some sites did have grid connections, the electricity supply was unreliable – certainly not good enough to maintain uninterrupted network uptime or to allow Energy Vision to profitably deliver an EaaS service.

To make the opportunity financially viable, Energy Vision would need an extremely reliable state-of-the-art solution that could draw heavily on renewable power sources while significantly reducing diesel-related costs.

Further, Energy Vision had a very short time window within which to establish power delivery to the new tower sites if the mobile operator was going to achieve their aggressive network rollout goals. And the challenges didn't end there, with extreme environmental conditions and an often inadequate road infrastructure seriously hampering access to many of the more remote sites.

#### The Solution

Energy Vision selected Flexenclosure's eSite x10 site power system.

eSite x10 is the world's first telecom site power system purpose-built for outdoor telecom sites and to outdoor telecom standards. It is a patented, sealed, tamper-proof outdoor rectification unit with passive convection cooling, no filters, no moving parts and it requires no maintenance. eSite x10 offers the lowest total cost of ownership in the most challenging operational environments and is the perfect long-term site power solution.

As a landlocked country, standard shipping to Burkina Faso would have delayed Energy Vision's rollout schedule. But the eSites' compact size meant that they could be air freighted instead, significantly accelerating time to deployment. In fact, eSite x10 is so compact that it can be carried by hand, so transport to site, however remote, is a simple operation.

eSite x10 is designed for fast and easy plug-and-play installation. All sensors are built in to the unit during manufacturing, with configuration and testing also taking place in the factory. This leaves no possibility of installation errors and maximises the efficiency of the rollout teams.

With each and every site being unique, Energy Vision was able to use eSite Tools – eSite's powerful built-in remote management system – to fine tune their systems at an individual site level in order to optimise overall ongoing performance. In this way, diesel use was reduced, battery lifetime extended and the highest possible uptime ensured. And with all of this achieved remotely from Energy Vision's network operations centre, OPEX was further reduced through no physical site visits being required.

All the eSites were preconfigured for solar power to make best use of renewable energy – a critical requirement for Energy Vision's business case. And with ATS functionality also built in to each eSite, when grid power eventually arrives at any given site, the system is ready to receive it.

#### The Flexenclosure Advantage

By working with Flexenclosure, Energy Vision was able to capitalise on a number of additional and significant eSite differentiators...

Site power suppliers have always had to factor rectifier replacements in to their financial calculations due to regular failures. This is a major issue, especially for ESCOs managing EaaS contracts. However, eSite's purpose built, robust and reliable rectification system is specifically designed to secure continuous site power without failure even in the most challenging environments, meaning an ESCO can trust eSite and will be able to avoid ongoing rectifier-related OPEX hits.

eSite x10 has been purpose-built from an individual component level, IP65 sealed and ruggedized to withstand operational challenges such as heat, humidity, sand, dust, electrical disturbance and accidental physical shocks – and all without the need for any on-going or on-site maintenance.

It has been tested and certified to the strictest CE and ETSI requirements and includes significant innovations including protective soft switching between the grid and connected gensets to replace mechanical ATS switching and thus protect the unit from potentially damaging input – one of the more common causes of rectifier failure at telecom sites.

eSite x10 can significantly reduce genset run hours and fuel use at off-grid sites. At bad grid or good grid sites genset run hours and fuel use are



further reduced by maximising energy harvesting from any available grid power. At solar sites eSite x10 optimises the use of renewable energy. And all of this results in significantly reduced carbon emissions.

With sensors built in to the unit and calibrated in the factory, eSite x10 ensures sustained performance from data you can trust. The system uses a substantial local data buffer to avoid any data loss. And uploaded data is stored in a secure and cost-efficient data cloud, where it can be accessed by eSite Tools for analysis and by web services for smooth integration with other systems.

It's part of Flexenclosure's DNA to work very closely with every customer in order to ensure that every eSite deployment is optimised for lowest ongoing OPEX and highest overall long-term success. And having delivered projects in more than 20 African countries, Flexenclosure is extremely experienced in delivering solutions that are specifically designed to cope with the most challenging of environmental conditions.

"eSite's built-in remote management system – eSite Tools – is an extremely powerful application which gives us a very detailed and accurate view of all power related parameters at all our sites. And through our service agreement with Flexenclosure, their product experts are always on hand to help us remotely configure each site according to its specific needs and even add new functionality where necessary. The result is that every site is fully optimised to perform exactly how we need it to perform."

Moshe Horowitz, CTO, Energy Vision





#### WIRELESS SOLUTIONS

# Quantenna expands .11ax portfolio with "unique" architecture

Wi-Fi specialist Quantenna Communications says its new *QSR5GU-AX PLUS* is the world's only dual-band, nine-stream 802.11ax chipset.

Designed for use with mainstream APs, home gateways and mesh repeaters, the device is said to provide consumers with "much clearer Wi-Fi channels, higher airtime efficiency and soaring speeds".

According to Quantenna, the QSR5GU-AX PLUS' 5x5 5GHz + 4x4 2.4GHz architecture includes advanced technologies that "outdistance" existing similar products. These include integrated dualband, dual-concurrent 2.4GHz and 5GHz functionality in a single chipset optimised for the best overall Wi-Fi performance. There's also an embedded CPU which, says Quantenna, allows full AP and repeater functions to be supported without need for an external processor. It says this means lowers overall cost and power.

Other innovations include 5x5 MIMO capability in the 5GHz band.

The company says that addition of a fifth chain allows up to 50 per cent more speed, especially in MU·MIMO operation. The *QSR5GU-AX PLUS*' architecture also allows background 5GHz scanning by not interrupting existing data transmissions. This is said to enable "superior" 5GHz spectrum utilisation for improved network capacity.

Furthermore, a so-called

"advanced" algorithm intelligently selects and operates in the cleanest DFS channel including the weather



radar channels, which are seldom occupied. Quantenna says this allows *QSR5GU-AX PLUS* networks to have the maximum performance in dense environments. *www.quantenna.com* 

### Compact TETRA radio remains big on the features

Motorola Solutions says its recently launched *ST7500* TETRA radio provides "uncompromising" coverage with an integrated internal and external hybrid antenna system, all in a compact and robust design.

With a 25mm antenna, the radio measures 139 x 63 x 22mm size and weighs in at 197g. Motorola says 1.8W transmission power, an open speaker port, automatic gain control and multi-band compression deliver "loud and clear" audio with low distortion

The vendor adds that the *ST7500* was designed for simplicity so users can focus on the mission. It features an easy-to-use keypad that is said to have "well-defined", fully



protected keys with haptic feedback that can be operated even while wearing gloves. Tactile buttons available for PTT, volume control and emergency calls, and there's also a talk group rocker switch. A bright, high contrast OLED is said to be easy to read even in bright sunlight.

The radio offers up to 22 hours battery life and a rugged design that is certified to withstand dust, rain, shock and drops, with an IP65, IP67 and MIL-STD 810 D/E/F/G rating.

Motorola adds that the Wi-Fiready *ST7500* is also equipped with a MAC13 GCAI connector and integrated Bluetooth 4.1 wireless technology, facilitating the use of a wide range of wireless accessories, such as audio headsets, PTT buttons and smart devices. *www.motorolasolutions.com* 

#### Streamlining next-gen inbuilding network planning

PCTEL and Ranplan are promising to streamline in-building wireless network design, planning and optimisation with the integration of their software.

The companies say nextgeneration wireless networks will incorporate new technologies such as 5G alongside existing cellular, Wi-Fi, and public safety networks. By integrating PCTEL's *SeeHawk Touch* data collection software with Ranplan's *Professional* solution for planning, designing and optimising in-building and outdoor wireless networks in coordination, it's claimed onsite engineers will be able to measure, model and visualise the complex interactions between these technologies.

US-based PCTEL (Performance

Critical TELecom) is global supplier

of antennas and wireless network

testing solutions. It says: *SeeHawk Touch* and *Ranplan Professional* will enable network operators and building owners to prepare for a wide variety of uses, including emergency response, industrial IoT deployments, smart building automation and even virtual reality.

The companies add that the combined system will support network design and planning for a wide range of wireless technologies, including 3G, 4G LTE, LTE-A, CBRS, LAA, NB-IoT, Wi-Fi, P25, and 5G New Radio. *www.pctel.com www.ranplanwireless.com* 

New spec a "significant move forward" for deploying IoT

oneM2M, the global standards initiative that covers machine-tomachine and IoT technologies, has published its third set of specifications. It claims *Release* 3 "dramatically" enhances 3GPP interworking, particularly cellular IoT, and includes new capabilities to unlock value in industrial and smart home applications.

3GPP has been adding IoT-centric features, including capabilities to avoid network congestion and using

them more effectively, enhancing security, and enabling IoT devices to manage power resources efficiently.

oneM2M says *Release 3* allows "seamless" interworking with these underlying 3GPP network services, particularly NB-IoT and LTE-M, via the 3GPP Service Capability Exposure Function. It's claimed the combination of oneM2M's service layer and 3GPP's underlying network represent a "significant move forward" for operators in deploying IoT capabilities.

According to oneM2M, growing momentum behind LPWAN solutions is expected to fuel large volumes of low price-point connected devices. Their commercial success will depend on efficient approaches for gathering and sharing loT data, both at scale and across heterogeneous device populations. By enabling interworking with LPWAN technologies from 3GPP, oneM2M says *Release* 3 further supports operators in deploying cellular IoT services and tapping into new revenue opportunities higher up the value chain.

The organisation adds that its ultimate goal is to open up the IoT ecosystem and improve the business case for players looking to launch services. It reckons *Release 3* does this by creating an abstraction layer that simplifies the exchange of cross-silo data. *www.oneM2M.org* 

### Doodle's Smart Radio optimised for 'SWaP'

Singapore-based Doodle Labs claims its *Smart Radio* is the world's first highspeed, long-range radio that has been optimised for 'SWaP' (space, weight and power). The device measures  $37 \times 57 \times 11$ mm, weighs 40g, and is said to consume a maximum of just 6W (1W in sleep mode).

Doodle developed the *Smart Radio* to simplify integration into IIoT applications, such as drones, mines and construction site machines, public safety/video surveillance, private networks in oil and gas fields, wireless Ethernet extension, etc. The radio uses 2×2 MIMO and 1W of transmit power to enable what's claimed to be distances exceeding 10 miles and data throughput exceeding 100Mbps. Doodle says the *Smart Radio* is a complete wireless modem. It removes the need to connect to a separate CPU board and uses an Ethernet interface. A USB interface is also available. The radios come preloaded with a customised version of Linux's open source OS, *OpenWrt*.

The full *Smart Radio* portfolio includes a variety of models that cumulatively cover the 100MHz to 4GHz range. They are interchangeable, allowing customers to switch the operating bands by simply swapping the radio.

Among some of the key features, the radios are said to include interference-resistant COFDM (coded orthogonal frequency division multiplexing) for improved link quality in



dynamic environments. Other feature highlights include TDD for bi-directional traffic, end-to-end IP architecture for distributing unicast and multicast traffic, the ability to create selfhealing/self-forming mobile mesh networks, and support for all network topologies. www.doodlelabs.com

#### Mesh system simplifies Wi-Fi networks

Zyxel Communications claims to have developed a mesh-WiFi solution that delivers business-grade mesh Wi-Fi at a more affordable price point and with easier, plug-and-play usability.

According to the firm, small businesses have long relied on commercial access points to provide wireless internet to guests. It believes this is a "far from optimal solution" as wiring these APs takes a great deal of time and money. Zyxel adds that managing them is also "equally difficult given their complex interfaces". The company says its *Multy Plus* mesh solution only requires placing two or more APs anywhere around the premises without the need for any wired connections, and that its interface is so straightforward that even non-IT staff can use it. The devices offer tri-band Wi-Fi and 5GHz dedicated backhaul for speeds of up to 1,733Mbps across 5,000ft<sup>2</sup> via nine internal antennas.

Zyxel also claims *Multy Plus* raises the bar for cyber security with *AiShield*, a dedicated app that takes numerous GUI functions and packages them for what's said to be convenient mobile use. Its features include access control, which enables network administrators

to restrict access to tens of thousands of categories of inappropriate websites and up to 500 apps. www.zyxel. com

ZYXEL

### Also look out for...

### First 5G NR call on mobile device

In a demonstration described as marking the next critical milestone for 5G development, Ericsson and Qualcomm have successfully completed a 3GPP Rel-15 spec compliant 5G NR call on a mobile test device.

The over-the-air call was performed using millimetre wave (mmWave) frequencies in the 39GHz band in nonstandalone mode. It utilised Ericsson's *AIR 5331* commercial 5G NR radio and baseband products, together with a mobile test device integrated with a Qualcomm *Snapdragon X50* 5G modem and RF subsystem. The tests took place in Ericsson's lab in Kista, Sweden.

The demonstration call is a continuation of the interoperability development testing that was announced in 2017 which used Ericsson's 5G NR pre-commercial base stations and Qualcomm Technologies' 5G NR UE prototypes. The companies say it further shows their commitment and ability to achieve milestones that pave the way for commercial launches of 5G NR standard-compliant infrastructure, smartphones and other mobile devices.

In addition, it's claimed these early trials and milestones will enable global operators and OEMs to conduct tests in the field using their own networks and devices.

According to Qualcomm, mobilising mmWave for a smartphone has been regarded by many as an "impossible challenge". The company reckons this latest demonstration in collaboration with Ericsson proves that they are on track as the industry progresses to the commercialisation of 5G networks and devices in early 2019.



Qualcomm unveiled its prototype system for use in 3GPP-based millimetre 5G NR trials last year.

### L-band to 720MHz frequency converters

Advantech Wireless Technologies' new satcoms up/down converters are designed to translate L-band frequencies (720MHz, +/- 200MHz) to 800 to 1550 MHz with 100KHz step size.

The company reckons this frequency translation provides a "low cost" alternative to using offthe-shelf, satellite-based, block-up or block-down converters that usually include an L-band I/O within 800 to 1550MHz. It adds that the new converters provide a bridge between high data rate 720MHz modems and conventional X-band hardware.

Advantech says products have been specifically developed to reduce

the high level of customisation and the overall cost of the new generation of medium Earth orbit (MEO) and low Earth orbit (LEO) satellite constellations, especially those used for imaging the planet and weather forecasting. Combined with its range of solid state power amplifiers, the vendor claims the converters offer an "advanced" solution for any new applications in which very high data rate modems need to process large amounts of data over large bandwidth, such

as the high definition video links required by geo-imaging.

Advantech says MEO and LEO satellites are both intended to provide a lower cost alternative to traditional geostationary (GEO) satellite services and provide coverage where a GEO footprint is absent. It believes operators can re-use many components of traditional satellite technology and advancements, thereby avoiding additional high costs and risks of R&D. https://advantechwireless.com

### Getting smarter with subscribers

Openet claims its Data Fabric provides a unified intelligence platform to enable the integration of all data sources into a single system. The company says it's designed to only source the relevant data required to realise value outcomes for the operator.



Using 'Big Data' to gain insights into customer behaviour is now vital for all mobile operators. But why is it so important and how should they go about it? RAHIEL NASIR finds out.

he idea of analysing 'Big Data' to see how subscribers use network services is certainly not new in the industry. But there does seem to be mounting evidence that the need to do this is no longer a 'nice to have' but a 'must have' for mobile operators in their ongoing battles to reduce churn and boost customer loyalty.

For instance earlier this year in March, roaming specialist Mobileum (formerly Roamware) and Juniper Research published a report about how predictive analytics can quickly unlock revenue streams whilst improving the experience of roaming subscribers.

In *The New Rules of Roaming and How Mobile Operators Should Play to Win*, Mobileum said: "In the context of falling ARPU, operators need to take action to reduce their costs by introducing operational efficiencies and increasing revenue streams... Big Data and predictive analytics are one hugely promising way to reverse the trend of diminishing ARPU, which is why operators are moving to it."

The report particularly looked at the so-called 'silent roamers' – those who used any mobile services when travelling outside their home network for fear of high charges and 'bill shock'. Here, Mobileum said that there is a need to understand the customer's experience whilst roaming, and to understand their requirements, needs and purchase history.

"As many travellers do not utilise roaming services, there is a significant opportunity in this untapped non-user market," stated the report. "Globally, Juniper estimates around 60 per cent of mobile roamers to be silent data roamers in 2022; in comparison silent voice roamers will be just 22 per cent."

It continued by saying after identifying who the silent roamers are, MNOs can then target those customers with bundles to tempt them into using roaming services. Mobileum said that while calculating the most effective price point for roaming solutions can be difficult, using analytics to determine the optimum price point should increase revenues. Tim Moran, the company's SVP for product and offering, added: "With the increasing amounts of both network and traveller data available for interpretation and analysis, operators who ignore trends face customer dissatisfaction or customers simply turning off data altogether."

Meanwhile in a separate study published in May, IHS Markit said that as subscriber growth "hits the brakes", service providers are increasingly turning their attention to providing the best customer experience to minimise churn.

For its 2018 *Digital Transformation Strategies Service Provider Survey*, IHS said it polled service providers that account for one-third of the world's telecom revenue and capex. It found that enhancing customer experience is the top digital transformation project for 75 per cent of them, followed by automation (44 per cent) and 'cloudification' (38 per cent).

"In this saturated world, subscriber growth is non-existent – and without customers, service providers have no business," said Stéphane Téral, executive director for mobile infrastructure and carrier economics research at IHS Markit. "With nowhere to go to find new 'human customers', providers need to pay serious attention to their existing customer base."

#### The data "gold mine"

So how exactly can service providers gain insights into what their customers are doing whilst using the network? In its report referred to above, Mobileum pointed out that the task of understanding customer analytics is "too great" for any team of professionals to perform without technological assistance from expert vendors.

One such company is France-based data analytics specialist Intersec Group. Its CEO Yann Chevalier points out that MNOs sit on a "gold mine" of data, be it technical information from their network or customer data from their CRM and billing systems. He believes operators should cross these data to enhance customer experience (CX), smoothen business processes, and anticipate user issues.

"Having a 360 degree customer view in real-time is now mandatory to deliver great customer interactions. CX is both about ensuring high quality of service/quality of experience, and smartly proposing tailored offers at the right time and place."

Chevalier adds that the same data sources are of great value to build and develop new B2B revenues streams for operators. "From LBA (location-based advertising) to geo-statistics, IoT and safety, business opportunities are endless. They allow MNOs to address a wide range of enterprise customers with high value propositions in the fields of smart cities, urban planning, advertising, tourism and hospitality, logistics, industry, banking and finance, governments."

Ireland-headquartered mobile software provider Openet warns that without actionable data insights to truly understand how their network is performing, cellcos will be unable to fully realise ROI for their digital transformation efforts that have been brought about by the accelerated move to 5G and evolution towards NFV and SDN.

"MNOs are undergoing a great deal of change to evolve their networks towards a far more complex and dynamic service delivery environment," says marketing manager Julia Hogarty. "All of this has been driven by the need for MNOs to now compete in a very different competitive arena than before – one that pits traditional operators in direct competition with far more nimble internet-type business models."

According to Hogarty, these players have been able to gain advantage in service innovation and customer engagement practices due to the fact that they do not have to resolve how the service itself is delivered. Despite this, she says the significant transformations to network architectures and service delivery mechanisms present a "huge" opportunity for mobile operators to be far more insightful as to how to deliver a better service at a lower operating cost going forward.

Magnus Moller Petersen, EVP of sales and marketing at Swiss company Sicap, also believes network insight is "crucial" for a mobile operator business, adding that the ability to automate processes to react in real-time upon the data provides countless benefits.

He gives a number of examples here, such as enabling operators to grow sales through better market segmentation, as well as automated, targeted and personalised offers and promotions.

Another example is helping operators to deal with fake phones. "10 to 30 per cent of mobile devices in Africa are counterfeits. They cause significant revenue losses for operators and regulatory bodies, and reduce tax incomes for African countries. Network intelligence can be used to identify and handle those handsets appropriately to avoid economic losses, for instance, by ensuring that the devices have been imported to the country using the correct channels."

Petersen says MNOs will also be able to provide better customer support at lower opex by utilising real-time network intelligence for delivering proactive care precisely when subscribers typically encounter problems.

For example, he says Sicap has found that because of the low penetration of mobiles with over-the-air configuration capability ("as low as 50-60 per cent of handsets on a typical African network"), device configuration is a common root cause for connectivity problems, call centre contacts, and customer complaints. He goes on to describe two instances of how network intelligence could be applied to reduce this problem:

"A user switching from a feature phone to a



"Having a 360 degree customer view in real-time is now mandatory to deliver great customer interactions." smartphone often encounters difficulties in setting up or using the new smartphone. To prevent the user contacting an operator's call centre, IMEI code switches could be monitored on the network. Based on that insight, operators can automatically deliver such users correct online self-care help for the new handset model."

In another instance, Petersen says switching SIMs between devices is not only a common practice in Africa, it is also a common root cause for connectivity problems. "Again, identifying such problem situations is easy by monitoring SIM and IMEI combinations on the network. An automatic device configuration guide can be automatically sent over SMS upon each switchover event detected."

#### African challenges

So far, all of that certainly sounds plausible and convincing. But do mobile operators truly understand the significance of investing in the platforms needed to extract network and subscriber intelligence?

Petersen says that, in general, operators in Africa do see the potential benefits but do not value the gains high enough to warrant an investment.

Chevalier also points out when it comes to monetising the intelligence gleaned from analysing Big Data, many operators come up against internal challenges before they can start. He reckons their "siloed" organisations act as an "impediment" to the design of offers that are not purely telco in their nature in order to make the most of the data monetisation.

"Seeing what to do with their huge amount of existing data is very tricky," says Chevalier. "Even with a concrete idea, managing heterogeneous sources of data and cross-analysing them to get the right insight is a major challenge."

As a result, he says MNOs need solutions to collect and filter data, compute and cross-analyse them, and deliver actionable insights. "They are torn between solutions from small, niche [providers] and IT giants. The first one doesn't scale and only addresses a single use case. The second leads to a very long [time to market] and high costs for development and customisation – that take ages."

Chevalier says another challenge for Africa, which remains a predominantly pre-paid mobile market, is the need for real-time interaction where rapid execution of a promo campaign that is based on data analysis is paramount.

"The insights you get from Big Data can be invalidated in a short time (e.g. a top-up, data bundle purchase, etc.). Moreover, African MNOs tend to have less CRM and BI data, which are well-known aspects of pre-paid markets."

Petersen also picks up on this latter point: "Operators lack availability of valuable and up-to-date data. Sourcing of data from multiple locations including the CRM, billing, CEM and the standard mobile network elements in an automated and real-time manner requires a lot of resources and skills in integration of databases, network components and IT systems."

Hogarty supports this view when she says that the "most critical" challenge is in resolving the

effective management and interrogation of data on the network. She says: "Due to the myriad data sources and data format types propagated across today's often converged networks, it is becoming increasingly complicated to not only ingest all network and usage data but also to aggregate and correlate disparate data into actionable data sets.

"These data sets, or data insights, must be driven by applicable value outcomes to the business in order to deliver actionable insights to downstream applications and consumption channels. Appropriating data in this way to realise business relevant insights is no easy feat."

Given the complexity of the entire process do African cellcos have the personnel needed to analyse the Big Data created by their networks' usage – indeed, given that data scientists are in short supply even in developed markets, does *any* MNO have the talent needed to be successful in all this?

"Lack of sufficient numbers of skilled resources is a bottleneck for African operators, and they need to enlist either direct resources or establish partnerships with experienced vendors," says Petersen. "The ability to process and analyse Big Data is essential now and will become crucial during the coming years with the advance of Al and machine learning."

Hogarty echoes this and reckons a shortfall in dedicated personnel does not have to be an obstruction to effective data analysis, particularly when you consider the role of automation in data processing and analytics today.

She adds: "As evidenced by the pronounced role of the chief data officer, it is clear that the centralised governance of data management and analytics is becoming increasingly critical to competitive success. Having said that, it is true that some MNOs are perhaps less mature than others in the resourcing of this function."

#### Overcoming the challenges

Sicap was founded as a spin-off from Swisscom in the late 1990s and now specialises in four areas: customer insights and engagement; device and SIM management; device knowledge; and mobile security.

Petersen says that to help operators overcome the problems in automated data sourcing, integration and processing, the company's solutions provide a range of ready-made interface connectors to many commonly used databases and network elements used in telecoms. "Additionally, Sicap's solutions provide the automation logic needed to collect, process and mash-up data from different sources. To overcome the lack of data intelligence resources, [the company] offers its data analyst team for operators."

Hogarty believes that a "data fabric" approach helps overcome many of the challenges MNOs face when it comes to gathering network and subscriber intelligence. She says this represents a "significant evolution" towards a truly strategic approach to comprehensive data management, data processing and data governance.

"As described by IDG, the concept of a 'data fabric' is an approach to help MNOs better deal

with fast-growing data, ever changing application requirements and distributed processing needs," says Hogarty. "The term references technology that creates a converged platform which supports the storage, processing, analysis and management of disparate data. In short, a one-stop-shop to resolve the data challenges of today's networks."

So when it comes to network and subscriber intelligence, what actually needs to be monitored?

"The type of data to be monitored is mainly determined by each operator's needs and goals, whether it is about mobile marketing, proactive customer care, or perhaps handling of counterfeit devices, explains Petersen.

"For example, when an operator wants to increase revenues through higher top-up frequency, by selling bigger bundles or faster 4G subscriptions, data points such as minutes of usage, location of residence, ARPU, data consumption, handset type (4G or non-4G) become crucial for market segmentation and more targeted promotions."

According to Sicap, 4G penetration across Africa is still extremely low, with between three to 20 per cent of all devices on a typical network supporting LTE. Petersen says: "Gaining detailed device type data in real-time from the network would allow operators to automatically send customers more relevant and targeted offers – to first increase 4G device adoption, then ramp up 4G subscriptions, and finally grow the appetite for bandwidth-intense applications and services."

Hogarty reckons there are a myriad of metrics that can be monitored using the data fabric approach that she mentioned earlier. "[Metrics] which are called upon and proactively monitored depend greatly on each network ecosystem. While this can be informed by the downstream applications in place, the hyper interoperability of a data fabric allows for a complex and highly dynamic operational environment to be managed and monitored to deliver on the strategic objectives of the MNO business at a given time. Such applications may include congestion control, revenue assurance and audience measurement, to name but a few."

Intersec, highlights three areas that need to be analysed in order to gain intelligence about subscriber behaviour. Chevalier says these include: customer consumption (calls, messaging, data, mobile money and additional services); customer experience (QoS, network KPIs, calls to customer service, past customer journey); and customer profile and history (contract, tariff plans, recharges, services subscriptions, interests). He adds that all these are enriched by data about subscriber locations, demographics and CRM.

When asked what operators need to watch out for when it comes to choosing a platform that enables all this, Chevalier advises them to avoid "hard-coded" solutions.

"MNOs should be looking for solutions that enable multiple use cases within a single platform and yet remain open to new needs and use cases. They should offer the ability to scale in terms of dimensions (i.e. number of subscribers, devices, events, data fields, etc.)." He also recommends going for proven products that can be delivered in the timeframe needed rather than selecting platforms for *ad hoc* projects, and highlights the importance of seeking references.

According to Chevalier, Intersec offers a whole suite of applications specifically designed for MNOs to make the best out of their data.

"Our GeoIntelligence suite proposes a rich set of products based on mobile subscribers or devices geolocation, both real-time and history-based. It includes: GeoInsights (vertical studies based on anonymous location data); GeoReach (locationbased advertising campaign manager with brands and budget management); GeoSafe (public safety and warning; and GeoTrack (business care for mobile and IoT/M2M asset tracking).

"Our Contextual Marketing suite focuses on developing customer engagement. It includes *Iris Contextual Marketing*: that features triggered actions for customer engagement; *GeoTravel* for welcome SMS/push roaming pass; loyalty and community management; and inbound marketing for the next best action."

Like Chevalier, Sicap's Petersen also advises operators to avoid systems that require fully customised and hard-coded data connectors, interface plug-ins and data processes. He says they should select a product that is essentially fast to deploy, easy to integrate and easily solves the operator's issues.

Hogarty highlights two important aspects to consider when evaluating such solutions.

Firstly, she says operators should look for a platform that has a modular design in order to fulfil the interoperability requirements needed to interwork and optimise existing network assets and cloud infrastructures.

A second, and perhaps "more critical" evaluation criterion according to Hogarty, is to see if such a platform delivers on integration through an open API approach.

"The hyper dynamic nature of today's networks necessitates a move away from monolithic solutions and vendor lock-in. Interoperability is key, along with the need to embrace open source architectures. Those who are successful will



"The ability to process and analyse Big Data is essential now and will become crucial during the coming years with the advance of AI and machine learning." avoid a platform which demonstrates a restrictive design as the very definition of a data fabric requires an open approach both to upstream data ingestion and downstream consumption channels, whether these be MNO or third party."

Hogarty claims that the *Openet Data Fabric* provides a unified intelligence platform to enable the integration of all data sources into a single system. She says it features the intelligence to only source the relevant data required to realise value outcomes for the business.

"The platform incorporates Openet's *Digital API Gateway* to provide extensive interface intelligence to allow for integration across all data source types and formats. [It] accelerates the delivery of insights by automating key processes for increased agility, while giving business users more autonomy in the data preparation process.

"All data consumers, whether MNO or thirdparty applications, are optimised as a result of the data quality achieved through this 360 degree approach to data management."

#### Is future intelligence all artificial?

Artificial Intelligence is one of the big buzzphrases of the moment and Chevalier says Intersec is currently working on introducing the technology into its products to amplify the scope and power of the company's algorithms.

In the meantime, Petersen says Sicap has already developed an AI/machine learning enabler solution called *AI Engine*. "This is a generic software framework that enhances the capabilities of Sicap's solutions such as *TargetMe*, *Device Management Centre* and *Online Smartphone Support*."

Sicap launched its Al Engine in 2017 with a *Churn Prediction and Prevention* solution as its first application. More recently in August 2018, the vendor announced a new product in its *Device Knowledge* solution line to give operators access to the data needed for self-care, chatbots and Al-powered customer services.

"At Sicap, future R&D spending continues to be allocated to building the ability to utilise the captured network and subscriber data in a more valuable way," says Petersen. "Whereas today the data is mainly used for gaining a better business insight and for simple reactive actions based on the data, in the future more advanced data-driven process automation will deliver operators higher business value.

"As an example, by combining Sicap's device knowledge data and self-care help content with chatbot technology and the Big Data that identifies commonly encountered device problems, we believe that most of call centre and customer centre work could be fully automated."

For operators and service providers, it is ultimately all about developing a long-term relationship with the customer. As Chevalier concludes: "MNOs are a trusted third party for their subscriber and they need to build upon this to monetise even more the tremendous amount of data they have without compromising their subscribers' trust in keeping their personal data safe."

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#### **INDUSTRY VIEW: REMOTE & RURAL CONNECTIVITY**



Could TVWS technology help bridge the digital divide that is still impacting billions of people across the world? KALPAK GUDE explains why utilising white space and working to free-up licensing is essential for Africa's future connectivity.

s an organisation that advocates for the increase of dynamic access to unused radio frequencies, the Dynamic Spectrum Alliance (DSA) has been very pleased to see a gradual uptake of conversion in recent years. In Africa in particular, the kind of potential and freedom this access will herald is set to be monumental.

When it comes to TV white space (TVWS) technology, many pilot programmes and commercial deployments have gone forward. More than 25 locations have taken part in trials and demonstrations showing the technical capabilities. These deployments can be seen as the first winds of change which have brought cost-effective solutions to underserved areas. The introduction of broadband connectivity to those that have been the most difficult to service has provided opportunities to many who had previously never imagined it.

We are seeing regulators in many countries around the globe now start the necessary process of adopting rules for TVWS. This in turn will no doubt enable operators to make the necessary investments to serve these rural communities who for so long have either had no connections at all, or unreliable and unsteady access to broadband. Certainty regarding the regulations is a necessary part of this process and thankfully looks like it is now starting to move forward.

Conversely, TVWS regulations are still new to most regulators and the challenge remains to convince many of its effectiveness and longevity. Regulations often require setting up dynamic database systems that work to protect incumbent broadcast services and assign channels to permit sharing of the spectrum. The DSA has created model rules in an effort to help regulators work through the new technology. These rules give regulators the ability to benefit from the work of others around the world, as well as share the experiences from the many deployments that have successfully taken place to make TVWS implementation easier and quicker. Mozambique's communications regulatory authority, INCM, has recently used the DSA's



by walls or other environmental barriers, white space technology can cover an expanse of about 10km in diameter – 100 times the distance. This breakthrough technology has been nicknamed 'Super Wi-Fi' because of its superior range and ability to penetrate obstacles such as trees, buildings and rough terrain.

#### **INDUSTRY VIEW: REMOTE & RURAL CONNECTIVITY**



More than 25 locations have taken part in trials and demonstrations showing TV white space technology's technical capabilities in Africa. They include Botswana, Kenya (shown here), Namibia, among others.

guidance and is now able to plan on issuing its own rules in months, rather than years. This in turn will better enable the country's operators to bring broadband connectivity to many who previously could not be served.

As DSA treasurer Mark Rotter has recently suggested, digital inclusion is also essential for driving economic development and enabling environmentally sustainable growth. Progress is being made but there is still a long way to go before the digital divide is closed. The DSA believes that one of the first steps should be utilising TVWS networks to lower the cost of access.

TVWS technology can bring connectivity today to those that are without and do it on a cost effective and sustainable basis. It uses unused or underused broadcast spectrum on a secondary basis to bring broadband connectivity to areas where other technologies are not cost effective. Changing the economics of rural deployment makes TVWS a financially attractive solution to solve one of the most intractable social issues of our time – how to bring opportunity to rural and economically underprivileged areas. Furthermore, shortening the deployment time not only helps citizens sooner, but also lowers the cost of deployment making it possible for more operators to reach more people.

Today, broadcast spectrum throughout Africa remains highly under-utilised – and that was even before the transition to digital television which has enabled broadcasts to be delivered more efficiently and with less spectrum.

The digital dividend will no doubt free up even more spectrum as broadcasters continue to move to digital and are thus capable of delivering services using fewer frequencies. This digital dividend will enable governments to auction some spectrum to mobile carriers.

However, it is important to recognise that more spectrum for mobile carriers will not solve

the digital divide. Using broadcast spectrum for technologies such as TVWS, particularly in rural areas, is a critical part of the mission of improving the lives of their citizens that all governments share. Regulators can use the model created by the DSA as rules for a customisable out-of-the-box solution that results in a faster and more efficient way to enable TVWS networks to be launched in their markets.

The digital dividend is set to improve many facets of African society as more people are connected. Taking advantage of the leaps in technology is vital if countries are going to grow both in technological and financial terms.

For example, e-commerce is presently one of the most dynamic industries. Africa has incredible potential in this sector but has been considered as lagging behind. The reasons are myriad, but connectivity and poor internet speeds and reliability are some of the main reasons progress continues to elude those on the continent.

Research firm Statista backs this up. It estimates that Africa's e-commerce sector generated USD16.5bn in revenue in 2017 and forecasts revenues of USD29bn by 2022. In order for this growth to continue, spectrum must be freed to let the people take advantage – with only 35 per cent of the continent's citizens online, the opportunity for growth in this sector is enormous.

The people of Africa are ready to innovate now, and merely require the broadband infrastructure to do so. It is down to operators and regulators to fashion a connected ecosystem in order for more to be done.

It is often said that Africa has leap-frogged the world in terms of being a mobile-first connected continent. That daring nature and willingness to embrace technology now needs to be matched by those who provide the means to free up spectrum for TVWS.

Project Isizwe is an example of one of these innovators. Based in South Africa, the non-profit organisation works with the public and private



sectors to bring connectivity to the lowest income communities in the country. Some of the recent innovations that it has recently worked on include:

- Partnering with another project called Yes4Youth in connecting the first entrepreneurship hub in Tembisa. This provides free Wi-Fi use of the hub which features a content portal that allows entrepreneurs to advertise their businesses and curate local content
- A partnership with Glencore Mine to roll out free Wi-Fi hotspots in two mining towns in Witbank, Ogies and Phola This has established free Wi-Fi hotspots at a local school, a library, a community sportsfield as well as at the Phola and Ogies taxi ranks.
- Project Isizwe has also partnered with The Social Collective in Bushbuckridge and Botshabelo to launch a Free Wi-Fi Champions Programme. This aims to leverage the power of young, motivated individuals to share, activate and educate Wi-Fi users about this important service, creating employment opportunities.
- Another partnership has seen the project working with Amafreezone to enable the introduction of 15 hotspots in Durban and KwaMashu, 10 hotspots in Edenvale and five hotspots in Diepsloot, Alexandra and Sontonga Mall in Johannesburg.
- Working with Digital Village has also enabled the roll out of 130 hotspots in George This kind of inspiring work is why the DSA

This kind of inspiring work is why the DSA continues to campaign for TVWS to be utilised fully and shows the true potential that exists within the unlocking of this underused resource.



The first telemedicine network using TVWS spectrum was launched in Africa by the Botswana Innovation Hub in 2016. As part of a pilot, Project Kgolagano was used to provide internet connectivity and services to hospitals and clinics, enabling access to specialised medicine in Gaborone and other locations around the world. The project was officially launched at the Tsopeng clinic in Lobatse (main picture) where Adaptrum's TVWS radios (inset) were installed.

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# Riding the new technology wave

New research places the maritime sector either on a par with or ahead of other key markets for Industrial IoT adoption, as RONALD SPITHOUT explains.

he maritime industry may be at a more advanced stage of readiness to adopt the Industrial Internet of Things (IIoT) and its analytic, management and operational tools than many have supposed.

In July, Inmarsat published the 2018 edition of its *Industrial IoT on Land and at Sea* research report. It explores IIoT trends across the maritime, transport and logistics, energy, mining and agriculture sectors, and is based on 750 interviews conducted by Vanson Bourne. These included 125 maritime respondents working on container ships, tankers, bulk carriers and offshore vessels.

According to the report, the IIoT is set to play a profound role in providing end-to-end transparency across supply chains and improving their efficiency. It says: "We are reaching a point where all events in a supply chain will be captured as data by nerve-like sensors, before being routed for analysis and actioned."

Resource efficiency, improving health and safety, and the monitoring of environmental change are identified as the top three drivers for IIoT-based solutions across all sectors.

The study shows 21 per cent of respondents having fully deployed IIoT solutions of one type or another, 25 per cent trialling them, and a further 10 per cent saying they will deploy within six months. However, it also reveals that adoption levels are inconsistent across the sectors surveyed, with the mining and energy industries so far showing much lower levels of adoption than transport and maritime.

In general, the researchers found that respondents closer to consumers are likely to have the strongest and most developed strategies for data use. It is therefore understandable that, of the sectors studied, the part of the transport industry involved in mass transit and the distribution of finished products exhibits exceptional IIoT readiness: 40 per cent of transport respondents feature among the survey's 'leaders' while a further 30 per cent are described as 'progressives'. However, the transport sector is highly segregated, with mass transit significantly ahead of parts of the freight transport market when it comes to IIoT engagement. Only 19 per cent of businesses within the freight sector and 22 per cent of those in the container sector said that they had fully deployed IIoT solutions. That compares to 64 per cent of the mass transit sector who reported full deployment, with the remainder planning to do so within 12 months.

Despite, or perhaps because of, the rise of online shopping, the report indicates that low margins are hindering IIoT adoption in the 'last mile' transport sector, although the researchers predict rapid change is coming in this part of the supply chain.

#### Maritime is special

Industrial IoT on Land and at Sea considers the maritime industry separately, and arguably offers the most detailed account ever of the sector's attitudes towards the IIoT, while also putting digital penetration among ship owners in the context of other markets that Inmarsat has experience of.

By its very nature, maritime's journey towards digitalisation is 'special' because its connectivity options are more limited. Fifty-one per cent of maritime respondents rank satellite connectivity as 'number one' by usage, while 69 per cent say they rely on the technology to support their IIoTbased solutions.

In findings that challenge the received wisdom of shipping as a 'backward-looking' business when it comes to digitalisation, the study suggests that actions by the sector's thought leaders mean that the industry as a whole is ahead of many of its customers on IIoT uptake.

However, more stereotypically, the shipping sector also finds room for a sizeable rump of IoT 'laggards' whose resistance to change will ensure that the wider transport industry stays ahead of its maritime component on digitalisation for the foreseeable future.

In some ways, variations in shipping attitudes are inevitable as reflections of the industries with which they engage. For example, as a core contributor to the dry bulk sector, agriculture is at the earliest stage of investment in the IIoT, with 80 per cent of those surveyed characterised as 'starters' in the investment cycle. This contrasts with the maritime industry, where around 35 per cent are considered starters in investment terms, against a 53-54 per cent 'progressives' constituency. In the mining industry, around 42 per cent of respondents are identified as IIoT starters while 39 per cent are progressives.

These findings put shipping ahead of the curve in terms of IIoT investments. But the positives need to be qualified – for example, where around eight per cent of the study's respondents overall could be described as IIoT investment 'leaders', none of these came from the maritime group (a small number of leaders were found in the mining sector). Meanwhile, 10 per cent of ship owners and more than 10 per cent of mining respondents are described as IIoT investment 'laggards': proportionately, this is twice the size of the overall 'laggard' constituency, demonstrating how both sectors provide a haven for intransigence.

Of course, investment perspectives can change: for example, with 77 per cent of respondents from agriculture and 84 per cent from mining 'agreeing' or 'strongly agreeing' that the IIoT will revolutionise their industries, there appears to be a clear realisation that change is in the wind.

#### Sector priorities

A survey of drivers for IIoT uptake across shipping's customer base not only offers a chance to evaluate motivations but also, for the more competitively-minded, presents an opportunity to identify areas for empathy.

For example, those involved in the bulk

#### **INDUSTRY VIEW: IOT**

shipping sector may be interested to learn that around 50 per cent of respondents from agriculture identify environmental monitoring (of soil and weather conditions) as a main driver, while 44 per cent pinpoint the IIoT's potential to reduce operational costs. However, while 64 per cent believe the IIoT will help them gain better insight into their supply chains, only nine per cent have actually achieved this objective so far.

Meanwhile in the mining sector, the priority for IIoT focuses on tracking and smart monitoring. Like its maritime counterpart, this customer base is attracted to the health and safety benefits associated with wearable technologies.

Respondents from the energy sector span industry roles from exploration through to distribution, so it is no surprise to find a range of attitudes here when it comes to the IIoT. For instance in exploration, IIoT can help to accelerate and enhance seismic performance data acquisition and analysis to improve production performance. In both exploration and extraction phases, however, health and safety benefits such as wearable technology are cited as key by 50 per cent and 60 per cent of respondents, respectively, while monitoring environmental changes are respectively cited by 53 per cent and 58 per cent. Further downstream, IIoT sensors can help to optimise supply and demand forecasting, as well as pipeline operations.

Collectively, the study identifies two major aspects of IIoT readiness among the organisations underpinning shipping's oil and gas cargoes. First, they are further advanced in their commitment and attitudes towards digitalisation than their dry bulk peers, with 50 per cent of energy respondents among the survey's 'progressives'. Secondly, 90 per cent of energy respondents believe that the IIoT will be essential for gaining a competitive advantage.

From the maritime perspective, one of the most striking findings is that ship-owners expect average expenditure per business on IoT-based solutions to amount to USD2.5m over the next three years as part of their IT expenditure. In absolute terms, the more mature energy and transport sectors predict higher average spend over the period (USD4m and USD3.5m, respectively), while the figure for agriculture is significantly lower (USD1m).

Maritime respondents also say that they intend to invest a larger share of their IT budgets (7.8 per cent) in IoT-based solutions than in any other 'next generation' technology. Maritime therefore achieves a middle ranking when it comes to the 7 to 9 per cent range of IT budgets set aside by all sectors for IIoT. However, IT spend may not account for all maritime spending on IIoT, where ship connectivity costs cut across the operations, training and safety budgets that often sustain the adoption of new technologies.

Furthermore, analysis also places maritime ahead of agriculture, mining and even energy when it comes to specific attitudes towards IoT-based solutions, with 34 per cent of maritime respondents indicating that they have an IIoT solution under 'full deployment'. By their own testimony, driving these 'leaders' is the need for ships to be more cost



efficient, cleaner and safer than ever before, with 56 per cent of maritime respondents already using or trialling smart asset monitoring.

Drilling further down into the report, owners show themselves as upholding the maritime industry's decade-long fixation with costs. While 51 per cent of respondents say that revenue generation does not figure in considerations, 75 per cent say that they have realised, or expect to realise, savings using the IoT. Route optimisation is typical and is identified by 57 per cent as in use or on trial.

#### Environmental agenda

Emissions also matter: the environmental agenda is a key driver for IIoT adoption in the land-based and mass transit sectors, with 61 per cent of respondents saying that monitoring techniques such as emissions sensors provided primary motivation for IIoT adoption.

In the maritime sector, regulation coming into effect over the short term is providing an extra prompt for adoption. In line with global fuel sulphur limits from 2020, the International Maritime Organization's target to halve ship CO2 emissions by 2050 and use EU Monitoring, Reporting and Verification for fuel use, 65 per cent of respondents say they already use IoT-based solutions to monitor consumption. A further nine per cent say they will do so within a year, with deployments projected to reach 100 per cent by 2023.

However, maritime respondents also exhibit a marked ambivalence towards IoT-based solutions that is unique to the sector: enthusiasm in some quarters is tempered, in that the industry is also home to the largest group of IoT 'laggards' – a description applied to more than 25 per cent of respondents. Even the least prepared organisations in the neighbouring mass transit and inland distribution sector said that they would deploy IIoT-based solutions within two years.

In the cost-conscious world of shipping, one explanation may be that while 33 per cent of respondents believe that IoT solutions will bring 10-20 per cent savings within five years, their potential to create new revenues is considered only half as likely, while 14 per cent of respondents believe that – even five years out – there will be no savings at all. Some 54 per cent of peers in the mass transit and inland distribution industries identify improving resource efficiency as a primary driver for IIoT adoption.

But direct operational savings are not the only savings available from deploying IoT-based solutions in the maritime sector. Cutting marine insurance premiums is cited by 70 per cent as one of the most important drivers for adoption. This finding is especially interesting because the industry self-selects as a 'laggard' when it comes to taking steps to remedy its cyber security shortcomings, even though this topic is one of the fastest growing areas of business for insurers.

#### Cyber awareness

Maritime respondents are more concerned about data storage methods (55 per cent), network security (50 per cent) and potential mishandling of data (44 per cent) than they are about targeted attacks (39 per cent). Even so, only 37 per cent report initiatives to improve security training, with just 25 per cent working on new IoT security policies.

Maritime's inward-facing security concerns are therefore distinct: respondents in the energy sector (48 per cent), transport (52 per cent) and mining (64 per cent) most frequently cite the threat of external cyber attacks as among their biggest security challenges.

The industry's lack of cyber preparedness raises a deeper malaise over more full-blooded commitment to IoT-based solutions in some quarters: overall, the industry's lack of decision-making skills is the most frequently cited impediment to uptake (by 56 per cent of respondents). Maritime also identifies itself as behind the curve when it comes to planning skills, where 42 per cent of respondents believe their organisations would benefit from additional skills against a figure for all respondents expected to amount to 37 per cent.

Once more, however, these findings should be considered in context: across all sectors, the lack of in-house skills was identified as a brake to IIoT uptake.

A different frustration appears to be thwarting ambitions among those already fully engaged in IoT-based solutions. Here, 51 per cent of maritime respondents cited the time lag between data collection and its availability as the biggest obstacle blocking their optimisation of IoT-based solutions. This is despite the finding that only 20 per cent of maritime respondents cite connectivity issues as a barrier to adoption of IoT-based solutions within their organisation – lower than any other sector.

However, to assess the maritime industry's readiness to adopt IoT-based solutions on owner testimony alone is to overlook a mature quirk of the maritime industry: much of the technical expertise historically held in-house has been outsourced to ship managers and equipment suppliers. Marine equipment can contribute 70 per cent of the value of a new ship, meaning that it has been suppliers, rather than owners, making the running on connectivity, Big Data analytics, and app-triggered remote diagnostics and preventive maintenance.

Therefore, while lack of skills and siloed knowledge are acting as a brake on IIoT uptake in the supply chain, the willingness of 64 per cent of maritime respondents to consider external partners for some or 'as much as possible' of their IIoT facilitation may, in the long term, be more a benefit than a block.

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#### **WORLD NEWS**

### Verizon claims first with 5G launch

US operator Verizon has launched the world's first commercial 5G broadband internet service. On 1 October, *Verizon 5G Home* was introduced in parts of Houston, Indianapolis, Los Angeles and Sacramento. The company said it will "rapidly" expand its coverage area once it can install new standards-compliant equipment from its vendors.

Verizon said that rather than waiting for the most recent technical standards, it decided to use its own proprietary platform for the initial commercial launch of its 5G Home



Early adopters will benefit from free white glove installation, equipment and set up of all Wi-Fi devices.

service. According to the operator, it has "spearheaded" the 5G ecosystem for three years, with its 5G Technology Forum, 5G Labs, work with international standards bodies, and collaboration with network equipment and device makers.

5G Home is built on Verizon's Ultra Wideband 5G network. The company says this combines: end-to-end deep fibre resources throughout the network; a large deployment of small cells, and "best-in-class" spectrum holdings, particularly in the millimetre wave bands. According to Verizon, this is the only spectrum with the bandwidth to realise full 5G potential for capacity, throughput and latency. Consumers in the initial rollout areas can get 5G Home for free for three months as part of a special introductory offer. After that, current Verizon Wireless customers with a qualifying smartphone plan will pay USD50 per month for the service while non-Verizon Wireless customers will pay USD70. They should expect typical network speeds of around 300Mbps and, depending on location, peak speeds of nearly 1Gb, with no data caps.

Verizon is the first company to bring 5G broadband internet service to consumers and is expected to be the first to offer 5G mobile service.

#### Asia's fastest five-carrier aggregation achieved on LTE

Singaporean MNO Singtel and Ericsson claim they have achieved peak LTE speed of up to 1.5Gbps in a lab environment using five-carrier aggregation (CA). The companies said this is the fastest speed achieved in a network of this type in Asia, and 50 per cent quicker than the prevailing 1Gbps record they set earlier this year in February. According to Ericsson, the demonstration was the first time CA technology was utilised across five carriers. It combined two 1800MHz frequencies, together with 2100MHz, 2600MHz and TDD 2500MHz spectrum bands. Achieved in a lab environment on a Viavi Solutions and Stellent Networks' TM500 test system, the two companies also harnessed technologies such as FDD and TDD, 256 QAM and 4x4 MIMO to achieve the peak speed of 1.5Gbps.

Singtel will gradually deploy the new speed across Singapore as more spectrum bands are allocated to its LTE network. Smartphones supporting 1.5Gbps speeds are scheduled to be launched in 2019. Ericsson said that when introduced in the live network, such capability improves user experience and enhances network capacity. For instance, it said customers can download a two-hour 4K video in eight minutes.

Following the success of the test, the two companies plan to launch a pilot 5G network on the island during the coming months.

#### LTE Emergency Services Network to be launched in phases

The UK Government has decided on what it described as a "new strategic direction" for an LTE-based Emergency Services Network (ESN) that should have begun to be deployed last year.

In 2015, it was announced that the TETRA communications system used by the UK's emergency services and supplied by Motorola Solutions and Airwave would be replaced with a mobile-based communications network that uses LTE (see World News, Jan-Feb 2016).

Rollouts were expected to begin in mid-2017, but in September, the UK's Home Office announced that the project will now be launched in phases starting in the New Year.

The government said its new incremental approach means police, fire and rescue, ambulance crews and other users will be able to use data services over the network from early 2019, with voice capabilities following soon after. It added that it will also leave the emergency services free to test and choose which ESN products they want as and when they become available, rather than having to wait for the network to be fully implemented.

The Home Office is engaging with its commercial partners, mobile operator EE and Motorola Solutions, regarding future changes to their contracts.

#### Satellite alliance aims to facilitate use of C-band for 5G

Four global satellite operators have formed an alliance that could accelerate making C-band spectrum available for 5G services.

Eutelsat, Intelsat, SES and Telesat have created the C-Band Alliance (CBA) to act as a facilitator to clear a portion of this mid-band spectrum in the US. The companies said their alliance demonstrates the industry alignment necessary to make these frequencies available quickly, thus supporting the US objective of winning the race to introduce terrestrial 5G services.

With the formation of the CBA, the

satellite operators delivering the vast majority of C-band services in the US have agreed upon the key technical and commercial steps necessary to enable commercial implementation of the spectrum clearing process. The alliance also ensures that customer services are protected from potential interference as new wireless services are introduced into the cleared portion of the spectrum.

The CBA was created in response to a US Federal Communications Commission (FCC) proposal for a consortium to undertake the technical and commercial implementation of the spectrum clearing process. This process is necessary to re-purpose C-band spectrum for use in a 5G environment while seeking to protect the quality and reliability of the extensive services provided by satellite operators to US broadcasters, media and data companies.

The FCC proposal establishes a commercial and technical framework that will enable terrestrial mobile operators to quickly access spectrum in a portion of the 3,700MHz to 4,200MHz band in order to hasten 5G deployments.

The CBA will be led by Bill Tolpegin,



Representatives of the C-band Alliance include (from left): Daniel Goldberg, Telesat; Steve Collar, SES; Stephen Spengler, Intelsat; and Rodolphe Belmer, Eutelsat. PHOTO: BUSINESS WIRE

currently CEO of OTA Broadcasting, who will serve as CEO.

Robots will then be dispatched on the

ground to deliver emergency relief

and take first-aid measures until

added that if signal scanning is

and medical databases, it could

expedite first aid treatment by

pre-existing health conditions.

items, relay information to rescuers,

medical teams arrive. The operator

integrated with national registration

immediately providing the survivor's

medical records which containing key

information such as blood type and

Rohde & Schwarz spectrum monitoring antennas are part of an ITU-compliant installation in Thailand.



#### R&S helping Thai regulator to monitor spectrum

Thailand's regulatory authority will use solutions from Rohde & Schwarz (R&S) to monitor radio spectrum in the country.

Spectrum monitoring systems enable public authorities to effectively support spectrum management, verification of license data, and simplify the planning and allocation of new transmitters. They also allow identification and elimination of radio interference sources.

Since 2010, Thailand's National Broadcasting and Telecommunications Commission (NBTC) has been using nine mobile measuring stations from R&S. It now plans to install 15 stationary monitoring stations later this year. Each one will be equipped with an R&S *ESMD* wideband receiver for spectrum monitoring, a set of antennas, and a computer running the vendor's *ARGUS* software.

R&S said its software performs a variety of manual and automatic measurements. For example, operators can configure automatic measurements to start and stop as needed. In the case of long-term measurements for monitoring technical transmission parameters, data can be recorded and warnings triggered when the readings are outside predefined reference values. R&S said this allows the authority to verify compliance with the technical parameters and guidelines for transmitter systems, and identify and follow-up any violations or radio interference sources.

### Unique comms platform for emergency rescues

South Korea's largest telco, KT, has unveiled a nextgeneration platform for disaster and safety management, in its latest effort to pioneer new businesses with its 5G and comms technologies.

Called *SKYSHIP*, the platform operates a special aircraft and a mobile communication centre to remotely control drones and robots that carry out search and rescue operations. Teams on the ground are also assisted with AR glasses that have a direct line of communication to doctors at nearby hospitals.

The system comprises a new concept aircraft that combines a helium gas-filled airship and a drone; the *Skyship C3* (command, control, communication) mobile ground control station; along with drones and robots that have been specially developed and are installed on the aircraft.

The *Skyship* aircraft itself features a pod that carries core hardware

items including propellants, cameras, network modules and drones, along with a signal scanner. This detects smartphone signals and synchronises them with the mobile carriers' customer database to identify personal information relating to survivors.

KT said image scanning uses an ultra-small LTE device that can check the presence of survivors within a 50 metre radius. When survivors are detected, *Skyship* will deploy drones to pinpoint their exact locations.



The SKYSHIP platform features a special aircraft and a mobile communication centre to remotely control drones and robots that carry out search and rescue operations.

#### mmW links save ISP from congestion

Siklu has provided a backbone network of gigabit radios to support Mexican ISP Gigamex. The firm's millimetre wave (mmW) solutions have been used to connect around 1,000 homes and business users in Toluca, the capital city in the central State of Mexico.

According to Siklu, the main challenge was ensuring enough capacity for the access networks. It said saturation in the 5GHz frequency band in the city centre were preventing these networks from working to their maximum capacity because the existing wireless radios they used could only provide less than 200 Mbps. As a result, Gigamex could not bring new subscribers onto its network or expand its coverage in Toluca. It therefore sought an alternative wireless solution that operated on a separate, cleaner spectrum and would not be affected by the plethora of 5GHz Wi-Fi devices simultaneously accessing the network.

Siklu said its mmW radios operate in the 70-80GHz spectrum with more than 17GHz of bandwidth available. The company provided design consultation and utilised its *SmartHaul Link Budget Calculator* to validate the required link capacity and predicted performance. Twelve pointto-point radios were installed between the city centre and the surrounding mountains within seven service distribution nodes from their nearby POP. The network was deployed across a 30km area within two days. Siklu claims it delivers 99.99 per cent availability with each radio boasting 2Gbps full-duplex capacity.

#### Vodafone to double 5G IoT network sites

Vodafone will double the number of European cell sites in its 5G Narrowband IoT network footprint by the end of 2019. It's claimed this will create the world's biggest, international NB-IoT network when it becomes available in 10 European countries, including planned launches in the UK, Romania and Hungary.

The operator has already launched NB-IoT networks in the Czech

Republic, Germany, Greece, Ireland, Italy, Australia, Netherlands, South Africa, Spain and Turkey. It claims to be the global leader in managed IoT, with 74 million connections and an international network and services platform supporting companies such as Amazon, BMW, Panasonic, Philips Lighting, among many others.

According to Vodafone, NB-IoT is the 'industrial grade' LP-WAN (low power wide area network) technology that will provide connectivity for many smart city and industrial applications at low cost and with equivalent security to 4G. It said NB-IoT operates in licensed spectrum to guarantee service quality, provides "strong" coverage over large areas (even when devices are underground or deep within buildings), and provides "greater" power efficiency enabling devices to run on batteries for 10 years or more on a single charge.

#### WORLD NEWS

### in Indonesia

Nokia has helped Indonesia's XL Axiata to successfully deploy the country's first wireless passive optical network (WPON) as part of a technology trial. Combining PONs with the WiGig 60GHz standard (802.11ad), XL was able to extend the reach of its fibre network by connecting to WPON access points which in turn linked endpoints with wireless drops. Beamforming was used to bring connections of up to 1Gbps to end users. The operator now plans to bring new ultra-broadband services to other residential areas

#### 'Unburdening' care centre

O2 will use Sicap's mobile Device Management Centre (DMC) to offer its subscribers in the Czech Republic automated and seamless mobile device configuration with a faster problem resolution from its customer care centres. 02 currently has around five million subscribers in the republic and is said to be the country's largest telecoms services provider. Jakub Votava, the operator's director for network architecture and development, said: [DMC] perfectly supports our growth strategy by automatically connecting data users on our network, without burdening the customer care centre with handset configuration problems."

#### Pearls of the Caribbean

Sky and Space Global (SAS) is stepping up its efforts to bring nano-satellite based communications to the Caribbean following discussions with the Caribbean Telecommunications Union. The company plans to provide narrowband services to the region via is Pearls nano-satellite constellation which begins deployment in 2019. This supports the SAS business model of providing connectivity to equatorial locations such as the Caribbean, where these services are required. The firm is also working with officials in various other countries in South East Asia, Africa and Latin America, to bring affordable communications.

### WPON debuts Yahsat completes MYSAT-1 engineering model

Yahsat's Space Lab and research students at the Khalifa University of Science and Technology (KUST) in Abu Dhabi have successfully completed the assembly, integration and verification (AIV) of an engineering model of the MYSAT-1 satellite.

The model is an exact replica of the flight satellite. Yahsat says it was built so that it can "rigorously" test the conditions *MYSAT-1* will experience during launch and in space.

In September, the MYSAT-1 flight model was shipped to launch service provider NASA. It is now undergoing preparations for lift-off later this year from the Mid-Atlantic Regional Spaceport on-board a Cygnus space freighter to the



The model is an exact replica of MYSAT-1 and was built to test the launch and space conditions.

International Space Station.

Primarily an educational mission, MYSAT-1's payload consists of a camera designed to take images of the UAE from space to demonstrate the process of remote sensing. It

will also test a what's claimed to be a novel li-ion battery designed and developed at Khalifa University.

Yahsat established its Space Lab at the at Masdar Institute last year in collaboration with Northrop Grumman Innovation Systems (formerly Orbital ATK). Their aim is to develop and advance technologies within the space sector in line with the UAE's advanced space ambitions. It is the country's first space lab to be equipped with AIV facilities that cater for nanosatellites, and also incorporates a VHF/ UHF/S-band ground station that supports autonomous operations.

MYSAT-1 is the first satellite to be developed at the lab by the students enrolled in KUST's Space Systems and Technology masters programme.

#### Integrating TETRA and rail comms systems

State-owned LEN Industri, a provider of electronic infrastructure solutions specialising in transportation systems, will work with Teltronic to explore how it can integrate TETRA and/or LTE systems with its ETCS (European Train Control System) and CBTC (Communications Based Train Control) signalling platform.

Under an MoU signed at the InnoTrans event held in Germany in September, the companies said they will work together to enhance and

consolidate their respective abilities, resources and expertise. They intend to cooperate with each other not only to look at the feasibility of joint technical development, but also as a potential commercial cooperation scheme in the transport sector. Both companies signed during InnoTrans a Memorandum of Understanding to enhance and consolidate the parties' abilities, resources and expertise

Teltronic claims it has accumulated "wide experience" of integrating

TETRA with rail signalling systems, with a number of global references that have "proven the efficiency" of the technology for these services. The company said it offers an endto-end platform that integrates all the elements of the communications system, including equipment for backhaul infrastructure, specialised EN50155/EN45545 on-board radios and user interfaces, and its control centre specifically designed for the transport environment, CeCo-TRANS.

#### IoT gateway supports tyre monitoring

ADLINK Technology's industrial gateway has been selected for the Nihon Michelin-Softbank IoT tyre control system.

The first launch of an IoT tire monitoring system in Japan by a tyre-maker, the Michelin Tyre Pressure Monitoring System (TPMS) cloud service aims to provide improved safety and efficiency as well as cost savings benefits for industries such as fleet management and construction.

Softbank provides the IoT platform within the Michelin infrastructure and overall system. It's claimed the versatility of the TPMS allows it to handle vehicles of all classes, from camper vans and light trucks to

trailers and heavy vehicles.

The TPMS contains sensors that measure a tyre's air pressure and temperature, sending out alerts when these deviate from their standard levels. ADLINK's MXE-110i industrial IoT gateway will be used as the vehicle-mounted communications device. When factors within the tyre are outside of normal tolerance levels, it will send an email to the end customer's operations manager and the Michelin tyre vendor. An alert will also go out automatically to the Michelin Rescue Network which can dispatch a vehicle to provide assistance.

"The beauty of this system is that both the driver of the vehicle and



ADLINK said the MXE-110i provides an "extremely compact form factor with versatile RF connectivity and fanless rugged construction".

the operations manager can monitor all of the vehicle's data right on a smartphone, tablet, or personal computer," said Vincent Tseng, GM of ADLINK's APAC region.

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