

For communications professionals in southern Africa

SOUTHERN AFRICAN WIRELESS COMMUNICATIONS

NOVEMBER/DECEMBER 2018

Volume 23 Number 4

- Dealing with revenue leakage and mobile fraud
- Why TVWS could be the best option for bridging the divide
- Why connectivity is not just a developing world issue



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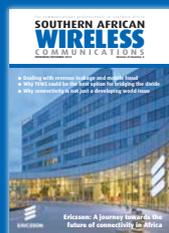
**Ericsson: A journey towards the
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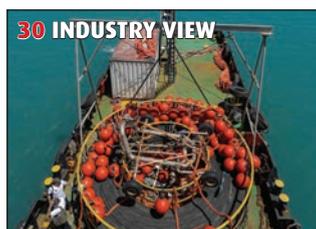
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China Telecom Global selects Teraco as location for interconnection hub

China Telecom Global's MEA (CTMEA) division is establishing an interconnection network and telecoms hub at Teraco Data Environments in South Africa to support growing traffic demands.

CTMEA first established its network nodes in Teraco's Tier III+ facilities in Cape Town, Durban and Johannesburg in 2012. These provide the interconnecting hubs linking global internet resources into the continent.

The new cooperation allows multinational companies to subscribe to Teraco's colocation services bundled with China Telecom Global's ICT and connectivity solutions. Teraco says the solutions will cater to the increasing demands from the



Teraco director Jan Hnizdo says the partnership opens up African opportunities for Chinese content and application providers.

world going into Africa, especially IT companies who are expanding from the Asia Pacific region.

Teraco director Jan Hnizdo says: "Our relationship with China Telecom Global opens up African opportunities for Chinese content and applications, which means a growing network and higher communications traffic in the

African region to the East.

"A digital transformation is happening across the sub-Saharan Africa region; with this development clients are able to leverage the most advanced, cost-effective data centre and ICT solutions from both companies."

China Telecom Global reckons its customers in China and the APAC region will now find it "even more convenient" to subscribe to high-quality colocation and connectivity services following the expanded partnership with Teraco.

CTMEA MD Changhai Liu says: "Our cooperation immediately builds higher confidence among our customers so they can focus

on their business operations and leave their hosting, colocation and interconnection requirements to us."

Liu says his company has been focusing on the African market for many years now, and that closer collaboration with Teraco further "enhances" its competitiveness in the MEA region with a "strong and like-minded" partner in Southern Africa that can be relied on.

This latest development for China Telecom Global follows a separate partnership agreement with Liquid Telecom announced earlier this year. The two companies will work together to provide network solutions to customers in Africa and Asia (see *Wireless Business*, May-June 2018).

Rwandan regulator warns public about telecoms fraud

The Rwanda Utilities Regulatory Authority (RURA) has launched a campaign to increase public awareness about crimes related to mobile security and telecoms fraud.

The authority says it has teamed up with mobile operators, security agencies, local administrators and consumer associations to "sensitise" telecom agents on various types of mobile fraud, the associated punishments, and preventive measures that can be taken to protect themselves and consumers at large.

The campaign kicked off in Kigali towards the end of October at an event staged at the city's Petit Stade. RURA says it attracted more than 1,000 telecom agents who came to hear how all citizens can be engaged in anti-fraud activities, and how quality of service can be increased and

maintained in the telecoms sector.

Addressing the audience at the event, James Musinguzi, director of technology development and services at RURA, said: "We decided to come and speak to you because we have noted that there are people misusing [telecoms] services and deceiving consumers by installing illegal networks which result [in money losses] on both consumer and operator sides."

Authority officials warned about an increase in criminal groups that are misleading consumers by tricking them into calling back high cost international numbers from unknown sources (*the so-called Wangiri fraud – also see p22*).

RURA advised mobile and telecom agents to take precautions and follow state regulations that govern



RURA director James Musinguzi tells an audience at the Kigali Petit Stade not to be deceived by criminals.

SIM card registration to avoid being implicated in the fraudsters' activities and other potential harms.

The authority says the event also provided an opportunity for mobile operators, local administrators and security services to brief telecom agents on the country's recently

adopted law on the prevention and punishment of cyber crimes. Audience members were told how to report such crimes as well as the penalties for failure to comply with the laws, rules and regulations in place.

Dealing with revenue leakage and mobile fraud – feature pp22-24.

Vodacom partners to introduce 'Super' HD Voice

Vodacom South Africa is partnering with device manufacturers to introduce Super High Definition (SHD) voice, also known as HD Voice+, in a live commercial network.

SHD is Voice Over LTE (VoLTE) subscribers using a compatible handset on the Vodacom network can now experience improved voice clarity made possible by the Enhanced

Voice Services (EVS) codec.

Vodacom launched VoLTE three years ago and says it is now pioneering the evolution of this technology in South Africa with EVS being the successor of the current HD Voice codec called AMR-WB (adaptive multi-rate wideband).

EVS is designed to offer up to 20kHz of audio bandwidth, and is

claimed to be able to deliver speech quality that matches hi-fi audio sources. In addition, Vodacom says the codec has been shown to provide coverage gains for users at the network edge. It says this will translate in better voice quality performance in conditions where cell coverage might not be optimal.

The company continues by saying

that without EVS, VoLTE offers more than double the bandwidth available over 2G voice, and is similar to the 3G WB AMR codec (23.85). But with the addition of EVS, bandwidth is again increased, further improving speech quality when using EVS-SWB (Super Wideband).

Vodacom invests ZAR300m for rural connectivity – News p8

Rahiel Nasir, editorial director, Southern African Wireless Communications



ON THE NETWORK

Wireless services: the next level

With flagging ARPUs in the consumer market, the enterprise sector is another revenue stream MNOs have been trying to tap into. But the golden egg this goose could potentially lay has so far eluded several cellcos. In previous discussions I've had with a couple of big name operators, they have privately told me the enterprise market has proven to be a struggle for them.

Perhaps one reason here is the lack of infrastructure that is needed to provide the reliable and resilient services enterprises need. Fibred data centres are a must here, but it's estimated that the entire continent is currently only served by a total of around 200 colocation and multi-tenant data centres.

However, things are changing and fast. While the figures above may seem low, they actually represent a significant rise from 2011 when it is thought there were less than 20 such facilities. Africa has been witnessing a rising need for colocation which is primarily being driven by cloud service providers eager to cash-in on the enterprises currently undergoing digital transformations.

But rather than build the commercial data centres themselves, MNOs have chosen to leave that to the specialists. This has led to homegrown firms such as MainOne in Nigeria and Teraco in South Africa. While both continue to expand, Teraco's recent enhanced partnership with China Telecom Global (see p5) is just the latest in a number of significant developments from the company that also includes the launch of Africa's largest data centre.

So who will be responsible for the future of Africa's wireless communication services? Will it be pipe providers such as the MNOs? Or the data centre operators who are opening the door to the enterprise market? Ideally, it will be both.

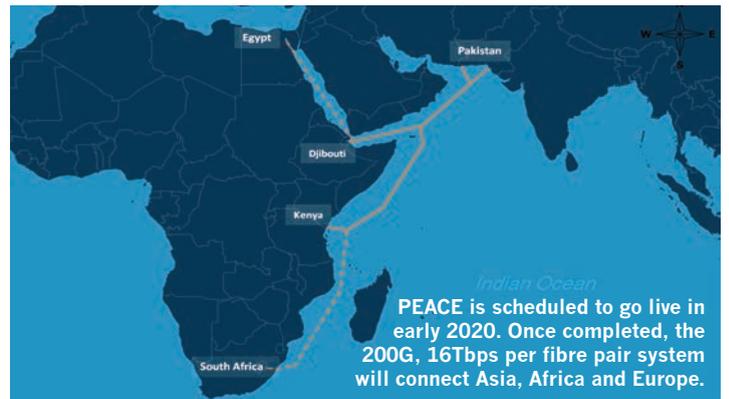
PEACE project enters into cable manufacturing stage

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.

BringCom and Versa partner for SDNs

BringCom has teamed up with Versa Networks in an initiative designed to develop and deliver pan-Africa SD-WAN managed services.

BringCom focuses on wholesale and retail telecoms services in Africa. It has deployed pan-African Ethernet and MPLS network services with its own regional hubs in Djibouti, Nairobi, Kampala and Lagos, as well as PoPs in the US and UK.

BringCom will work with US-based Versa Networks which has developed what's claimed to be a "next-generation" software platform called *Versa Secure Cloud IP*. Versa's SD-WAN deployment will be implemented across several locations on the continent, including multi-carrier connectivity spanning East and West Africa in collaboration with SimbaNET and ISOCEL Telecom. The vendor claims this will offer

Versa Networks' marketing head Atchison Frazer believes SD-WAN will boost business continuity and economic growth throughout the continent.

PHOTO: NET EVENTS



automated functionality, high performance and advanced flexibility.

BringCom's SaaS portal will feature Versa's *FlexVNF* software. Versa says this showcases SD-WAN connectivity integrated with diverse security services inclusive of ordering and provisioning.

Monitoring and analytics capabilities along with the Versa headend will initially be deployed

in BringCom's US data center facilities before moving to East and West Africa for production-level traffic. The partners add that the project will also utilise Versa cloud deployment capabilities, with future iterations supporting third party VNF via *FlexVNF* service chaining.

"Our carrier-grade and cloud-native software makes it easy for telco managed service providers and SaaS operators to deliver secure software-defined branch connectivity to multi-tenant customers," says Atchison Frazer, worldwide head of marketing at Versa Networks.

"[Africa] is an important, fast-growing market for us, and SD-WAN will play an important role in helping enterprises and organisations provide better services, while boosting business continuity and economic growth throughout the continent."

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ICASA withdraws invitation to apply for IMT spectrum license

South Africa's regulator has revoked its 2016 Invitation To Apply (ITA) for a license to provide wireless access services using International Mobile Telecommunications (IMT) spectrum.

The Independent Communications Authority of South Africa (ICASA) originally published its ITA in July 2016. This specified a licence to provide mobile broadband wireless access services for urban and rural areas using the complimentary bands, 700MHz, 800MHz and 2.6GHz.

But the ITA became the subject of litigation instituted by telecoms and postal services minister Siyabonga Cwele after objections were raised

about its terms. In September 2016, the High Court in Gauteng granted an order preventing the authority from implementing the licensing steps and processes referred to in the ITA.

The minister and ICASA have now agreed to settle the matter by revoking its offer and the government withdrawing its legal challenge.

The regulator says the settlement of the dispute paves the way for the licensing of IMT spectrum to support the uptake of mobile broadband services for the purpose of promoting competition, facilitating transformation of the sector, and providing a regulatory

environment that encourages ICT sector investment.

ICASA councillor Peter Zimri adds: "The withdrawal of this ITA is an important step towards achieving the National Development Plan objectives following the recent announcement of the economic stimulus and recovery plan by the President.

"ICASA is indeed working closely with all stakeholders and government to ensure completion of the process for the assignment and the award of IMT spectrum."

A new auction is now expected before the end of March 2019 according to local reports that quote ICASA spokesperson Paseka Maleka.



ICASA councillor Peter Zimri says the ITA withdrawal is an important step towards achieving the state's National Development Plan.

Vodacom invests to drive rural internet connectivity

Vodacom is delivering on promises made to rapidly expand its network to those who live in South Africa's remote and rural areas.

As part of continued investments in its *Rural Coverage Network Expansion* programme (see *News, Jul-Aug 2017*), the operator announced in late September 2018 that it had already spent ZAR300m (around USD202m) over the past three years to roll out networks in rural parts of the Eastern Cape. This is said to be country's fourth largest province by population with just over 6.5 million people, and covers an area of 168 966km².

Vodacom has built new sites to bring new coverage to many of the region's municipalities, such as Ngqushwa, Raymond Mhlaba, Amahlati, Enoch Mgijima, Walter Sisulu, among others. Within months of deploying new 3G sites, the operator says most of these communities have become part of the "internet revolution" that is now underway. Thirty new rural sites are planned for the Eastern Cape during this financial year.

In a separate announcement earlier in September, Vodacom said it had invested more than ZAR270m on networks over the

past two years in Limpopo. The operator said the funds have been targeted primarily at expanding its 3G and 4G footprint, deploying new sites in rural and township areas of the province, and performing upgrades to sites as well as to the core network in the region.

As a result, Vodacom said it has just over 1,000 base station sites in Limpopo, comprising 99.8 per cent 2G, 97 per cent 3G, and 75 per cent 4G population coverage.

Imran Khan, Vodacom's managing executive for the province, said that around ZAR150m will be spent on bolstering the network in Limpopo

during this financial year, an increase from the ZAR120m invested during 2017/2018. "Last year alone, we deployed 169 3G sites, 31 new network sites, 30 low cost sites to increase coverage in deep rural areas of Waterberg, Vhembe, Mopane and Sekhukhune districts," said Khan. "For the current financial period, we plan to deploy 224 new base stations; 93 of these will be deployed in deep rural communities, who never had signal coverage before and the remainder (131) is going to towns and townships to improve the user experience and increase data speed."



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AMN 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-as-a-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 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."

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



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Mozambique spectrum sale

 Mozambique's government is hoping to raise more than USD220m following a spectrum sale that was due to be held in late October as we went to press. The communications regulatory authority (INCM) was allocating licenses to use frequencies in the 800MHz, 1800MHz and 2.6GHz bands. Up for sale were: five lots of 2 x 5MHz in the 800MHz spectrum with each lot starting at USD15m; six lots of 2 x 5MHz in 1800MHz spectrum for USD30m each; and nine lots of 2 x 5MHz in the 2.6GHz band at USD15m. More details expected in the next issue.

MTN to use TIP technologies

 MTN plans to use network technologies developed as part of the 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 cost-effective 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.

TN offers free installations

 Telecom Namibia has launched a free home Internet installation promotion to help families get online. This comes as the government is urging ICT service providers to find ways to make online services more accessible to ordinary citizens. The operator says its offer is likely to result in "substantial growth" in the number of domestic internet users. Separately, Telecom Namibia is also in the process of revamping its internet service by installing a new multi-service access node platform as well as FTTH to provide high speed capabilities of up to 120Mbps.

WACS has been in commercial operations since 2012 and was constructed by Alcatel-Lucent using its cable laying ship, *Île de Bréhat*.

WACS suffers breakage in Angolan territorial waters

The *West Africa Cable System (WACS)* suffered a cut in Angolan waters on 19 September. The fault occurred around 1.2km from Sangano Beach, and the reason for the breakage has so far not been detailed.

Angola Cables said the outage meant a total loss of the international connectivity and internet services that it provides throughout Angola using *WACS*. The company added that it was able to restore services to a large extent and fairly quickly by routing traffic via alternative routes through the activation of redundant circuits in other subsea cable systems.

Repairing the cut involved mobilising an external vessel as one that had all the necessary equipment was not available in Angola. Angola Cables said: "Once all the conditions have been created for the arrival of the ship and its support technicians, as well as the authorisations of the competent bodies, we will begin the work immediately, which is already perfectly prepared and planned."

The actual repair time of the cable, depending on calm sea conditions, was expected to be around 10 days. At the time of writing this, all *WACS* repair and

recovery work was anticipated to be completed by 20 October.

Angola Cables is one of 12 companies that owns and operates *WACS*. The MTN Group, Telecom Namibia, Telkom SA and Vodacom are among some of the organisations in the consortium. The 14,530km cable runs from South Africa to the UK with landing points off Africa's west coast in Namibia, Angola, DRC, Congo Republic, Cameroon, Nigeria, Togo, Ghana, Côte d'Ivoire and Cape Verde, as well as in Seixal, Portugal before reaching Highbridge in the UK. It has been in commercial operations since 2012.

Internet Society & Facebook to expand internet connectivity through African IXPs

The Internet Society is partnering with Facebook to develop IXPs throughout Africa.

According to the society, 42 per cent of the continent's countries currently lack internet exchange points. Working with Facebook, it plans to increase and support the expansion of existing IXPs in Africa by promoting infrastructure development, training, and further community engagement.

Kojo Boakye (*pictured*), head of connectivity and access in Africa at Facebook, says: "Our partnership with the Internet Society will help develop Africa's IXP ecosystem by deploying resources like training and equipment to the areas where they are most urgently needed."



Citing data from the Africa IXP Association, the Internet Society says there are approximately 44 active IXPs located across

32 countries on the continent. This is said to have resulted in a 275 per cent growth of locally exchanged internet traffic since 2008 when there were only 16 IXPs in Africa. The society adds that over the last 10 years, traffic exchanged at African IXPs has increased from 0.16Gbps to 412Gbps with more than 800 networks now connected at these peering points.

"The internet community adopted the goal of having at least 80 per cent of the internet traffic consumed in Africa being locally accessible, and only 20 per cent sourced outside the continent by the year 2020," explains Dawit Bekele, Africa regional bureau director for the Internet Society. "We are getting closer to that target thanks to the many activities that promote interconnection and hosting in Africa, and to partnerships such as the one announced with Facebook."

This latest partnership follows the Internet Society's recent call for the need for community networks to address connectivity gaps (see *News, Jul-Aug*).

Fenix reaches 150,000 people in Zambia in just nine months

Energy company Fenix International says it has reached 30,000 Zambian households just nine months after expanding into the country in partnership with MTN.

The firm says the growth rate has exceeded its initial expectations. CEO Lyndsay Handler says: "[Fenix's] ReadyPay Solar Power system is now providing power for clean, bright lights, phone charging, satellite TV, and more to over 150,000 people in off-grid Zambian households."

According to the company, its systems are designed to extend safe, clean and reliable energy to off-grid users, and the lease-to-own business model makes them "ultra-affordable" to last mile customers. The company adds that its expandable range of solar products also gives individual households the flexibility to match

their system to their existing energy budget. It claims the success of this positioning has enabled it to quickly reach customers in every province in Zambia.

After establishing what it described as a "strong base" in Uganda, Fenix expanded to Zambia in exclusive partnership with MTN Zambia (see *Wireless Business*, Jul-Aug 2017). Fenix customers use MTN Mobile Money to finance their systems, whilst the cellco's brand and distribution network helps Fenix to quickly scale across the country. The company has previously said that its aim is to reach 850,000 people living in rural Zambia by 2020.

Fenix is now a wholly owned subsidiary of ENGIE and claims to be the only 'pay-go' energy company that is part of a global utility. France-based ENGIE says it has been active in Africa



The ReadyPay Solar Power system is now providing power to more than 150,000 Zambians in off-grid households.

for more than 50 years through its energy engineering business, natural gas purchase agreements with Algeria,

Egypt and Nigeria, and more recently as an independent power producer in South Africa and Morocco.

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Delivering the secret sauce for network uptime

The first Nando's restaurant was opened in Johannesburg in 1987. There are now 1,094 outlets worldwide, including 259 in South Africa.

How Nando's is using Wi-Fi and cloud connectivity for 99 per cent uptime in South Africa to ensure sales are never lost and customers are always satisfied.

Nando's started in 1987, with the first restaurant opening in Rosettenville, Johannesburg. It now has 1,094 outlets worldwide, including 259 in South Africa.

As smart technology becomes the norm, diners expect reliable, high-speed networks and communications solutions, as John Sikiotis, chief strategy officer and CFO for MEA and India at Nando's, explains: "Customers expect to be able to make a card payment on a secure point-of-sale system, and our franchisees expect a constant connection. In a digital age, everything relies on internet access, and constant uptime must be achieved to deliver both productivity and profitability."

Contemporary restaurants must therefore offer reliable POS systems and dependable back-office administrative support. In order to deliver on these requirements, a stable network is required as any interruptions means credit/cheque card payments cannot be accepted, and offline card payments are particularly susceptible to fraud. Network downtime not only results in exponential losses but also reputational damage that may hinder relationships with fickle consumers.

"As such, our business needs include full failover capability, centrally managed software, improved response to communication issues experienced at restaurant level, enhanced security and PCI compliance – all delivered in a scalable manner across the continent," says Sikiotis.

To achieve this, Nando's fitted Cradlepoint's AER2100 in each of its restaurants across South

Africa. According to Cradlepoint, this cloud-managed 3G networking device helps Nando's to increase bandwidth and achieve "four-nines" reliability in a secure, flexible, and open-architecture platform. It now operates as the primary connection with a cellular modem.

The system was implemented by Midrand-based managed IT solutions specialist, Infoprotect. Data usage is centrally managed, monitored and controlled using Cradlepoint's *NetCloud Manager*. It's claimed this enables Nando's to deploy and dynamically manage networks at geographically-distributed stores and branch locations, improving productivity, reducing costs, and enhancing the intelligence of the network as well as business operations. Cradlepoint says this includes full, proactive monitoring on the primary and secondary WANs for uptime tracking,

usage monitoring and limits, login attempts and network traffic. Monthly management entails LAN management, DHCP setup and passthrough, port forwarding, Wi-Fi as WAN and VPN setup. All firewall and maintenance configuration is also automatically handled via the platform.

"*NetCloud Manager* allows Infoprotect to perform remote diagnostics, upgrade firmware, and configure devices remotely," says Sikiotis. "This means our restaurants enjoy better return on investment with optimised data usage, real-time monitoring, load-balancing and proactive usage alerts."

The overall solution means Nando's has a reliable failover and business continuity strategy, achieved through the implementation of a combination of ADSL and mobile connectivity. With dual SIMs, cellular coverage variances are mitigated – if the primary line fails, the secondary one automatically connects, ensuring a seamless and automated transition. The system automatically alerts Nando's teams if the secondary line is in use and that the primary line is being repaired.

Cradlepoint adds that the solutions are easily scalable across any and all stores by simply adding more access points and switches, with "minimal change" to store topology.

"The benefits offered speak for themselves," concludes Sikiotis. "The cost-efficiencies realised include less downtime and fewer data breaches. Customers are satisfied and no sales losses are experienced due to offline POS systems. With this in mind, a reliable network and constant uptime offer a real cost saving solution." ■



Cradlepoint's AER2100 cloud-managed 3G networking device operates as Nando's primary connection. It is used with a cloud-based system for remote network management and control, uptime tracking, usage monitoring, etc.



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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 2Q19 ended 30 September 2018, Airtel said that in constant currency terms, its African revenues increased by 10.8 per cent year-on-year 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.

Liquid Telecom acquires all of Zambian subsidiary

Liquid Telecom has completed its acquisition of CEC Liquid Telecom in Zambia. It claimed the move will "further strengthen" its operations in Southern Africa.

CEC (Copperbelt Energy Corporation) is a Zambian power transmission, distributing and generating company. In 2011, it formed a joint venture with Liquid Telecom to build new fibre links in the country. CEC already operated a fibre network that spans more than 5,000km and is said to be Zambia's first fully-redundant network.

Under the original JV, Liquid owned 50 per cent of CEC. It has now purchased the remaining half for a reported USD32m. Liquid said this enable it to focus on growing its wholesale, enterprise and retail offering across Zambia. This includes cloud-based services such as *Microsoft Office 365* and *Azure Stack*, which will now be hosted locally in Zambia for the first time. The company also recently launched an LTE network in all of Zambia's 10 provinces. Liquid Telecom Group CEO Nic Rudnick reckons all this reinforces his company's position as a "leader in cloud networking and digital transformation."

In addition, the buyout means Liquid can invest further in its fibre network in the country and connect it to its One Africa broadband network that stretches from Cape Town to Cairo (*see News, Jul-Aug issue*).



Liquid Telecom head of commercial services Karl Delpport (right) seals the deal with Copperbelt Energy Corporation CFO Mutale Mukuka.

The Zambian operations will form a key part of Liquid Telecom's focus on the Southern Africa region, alongside Zimbabwe, DRC and Botswana. It will be led by Wellington Makamure, Liquid Telecom's new regional CEO of Southern Africa.

MiRO to distribute microwave systems from NEC XON

NEC XON has appointed MiRO to distribute its *iPASOLONK* 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.



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

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-Saharan 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."

Cryptocurrency has "potential" in 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 peer-to-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-to-peer 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 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.

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 enterprise-grade 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.

Helios Towers raises USD100m term loan facility for future expansion

HTA, a wholly-owned subsidiary of independent tower company Helios Towers Ltd., has signed a USD100m term loan facility agreement with Standard Bank of South Africa, Barclays Bank Mauritius and Mauritius Commercial Bank. The facility will be used for future expansion and general corporate purposes and will be drawn as required.

Helios Tower CFO Tom Greenwood says the loan will provide additional flexibility to support the company’s long-term growth initiatives. He adds: “This facility will not only enable us to continue investing in tower infrastructure in our current markets but will also support our intentions to seek opportunities in new markets across Africa.”

In a separate announcement made earlier in August, Helios

INVESTMENTS, MERGERS, ACQUISITIONS

Date	Buyer	Seller	Item	Price	Notes
2/10/18	CSG International	Forte Payment Systems	Acquisition	NA	CSG says the purchase of Forte adds to its expanding portfolio of public cloud offerings & grows its footprint in new verticals in the increasingly complex payments world. It also claims the acquisition “uniquely positions it to help clients create a convenient & differentiated customer experience, resulting in increased loyalty & share of wallet”.

NEW APPOINTMENTS

Date	Name	New employer	New position	Previous employer	Previous position
17/9/18	William H. Hess	-	-	American Tower Corporation	EVP, international operations & president, Latin America & EMEA - stepped down
17/9/18	Olivier Puech	American Tower Corporation	EVP, international operations & president, Latin America & EMEA	American Tower Corporation	SVP & CEO Latin America division
4/10/18	Martin Savitt	MATRIX Software	Chief revenue officer	Resolve Systems	CEO
4/10/18	Bill Highstreet	MATRIX Software	VP of operations & chief of staff	Hewlett Packard Enterprise	Director, worldwide channel operations
4/10/18	Terry Wong	MATRIX Software	VP of HR	Nimble Storage	Senior director, HR
9/10/18	David Heard	Infinera	COO	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

Towers is investing in upgrading and building backbone sites in the DRC. Helios says its investment is in the “double-digit millions”, and supports local mobile operators in their continued network improvement and expansion. It follows the recent award of the DRC’s first 4G licenses to mobile operators, including Vodacom, Orange and Africell.

Helios says the new backbone sites will improve mobile connectivity for an estimated six million people across the country. The 1,800km network runs through various areas of the DRC, including the equatorial rainforest and Kasai-Central province, with microwave signals transmitted between towers up to 40km apart.

The project is due for completion by December 2018. Helios says it will add significant capacity to replace the existing satellite connectivity in the regions covered, providing infrastructure for increased 3G capacity and the launch of 4G in Kisangani, the DRC’s third largest city, as well as the launch of 3G in Northern Kasai.

Helios Towers entered the DRC in 2011 with a 521 tower portfolio acquisition from Millicom. Since then, the firm says it has become the country’s leading independent towerco with 1,819 towers and a market share of 63 per cent.

Helios adds that to date, it has invested “several hundred million” dollars to develop the country’s telecoms infrastructure.

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. *Revenue assurance feature – pp22-24.*

LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
15/10/18	C-COM	Canada	3Q18	CAD	4.00	NA	0.0125	Generated revenues of CAD4,002,223 & a net after tax profit of CAD641,930 or 2 cents per share. This compared with revenues of CAD2,341,016 & a net after tax profit of CAD130,183 or 0 cents per share as reported in 3Q17, representing an increase of 71% & 393%, respectively. Company announced payment of its eligible quarterly dividend in the amount of CAD0.0125 per common share payable on 12 November 2018 to all recorded shareholders.
18/10/18	Ericsson	Sweden	3Q18	SEK	53.8 (bn)	NA	0.83	The turnaround continues as reported sales increased YoY by 9% & sales adjusted for comparable units & currency increased by 1%. President & CEO Börje Ekholm said: “There is strong momentum in the global 5G market with lead markets moving forward. The global radio access market is recovering from several years of negative growth & our investments in R&D have positioned us well to benefit from this development. More work remains, however, to get all parts of the business to a satisfactory performance level. We remain confident in reaching our long-term target of at least 12% operating margin beyond 2020.”
25/10/18	Nokia	Finland	3Q18	EUR	5,458	NA	(0.02)	Reported net sales for the period were EUR5.5bn compared to EUR5.5bn in 3Q17. On a constant currency basis, reported net sales grew by 1% YoY. Net sales in the Networks division came in at EUR4,888m for the quarter – a slight increase from the EUR4823m seen in 3Q17. But division’s MEA income fell 10%, from EUR478m in 3Q17 to EUR428m in 3Q18.
25/10/18	Bharti Airtel	India	2Q19	INR	20,422 (cr.)	6,343 (cr.)	2.5	Consolidated revenues for quarter at INR20,422 crore* grew 0.5% YoY (reported drop of 6.2%) on an underlying basis. In constant currency terms, Africa revenues increased by 10.8% YoY led by strong growth in data & Airtel money transaction value. African mobile services brought in INR56,472m, a rise from INR52,029m earned in 2Q17. *In India, one crore (cr.) equates to 10 million.
25/10/18	Orange	France	3Q18	EUR	10,307	3,687	0.30	The 1.3% growth in revenues in first nine months of 2018 exceeded that of FY17 (+1.2%). In Africa & Middle East, company reached 15 million of 4G customers at the end of 3Q17, representing a 57% increase YoY. MEA responsible for EUR1,310m during the quarter, a 3.7% increase compared to EUR1,263m in 3Q17.
25/10/18	ZTE	China	FY18	RMB	(6.2bn to 7.2bn)	NA	(1.48 to 1.72)	Net profit decreases expected to be around 235.72%-257.61% according to preliminary annual results. The substantial decrease in results for the period from January to December 2018 compared to same period last year was mainly attributable to US Government fine of USD1bn (see <i>Wireless Business, May-Jun issue</i>).
30/10/18	Eutelsat	France	1Q19	EUR	335.1	NA	NA	Total revenues down 2.7% on a like-for-like basis. CEO Rodolphe Belmer said underlying performance of operating verticals globally is in line with expectations at this stage of the year where the revenue profile is “back-end loaded” due to the ramp-up of African broadband and a contract with China Unicom expected in 2H19. He added: “The unexpectedly low outturn of the fall renewal campaign in Government Services, due predominantly to a one-off contract loss, while not representative of the underlying trend in this vertical, is a meaningful headwind for revenue development in the current year.”



Rafiah Ibrahim,
Head of
Ericsson
Middle East
and Africa



Ericsson: A journey towards the future of connectivity in Africa

Ushering in the Age of a 5G Future:

Ericsson is a global technology player with a localized focus on establishing the best network performance while paving the road to 5G in Africa. In fact, 2017 was the year when 5G went from vision to reality and the first commercial contracts were signed. Traction for Ericsson's 5G-ready 4G portfolio also began taking form and the success of the Ericsson Radio System (ERS) platform showed that technology leadership and a competitive portfolio provide substantial benefits, both in terms of customer feedback and margin improvements.

During the same year, a notable strong progress in Ericsson's strategy execution was recorded due to the simplification of the company's structural organization combined with a clear sense of accountability and strong governance. Ericsson has also appointed a new Executive Team to work across five market areas while focusing on three key business units: Networks, Digital Services and Managed Services. Due to the evolving nature of the industry, a new business area: Emerging Business, was created in January 2018 and was successfully addressed by Ericsson.

"Digital transformation is taking place in almost every industry, disrupting and creating new business models. 5G is an enabler of this transformation. In the Middle East and Africa region, we have already implemented an expanded platform to deliver more efficient network performance and improved network capabilities. This is enabling service providers to capture opportunities from digitization of industries and from emerging use cases while addressing the explosive traffic growth expected in the 5G evolution," said Rafiah Ibrahim, Head of Ericsson Middle East and Africa.

Today, a wide "smartphone ecosystem" adaptation in Africa is surfacing, which, in return, asserts a high level of demand

on Ericsson's partners to deliver. Providing a good user experience has become an important differentiator for mobile operators due to its significant impact on the score of subscribers' loyalty and operators' network efficiency. Therefore, Ericsson is supporting the operators to efficiently build and maintain best performing networks while generating the greatest possible return. The company is also ensuring all assets form future-proof investments toward tomorrow's 5G networks.

Telecoms' Steps towards 5G in Africa

Africa has gone a long way since its digitization journey. From mobile telephony to broadband, from connecting to digitizing entire sectors economies, jobs, education, healthcare, government, and societies. Smart Africa shall empower its people and communities to fight poverty, improve healthcare, enable education for all, and allow governments to build a strong and sustainable development.

Africa remains the fastest growing mobile market. At the end of 2017, there were 700 million mobile subscribers in Sub-Saharan Africa, equivalent to a penetration rate of 65%. The region continues to grow faster than any other region at a CAGR of 6% for the next 5 years reaching close to one billion mobile subscriptions by 2023, by which time more than 90% of the population in Africa will subscribe to a mobile service.

Africa is also witnessing a major technology shift. The major transition to mobile broadband is driven by the affordability of smartphones which is expected to more than double in the next five years. With Africa mobile data traffic expected to grow nine times by the end of 2023, there is a need for a more efficient technology, higher data rates and spectrum. New applications such as video streaming, virtual and augmented reality and emerging use cases will

also require higher bandwidth, greater capacity, security, and lower latency. Equipped with these capabilities, 5G will bring new opportunities for people, society, and businesses.

Technology brings an unprecedented opportunity to address the challenges of sustainable development and improve the livelihood of people in Africa. At Ericsson, we have engaged in initiatives to use our expertise in technologies, our solutions and our advocacy to make life better for the people of Africa.

Ericsson started to lead the telecommunication industry discussions around 5G as early as 2011, as it scoped out 5G services and requirements, and ran R&D in the area of the 5G technical concept.

In 2016, Ericsson played a key role in the industry standardization for 5G, with a number of contributions to the standardization body 3GPP higher than any other company at the time.

Previous generations of mobile networks addressed consumers predominantly for voice and SMS in 2G, web browsing in 3G, and higher-speed data and video streaming in 4G. The transition from 4G to 5G will serve consumers and multiple industries alike.

Today, Ericsson has an advanced 5G portfolio, enabling networks to evolve smoothly to the next generation. Early trials are key to developing leading technologies for the 5G standard as well as competitive product portfolios.

While Ericsson has always invested in R&D both for technology and cost leadership, including preparing for 5G and securing a leading position in that technology wave, the company has also ensured that its 4G offering is more competitive for its customers worldwide.

The Way to 5G is Paved with Partnerships

IoT innovation and business models require an ecosystem approach, which Ericsson is fostering

through strategic partnerships with leaders in the technology industry as well as academia.

Together with industry partners, Ericsson strives to ensure that the value of IoT is understood and realized in efforts to drive innovation forward.

Ericsson is driving and engaging in a large number of 5G research projects through working closely with telecom operators across the world.

By the Mid of 2018 Ericsson had 40 MoUs for 5G trials and collaborations. These early trials are key to developing leading technologies for the 5G standard as well as competitive product portfolios.

Ericsson did not solely work with industry leaders, but is also currently collaborating with 45 universities and institutes as well as 22 industry partners globally to better understand new use cases and support its customers.

Together with its partners, Ericsson is continuously testing, learning and pushing the boundaries of how 5G can meet the diverse needs now and of the future.

Local Tech Talents Make Ericsson Global

To ensure Ericsson's future success and maintain its pioneer status in the world of technology, the company focuses on attracting the best local and international talents to support the development of skillful competency and to inspire a work culture that brings out the best version of Ericsson to the world.

Respect, professionalism, and perseverance frame the company's culture, guide Ericsson employees through their daily work and shape the way the company does business.

Ericsson believes that talent has no age, race, gender, nationality or sexual orientation, as the company strives to nurture and attain the best talents that will turn Ericsson's vision for a smart future to a reality.

Building Wireless Networks

Ericsson provides solutions that realize its customers' digital transformations. These solutions consist primarily of software and services in the areas of monetization and management systems (OSS/BSS), telecom core (packet core and communication services), cloud & NFV (Network Functions Virtualization) infrastructure, and application development and modernization.

Networks' solutions support all radio access technologies and Ericsson offers hardware, software and related services both for radio access and transport with a focus on service providers. This encompasses all cellular generations offering best performance, low total cost of ownership, smooth evolution and a broad range of network capabilities (from Gigabit LTE to Massive IoT).

Additionally, Ericsson provides managed services and network optimization to service providers. Through these offerings, customers entrust us to run the operations of their network/IT systems and optimize network performance.

Ericsson's main differentiators are its deep understanding of service provider processes and its tools for advanced automation.



Sustainability and Corporate Responsibility

Ericsson has made many efforts specifically in Africa when it comes to Sustainability and Corporate Responsibility. For example Connect to Learn can be named which is a public-private partnership with the purpose to increase access to quality education, especially for girls, through life skills programs and the integration of technology tools and digital learning resources in schools. Ericsson provides cloud-based MBB infrastructure; the Earth Institute at Columbia University does the monitoring and evaluation, as well as providing access to cutting-edge research on education (including monitoring and evaluation frameworks); and Millennium Promise (MP) helps operationalize the research in under-resourced schools and local communities. This initiative has enabled quality education for +120,000 students in 25 countries including Bhutan, Burkina Faso, Cape Verde, Djibouti, Ethiopia, Ghana, India, Iraq, Kenya, Malawi, Myanmar, Rwanda, Senegal, South Africa, South Sudan, Sri Lanka, Tanzania, Tunisia, Uganda and many more.

Moreover, Ericsson contributed to building several Millennium Villages to empower communities by bringing connectivity and its benefits to unconnected areas. This was in partnership with the Earth Institute of Columbia University, Millennium Promise, Mobile Operators and Ericsson. As a result, over 500,000 people in remote villages in 10-Sub Saharan African Countries have benefited.

On top of that, in Tanzania, Ericsson collaborated with GSMA and Tigo to create a PPP to address rural connectivity challenges.

When it comes to peace efforts, Ericsson collaborated on a Whitaker peace development initiative (WPDI) which provides support to groups of young men and women who can bring positive change in their communities, in terms of like skills and vocational skills in ICT and entrepreneurship.

Ericsson provides ICT equipment and specialized training in ICT and business skills for the youth.

The training covers internet, social networks, staying safe online as well as communication and entrepreneurial skills. As a result, Ericsson has worked with Hope North School since 2015 to provide hands-on ICT training for youth affected by Uganda's civil war and to help build vocational skills.

Since 2015, Ericsson became a signatory of GSMA Human Connectivity Charter. The charter sets out enhanced coordination within and among mobile network operators before, during and after a disaster and to scale and standardize the mobile industry's preparedness and response activities.

The aim is to enable a more predictable response, and strengthen industry, government and humanitarian sector partnership as part of the emergency. Ericsson response initiative has been in existence since 2000. Ericsson response has supported 40 relief efforts in 30 countries and was deployed in locations such as Iraq, Sierra Leone, South Sudan, and more recently Madagascar and Nigeria.

Since 2010, Ericsson has supported the development of an online platform to connect displaced families; providing technical expertise and engaging with mobile operators. Ericsson has been the technology partner to Refugees United (REFUNITE) – a non-profit dedicated to help displaced persons locate missing family and loved ones. REFUNITE has assisted forcibly displaced families reconnect. By 2016, the platform had 600,000 users and available in 17 countries across Middle East and Africa.

Looking ahead

At Ericsson, the company creates value to their stakeholders by providing industry-leading, high performing, sustainable and cost-effective solutions. Ericsson has always driven its technology development with the intention to improve people's lives and contribute to the betterment of society, while at the same time providing shareholder value. Ericsson takes active measures to ensure that the company is a responsible and relevant driver of positive change in Africa as well as the rest of the world.

"By 2023, we now estimate around 142 million cellular IoT connections in the Middle East & Africa region, up 26% from 2017. Meanwhile, 5G will kick off with enhanced mobile broadband as its first use case. By the end of 2023, there will be 19 million 5G subscriptions in the Middle East & Africa region," Ibrahim concluded.

ABOUT ERICSSON

Ericsson is one of the leading providers of Information and Communication Technology (ICT) to service providers, with about 40% of the world's mobile traffic carried through its networks. Ericsson enables the full value of connectivity by creating game-changing technology and services that are easy to use, adopt and scale, making its customers successful in a fully connected world. For more than 140 years, Ericsson's ideas, technology and people have changed the world: real turning points that have transformed lives, industries and society as a whole.

Ericsson's investments in innovation have delivered the benefits of telephony and mobile broadband to billions of people around the world. The Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York. www.ericsson.com

Radio offers the 'longest reach and "highest gain'

Siklu claims its *EH-8010FX* radio delivers 10Gbps full duplex point-to-point wireless Ethernet connectivity with the longest mmWave reach by means of the highest system gain in the market.

According to the vendor, the device has a reach of 1.7/2.3 miles with 99.95 per cent availability (rain zone K/E and with a two foot antenna).

The *EH-8010FX* operates over interference-free 71 to 76/81 to 86GHz E-band spectrum, with a total of 10GHz of bandwidth for use worldwide. Siklu says it uses a high-gain pencil-beam antenna which helps guarantee spectrum will be available everywhere and maximises spectrum re-use. Additionally, E-band systems are



governed by low licensing fees and a quick licensing processes.

The *EH-8010FX* is said to incorporate adaptive bandwidth coding and modulation for high availability and easy integration with Ethernet switches or MPLS routers in highly resilient topologies. It is designed to connect into and extend existing

networks with its support for both copper and fibre 10G interfaces.

The all-outdoor radio is IP67 rated and comes pre-configured out of the box with no license to download. Siklu adds that the "intuitive" web GUI manages local and remote units to enable fast commissioning and configuration. www.siklu.com

ACCESSNET-T promises "unlimited" TETRA functionality

Hytera reckons its new *ACCESSNET-T* IP for partners is an "infinitely scalable" IP TETRA radio system that offers high performance and versatility, along with an "intuitive and user-friendly" web-based network management system (NMS).

The system fully links TETRA radios from Hytera and Sepura to ensure what's claimed to be smooth voice communication, high availability, and efficient data transmission. It also integrates PTT over Cellular(PoC), LTE and Wi-Fi.

Available in both indoor and outdoor versions, Hytera says the *ACCESSNET-T* offers "unlimited" TETRA functionality and "virtually limitless" connection possibilities for external applications.

The firm says it can be used for all scenarios thanks to its diverse configuration options and modular



hardware design which means components can be easily exchanged or added to during ongoing operation. Whether it is fitted outdoors on masts or walls (including in harsh environmental conditions as it is IP65 rated) or underground, Hytera reckons its system always provides "reliable radio coverage thanks to the unique dimensioning of the transmission/receiving components on the base stations"

www.hytera-mobilfunk.com

OTDR test solution detects and reports fibre faults

Optical transceiver specialist ProLabs has showcased its latest testing solution which promises to ultimately save time and money for service providers.

The *EON-NSV-OTDR* (optical time-domain reflectometer) is designed to quickly detect, locate and report any breaks or faults in optical fibre cables. ProLabs says this means the right team can be dispatched for the related problem quicker than before.

The *EON-NSV-OTDR* locates, stores and reports the number of faults and reflections detected, calculates distances to the faults, and reports the distance to the farthest fault. It works by transmitting a series of optical pulses into the fibre under test and extracts. From the same end of the fibre, light is scattered or reflected back from points along the fibre. The scattered or reflected light is measured and then analysed



to locate the end of the fibre, the location and overall loss. ProLabs says this process allows engineers to detect if fibres are intact and to then deploy teams to fix the issues as and when they are found.

The company adds that its solution is specifically designed to allow for not just OTDR testing of the underlying optical circuit but also the Layer 2 and Layer 3 services that may be running over it. The solution also contains custom hardware for the generation of test traffic, loop-back and analysis, and can be configured to provide real-time monitoring of jitter and latency between the desired end-points in the network. www.prolabs.com

Stretching fibre networks with wireless hybrid system

XKL LLC has developed a new Wi-Fi infrastructure solution to provide a point-to-multi-point topology solution for fibre-to-wireless hybrid networks.

The fibre optic networking systems specialist says its solution enables

educational organisations, municipalities and enterprises that deploy Wi-Fi networks to extend their reach up to 80km with up to 36 wireless access points per 1RU system, enabling growth and enhanced flexibility.

The new Wi-Fi fibre-to-wireless hybrid system is a special application of XKL's *DQT10* series which is part of the company's *DarkStar Transponder* family of products.

As a Layer 1 device, the *DQT10* is based on XKL's *FlexArc* architecture. It's claimed this enables it to act as a distribution hub for wireless applications, with MIMO access

points supporting 2.4GHz and 5GHz wireless networks. XKL says this increases distance from a traditional 10km-reach Ethernet implementation to an 80km-reach, providing 10GbE (or soft-configurable 1GbE) at each wireless AP, as well as increased flexibility and efficiencies across metro and regional wireless networks. www.xkl.com



Indoor LTE gateway makes wireless installations simpler

NetComm believes its new self-install *CAT 18 – 4G LTE Residential Gateway* will allow network operators to activate more fixed wireless customers “faster and more cost-effectively”.

According to the company, the cost of supplying and installing an outdoor antenna in fixed wireless access deployments can make delivering mobile-based broadband services uneconomical in some cases.

NetComm has come up with an indoor gateway which it says is easy for the customer to install and yet still ensures optimal performance in

locations with good signal reception.

The firm also makes an outdoor version and says having the option to install both an indoor or outdoor device will “significantly increase” the potential market opportunity for operators. In remote locations, where the distance between the base station and end-user equipment is large, outdoor antennas are needed to ensure optimal link budgets. In locations closer to the base station, the indoor device can offer a very effective alternative.

The *CAT 18 - 4G LTE* uses the same

technology as its outdoor counterpart. NetComm says it looks like a standard residential gateway, providing Wi-Fi, voice and Ethernet connectivity in the home, but instead of having a wired input, it uses a SIM card to connect to the LTE network.

The company adds that the device delivers a “powerful”, dual-band .11ac Wi-Fi network, allowing end-users to connect multiple devices simultaneously. It also features voice capability, making it the “ideal” all-in-one device for homes and small businesses. www.netcommwireless.com

Also look out for...

Programmable and open access network slicing

Nokia has developed a programmable fixed access network slicing solution built around open standards and Altiplano, its cloud-native software platform. It says this allows operators to establish full control and autonomy for each slice they manage, as well as determine performance metrics for the network and the services they deliver to customers.

Software Defined Access Networks (SDAN) allow the network to be partitioned into virtual slices. Operators can then use this to deliver new services and connect more users, segments and entities that would otherwise require parallel networks.

Delivering more than service level slicing, Nokia reckons its system enables operators to scale to a virtually unlimited number of discrete network slices that can be independently operated, for example to run 5G mobile transport, wholesale or business services.

According to the company, its programmable slicing solution uses YANG data models to create a virtual slice that looks, feels and operates just like a physical network. Each service provider runs its own dedicated controller with a dedicated view of their slice of the network. This is said to provide operators with the control and flexibility to deliver differentiated broadband services in a multi-vendor network environment.

Nokia says equipment from different vendors can sit alongside each other, in different slices or on the same slice. The company says its solution also makes it easier to share the physical network by enabling operators to automate challenging process such as rules, regulations and multi-vendor integration.

Once deployed, Nokia says its platform can help services providers move toward a fully autonomous Network as a Service (NaaS) model. It's claimed this will enable a number of key benefits. For example, the vendor says operators will be able to quickly develop new strategies and create service offerings that better monetise their access networks. They will also be able to accelerate 5G deployments by configuring a slice to meet the SLA requirements for 5G ‘anyhaul’, negating the need for a dedicated backhaul/fronthaul network.

INTRA offers fast network data insights

Rohde & Schwarz (R&S) has unveiled an intelligent network traffic analytics solution that claims to offer unmatched connectivity and processing speed.

Developed by its subsidiary firm ipoque, which specialises in deep packet inspection (DPI) software, R&S says *INTRA*'s real-time reporting capabilities enable service providers to efficiently glean data insights on subscribers across entire networks, and ultimately make more informed decisions that enhance organisational efficiency and impact.

With modern connectivity options of up to 100Gb with Gigabit Ethernet and processing speed, it's claimed *INTRA* provides data insights at a reporting rate of one second.

INTRA features R&S' proprietary *PACE 2* DPI engine and what's described as “advanced” real-time packet processing to offer fine-grained information on network traffic,



subscriber sessions and network metadata. The vendor says its solution can be easily integrated with existing systems, fully virtualised and scaled up as needed. With a standard and vendor-independent Big Data export, it adds that *INTRA* also allows service providers to re-use collected data for future use cases.

The platform can be deployed to serve specific functions based on the user's needs and maturity. It can operate as a standalone analytics system, supply data extracted from network traffic to Big Data systems, or serve both as an independent traffic analytics system providing insights

and reports, and as an aggregator for Big Data and third-party analytics.

R&S add that it operates on a ‘pay-as-you-grow’ model, and offers CSPs the option to use COTS hardware without the need to replace existing systems.

With its flexible analytics APIs that “seamlessly” connect to any Big Data system, the company reckons *INTRA* allows all CSP stakeholders to synchronise and optimise data analytics activities, thereby driving intelligent decisions across business units, reducing costs, and improving overall business performance. www.ipoque.com

Machine learning powers service assurance

TEOCO has released the latest version of its service assurance platform with the claims that it has become the first to truly unify all relevant operational data in one place.

Helix 10.1 is designed to help CSPs collect, process, store and analyse the massive amounts of data created by networks. It features *Sentinel* which, according to TEOCO, is a high-performing, intuitive analytics-driven user interface. It says this gives NOC and engineering

teams “advanced” visual analytical tools to investigate and drill down into potential problems by efficiently cross-correlating all available data.

The latest version also introduces *Anomaly Detection* to *Helix*, a machine learning algorithm that is said to be capable of automatically identifying network performance issues. By efficiently analysing massive datasets of network and service KPIs, TEOCO claims *Helix 10.1* offers automated

troubleshooting to offer a better understanding of the patterns that may cause service issues, as well as taking proactive measures to prevent such patterns recurring.

The platform also includes *Service Impact*. According to the company, this adds a predictive capability enabling users to anticipate how maintenance will affect the network, using both current alarms and advanced simulations to judge the potential impact. www.teoco.com



Attacking the hackers

With criminals increasingly targeting mobile users and fraud on the rise, the issue of security is never far from the headlines. So how can operators safeguard their networks and stay one step ahead of the hackers? RAHIEL NASIR asks the experts.

Mobile networks are coming under increasing attack from fraudsters, hackers and cyber criminals.

For example, South Africa's position as one of the continent's fastest-growing telecoms markets makes it an increasingly attractive target for cyber criminals. In a study published earlier this year in March, threat intelligence specialist Anomali cited a number of reports about cyber attacks on South African service providers. These included: Telkom being hit by *WannaCry* ransomware in 2016; a flaw in Vodacom's portal that allowed any subscriber to access high-level account summary information linked to any phone number; customer records becoming accessible following a flaw that was discovered in Cell C's portal; and sensitive information that was found accessible in MTN's e-billing portal. The latter, along with affiliated service providers, also suffered a service outage due to a DDoS attack in 2013.

Anomali also quoted the global *Threat Impact* index from security specialist Check Point.

South Africa was ranked 21 in the global list of countries and was placed ninth overall in Africa, but is by no means the country that is most at risk on the continent. Zambia, Nigeria, Uganda and Malawi all fared worse.

Whilst cyber crime in general is a global issue that can impact anyone and any body, from individual consumers and organisations to governments and states, mobile operators face the additional scourge of revenue leakages through, for example, the fraudulent use of SIM boxes, particularly in Africa.

Biren Sasml, CEO of Ghana-based revenue assurance specialist Subah, says: "The reality is that Africa has been hit by several telecom frauds. SIM box fraud, also known as the interconnect bypass fraud, is one of the major ones affecting the market. The impact is huge in terms of the loss in revenues to telcos and taxes to the government. It is estimated that Africa loses more than USD200m every year to interconnection frauds. I have seen more than 80 per cent of

African operators facing SIM box fraud."

Sasml says a major misconception is that SIM box fraud happens in countries with very high termination rate. "The moneymaking opportunity for the fraudsters is the differential between the international termination rate and the local termination rate. So even in countries where that is only a few cents, there's still enough margin for fraudsters to make money."

UK-based telecoms revenue assurance specialist Revector has been active on the continent and tracking down SIM boxes since 2008. Its founder and CEO Andy Gent explains that the company recently worked with a major low-cost carrier in one West African country that had been targeted by fraudsters and seen an 80 per cent decline in business. "Three months later, Revector [was able to] return USD500,000 revenues per month of increased inbound traffic – USD22,600 per business day – as the fraudster sending the traffic could no longer keep up with the 'cut off' SIM box numbers it needed to replace. The SIM

box route into the country then failed and got switched off by the low-cost carrier.”

Nonetheless, SIM box fraudsters continue to thrive in Africa.

“Each year, I want to believe the MNOs would have invested the effort and addressed this as well as the new and highly costly OTT bypass issue,” says Gent. “This is not the case: changing rates from promotional tariffs and cross-border plans continue to encourage international bypass. The reality is that the marketing teams should work much more closely with the fraud teams across the continent.”

The i3forum is a not-for-profit industry body that brings together the international carrier ecosystem to enable and accelerate transformation. It believes operators in Africa have been traditionally exposed to higher levels of fraud incidents compared to other regions – as well as SIM boxing, it says subscription, international revenue share fraud (IRSF), and partner channel frauds are some of the most prevalent.

Katia González, chair of the forum’s fraud group and also head of fraud prevention at BICS, says: “While operators have been investing a lot in SIM box protection, IRSF issues are starting to get more attention. ‘Wangiri’, a form of IRSF, has reached an epidemic level specifically in Africa but it’s also a fast-growing fraud scheme around the world.”

‘Wangiri’ originated in Japan and is said to mean ‘one ring and drop’. Those behind the scam literally do just that – they call a mobile or fixed line number, let it ring once, and then drop the call. Unsuspecting mobile users see a missed call from an international number that they don’t recognise, and the fraudsters hope that their expensive, premium rate per minute international numbers will be called back so that they can profit. González says targeting Wangiri is one of the key focus areas for the i3Forum’s Fight Against Fraud workgroup.

Sasmal points out that signalling security and the design of signalling protocols for next generation networks also needs to take centre stage and is crucial for the success of the industry and future networks.

This was highlighted earlier this year when AdaptiveMobile Security announced it had detected what it described as “increasingly sophisticated” attacks via the next-generation of the Diameter



“If each MNO or carrier goes it alone and tries to deploy their own solutions, we will never be successful.”

signalling protocols being used for 4G.

To acquire its insights, the company said it analysed international traffic that used Diameter from 10 mobile networks worldwide. It looked at traffic travelling to and from more than 80 countries across five continents and claimed to have detected a range of malicious activity, from simple to complex, affecting both mobile subscribers and mobile networks.

Speaking at the time, AdaptiveMobile’s chief intelligence officer Cathal Mc Daid said that up until now, Diameter vulnerabilities were thought to be theoretical. “This new research clearly demonstrates that they are actually being exploited in the real world, meaning the risk is real and must be addressed. Most importantly, carriers need to understand what is being detected and cannot rely on simple categorisation or rules to decipher what is malicious activity and what is not.”

Mc Daid went on to warn that while the threat is now proven, malicious traffic will remain hidden “amongst the noise” without an added and critical layer of intelligence. “As Diameter use widens and SS7 security improves we expect rogue actors to exploit Diameter more and more.”

What MNOs should look for

Having said that, the MNO still remains the gatekeeper in all this – to reiterate González’s point above no one is going to protect the operators’ networks and infrastructure on their behalf. So when choosing an assurance solution

to protect against revenue leakages, what do the cellcos need to look for?

“There are many types of solutions and not one fits all needs,” says Gent. “My personal view as an ex-CEO of a major operator is to go for a proven solution from a reliable vendor and not the latest sales pitch. Test the vendors, and get them in to analyse your network for risks. Every single fraud and revenue assurance service provider should be able to prove a return on your investment.”

According to Subah’s Sasmal, revenue leakage generally occurs in the organisational process and/or the technology side of business. “It can come anywhere in the revenue cycle, from sales to network configuration and rating and billing.

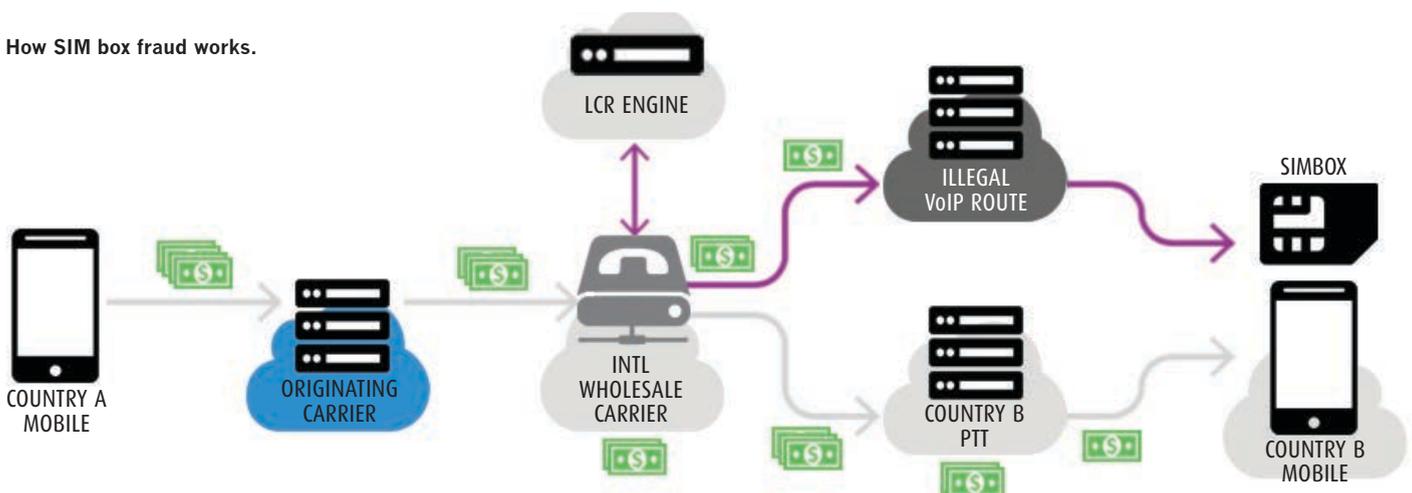
“The areas most vulnerable to leakage and fraud are the revenue streams with the largest volume of payments including pre-paid, roaming and post-paid plans. Many revenue leaks occur because organisations don’t have integrated, real-time access to service or contract data, and they use manual analysis rather than automated processes.”

This latter point is crucial for Subex which believes AI and predictive analytics represent the future. Maheshwari claims the company is committed to ushering in this future where all of its customers, including MNOs, will be able to predict with certainty the consequences of every action they take, and therefore predict and avoid every risk and every threat.

Maheshwari also advises MNOs to avoid the ‘old ways’ of choosing and using OSS/BSS vendors. “While in traditional thinking, efficiency demands singularity of approach, nature teaches us singularity is a sure way to extinction. Similarly, in fraud and security, the one trick pony will be found out sooner than later. So ask if the vendor has a multi-pronged, multi-dimensional approach to solving fraud and security challenges.”

Like Subex, Amdocs also says that machine learning- and AI-based methodologies should be part of the solution, and that a different approach is now needed when it comes to selecting a platform. “Service providers are becoming *digital* service providers. Many of the traditional revenue assurance methodologies – rule and statistics based on knowledge of human experts which worked well in past decades – are not enough to support the new digital ecosystems.”

How SIM box fraud works.





Biren Sasmal,
CEO,
Subah

“Many revenue leaks occur because organisations don’t have integrated, real-time access to service or contract data, and they use manual analysis rather than automated processes.”

González echoes this view when she says that operators are working in a mode of “incident-induced learning” with a silo view on fraud prevention. Her recommendation is to look at a solution that provides fraud intelligence around the world, seamlessly and efficiently. “Detection mode is highly unreliable and always introduces delays in fraud prevention. MNOs should look for more proactive and real-time ways to prevent fraudulent attacks from happening.

“Most incidents of fraud actually occur during non-business hours. That’s why 24x7 fraud coverage is an absolute must. New data feeds and technologies such as Big Data and signalling analysis should be focus areas of investment for operators so they can go to the next level in fraud prevention.”

More tech, more opportunities for the bad guys?

From a security perspective, are things only set to get worse for MNOs as they progress from 3G to 4G and beyond, and also move out to the edge and connect objects in the IoT?

“As African mobile carriers adopt the latest technologies, we firmly believe that new cyber fraud challenges will emerge,” says Michal Sever, product marketing manager for Amdocs’ Revenue Guard. “This will lead to verification and customer authentication in digital self-service channels (i.e. digital transactions through mobile). Applications through operators and/or web portals will ramp up. In addition, increasing internet speeds and bandwidth will enable operators to offer advanced IoT applications and services, hence new security challenge are expected to emerge in this space as well.”

González is likely to support this view when she says that the mobile ecosystem is continually growing, and when moving from end users to end points the opportunities for fraudsters grows. “Without proper focus on security and investment, the hacking of IoT devices may become the main method of security threats to operator networks.

“Organisations and consumers have a growing number of connected devices that hackers are

targeting. This challenge will only continue to grow as the number of smart devices we use multiplies.”

But Revector’s Gent is not so pessimistic: “4G is building in new security; IoT will be a challenge but if the MNOs build a complete security team and rise to the challenges they can protect themselves.”

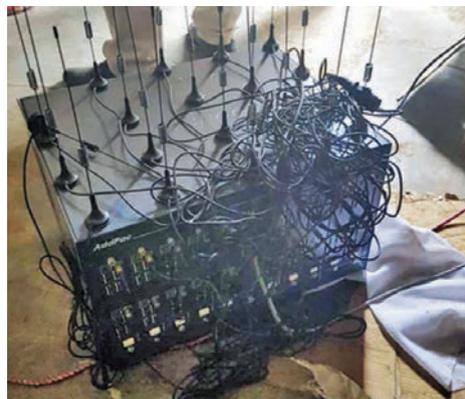
If there was one thing that many of the industry experts we spoke to agreed upon, it was the view that mobile security is not just an MNO problem.

“We are at a critical time for the entire telecoms ecosystem. Our businesses are diversifying, and we have to work together to ensure that services are both secure and profitable,” says González. “The industry as a whole has to collaborate and work together to create secure environments that are not easy targets for fraudsters. If each MNO or carrier goes it alone and tries to deploy their own solutions, we will never be successful. The whole ecosystem is more interconnected than it has ever been and we have to view the fight against fraud in the same way.”

She goes on to state that while operators are responsible for protecting their networks and infrastructure, support from governments and regulators can ensure there’s a set process that can be followed. “By enforcing these policies, they can help advocate and protect consumers from fraudulent attacks. Having this support will promote the sharing of information between operators and wholesale carriers in a coordinated way.

“Ultimately, it’s up to the carriers to work together with whoever will stand up and collaborate to fight fraud. Across the entire ecosystem, which includes governments and regulators, we have to work together to limit the damage being done by fraud. A fraud-free environment will enforce trust on the telecom industry and benefit everyone related to it directly or indirectly.”

The Internet Society also highlights the issue of trust which it sees as key to advancing Africa’s digital economy. At the Africa Internet Summit held in Senegal last May, the society unveiled *The*



An illegal SIM box in Congo. SIM box fraud is particularly rampant in countries with high numbers of incoming international traffic where SIM availability is loosely controlled and law enforcement is lacking. The fraudsters mainly use pre-paid SIMs where the ownership and address is hard to detect. There are many variations of SIM box fraud and methods of detecting them therefore also vary.



Andy Gent,
founder
and CEO,
Revector

“IoT will be a challenge but if the MNOs build a complete security team and rise to the challenges they can protect themselves.”

Personal Data Protection Guidelines for Africa. They have been jointly developed by the Internet Society and the African Union Commission to facilitate the implementation of the AU’s Convention on Cyber Security and Data Protection (known as the ‘Malabo Convention’), adopted in 2014.

Speaking at the time, Dawit Bekele, the Internet Society’s African regional bureau director, said: ‘The lack of appropriate protection for personal data can have a profound impact not just on individuals but also on society at large, to the point of endangering democratic systems. These guidelines explain how people can take a more active role in the protection of their own data as well as the role that other stakeholders, including governments and legislators, have in ensuring the proper use of data.’

The guidelines urge all AU member states to firstly recognise privacy as a foundation for trust in the digital environment, and secondly, prioritise the sustainable and responsible use of personal data in the digital economy.

In addition, there are recommendations for citizens such as being aware of the risks and benefits of the digital economy or their online activities; knowing how to exercise their rights under privacy and personal data protection laws; and developing the capabilities to protect their interests online.

So the entire issue of mobile and digital security does not just begin and end with the mobile network or other service provider. As stated before, it has an impact on all of us, and so even individual consumers need to know their responsibilities are when it comes to the safe use of digital services.

“Africa is still largely a voice-centric market where MNOs and carriers are being challenged by voice fraud,” says González. Our recommendation to operators across the continent is to get involved in the fight against fraud, share information and follow the ITW Global Leaders’ Forum’s and i3forum’s Code of Conduct. The ultimate purpose of this code is to prevent fraudsters profiting from criminal activity and bring a lasting impact on the carrier ecosystem. It requires a joint effort and if we are all on the same page across the globe, then we can make a coordinated effort to fight fraud.” ■

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.

Mobile Mark Europe Ltd

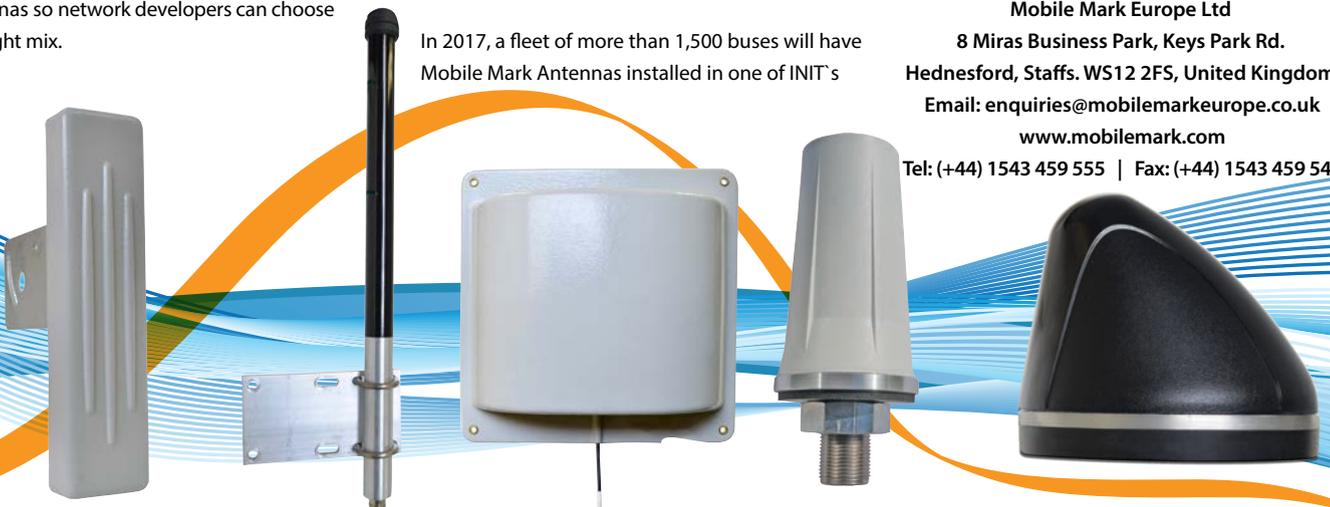
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Webb's RDS mast system on show in Johannesburg, South Africa

Africa Com

See us at AfricaCom 2018 Stand E82

Webb's innovative Rapid Deployment Solution saves time and money

South Africa's Webb Industries' Rapid Deployment System (RDS) is a multi-user site solution which does not require concrete or any excavation and, to top it all, has a very low environmental impact.

The main advantage of the RDS is the speed with which it can be installed. It takes only 1-4 days to erect depending on the size.

Designed by South Africa's Webb Industries the RDS can be reused, relocated and erected on almost any site, both urban and rural and can be used wherever speed is the main requirement.

Users include GSM operators, the Police Services and event organisers for concerts, sports tournaments, political rallies and much more.

The RDS serves a vital role in giving telecoms operators time to generate revenue while they wait for a more permanent solution.

Some of the more important advantages of Webb's RDS are:

- Helps to overcome site acquisition constraints
- Saves on rigging and installation costs due to short time spent on site
- Speed and ease of erection (i.e. no need for cranes)
- Suitable for both urban and rural sites
- Easy handling, very flexible and can be reused or relocated
- Above ground foundation, low soil-bearing capacity
- Compact site footprint, up to a maximum of 6m x 6m



SMC's Range of Pneumatic Telescopic Hilomasts from Webb are a hit anywhere any time

Hilomast telescopic masts, distributed in southern Africa by Webb Industries, are unusually versatile and can be used almost anywhere, anytime and in any place. The mast can be extended up to 30m by using low pressure air which is supplied either from a compressor or in the case of smaller masts from a foot pump.

Hilomast has long been established as a world leader in pneumatic mast technology and in addition to providing a supporting mast for mobile or semi-permanent communications systems, the product is particularly appropriate to those involved in security, surveillance and high-level filming or camera work.

Hilomast, a product of the SMC Group, has been around for more than 30 years and is fully supported by Webb throughout southern Africa.



SMC's Hilomasts from Webb can be used anywhere, anytime, any place

For more information contact Webb Industries in South Africa on +27 11 719 0000 | www.webb.co.za



webb
industries



TVWS – Africa's connectivity future?

The DSA has created a business model to enable regulators to authorise a customisable out-of-the-box solution that results in a faster and more efficient way to enable TVWS networks.

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.

As 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.

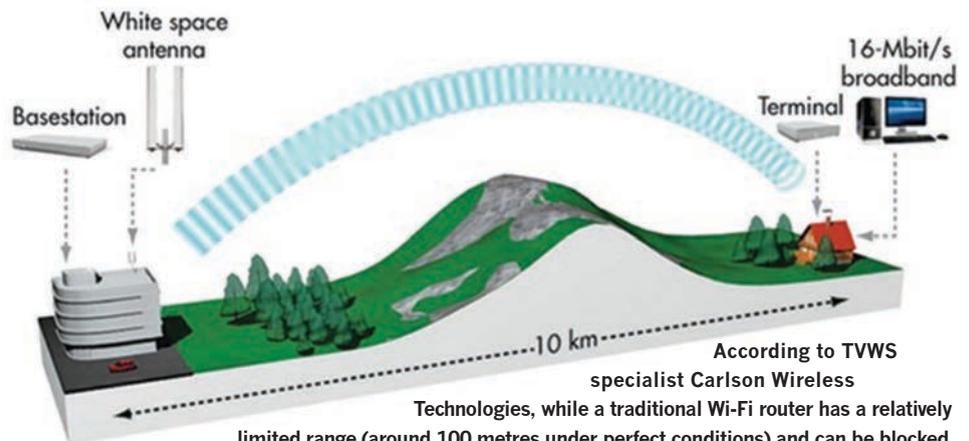
We are seeing regulators in many countries around the globe now start the necessary process of adopting rules for TVWS. This in turn will no doubt enable operators to make the necessary investments to serve these rural communities who for so long have either had no connections at all, or unreliable and 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



According to TVWS specialist Carlson Wireless Technologies, while a traditional Wi-Fi router has a relatively limited range (around 100 metres under perfect conditions) and can be blocked 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.



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



**Kalpak Gude,
President,
Dynamic
Spectrum
Alliance**

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 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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A global perspective

Developing economies must start to play a more significant role in supporting the ever-growing volume of global data traffic.

Internet access isn't just a connectivity issue for the developing world, as ARTUR MENDES explains.

Over the next ten years, emerging markets will experience ever-greater opportunities for their own economic advancement – but only if they can take advantage of the transformative power of the internet.

According to the ITU, more than four billion people still lack reliable, or in many cases any, internet access. For those that do, a large proportion suffer from limited capacity, leading to their usage being highly constrained. These groups are still largely concentrated in developing regions where delivering connectivity to those who lack access, or an improved service to those who are severely underserved, could create a giant leap forward in economic development.

The potential is so great that the Broadband Commission for Sustainable Development has set targets to increase internet user penetration in developing countries by 2025. At the core is a pledge to increase levels to 65 per cent in developing countries and 35 per cent in the least-developed

countries. Typically, the world's internet and telecoms giants are expected to take the lead on delivering on these targets. However, there is a massive opportunity for emerging countries to take on the challenge of making this happen themselves.

Indeed, the economic benefits could be far more meaningful if this was to be the case.

Many countries have already seen the incredible effect the digital revolution has had in countries such as China where Tencent and Alibaba are now two of the world's internet giants. Many other emerging countries want to emulate that experience, but how can developing nations rise to the challenge? While investment is required, the biggest risk to extending connectivity to the developing world is thinking of it as purely a connectivity issue.

If emerging economies are to capitalise fully on the economic benefits of internet access then we need to think of the challenge in broader terms, and regional players will need to step up their ambitions when it comes to scaling operations.

Investment isn't the hurdle you might expect

Of course, that is not to say there isn't a connectivity hurdle to overcome. Demand for connectivity in the southern hemisphere is skyrocketing, but developing countries typically lack the legacy infrastructure that developed economies have invested in over the past 150 years.

When it comes to connectivity infrastructure, one of the key elements is the global submarine cable network. As a result, there is an acceleration in demand for subsea cables to provide the capacity, speed and low latency developing economies lack compared to more advanced regions.

Interestingly though, funding to meet this growing demand does not seem to be an issue. For example, there has so far been USD1.5bn of investment¹ in Latin American submarine cable routes in 2017 and 2018. These new routes are mainly being developed in the South Atlantic, an

area which is currently known for having some of the lowest levels of connectivity in the world.

Funding and expertise to build these new submarine cable projects come from a wide variety of sources. For example, China Unicom and Camtel have partnered to invest in the *South Atlantic Inter Link² (SAIL)* subsea cable which will be built between Cameroon and Brazil by Huawei Marine Networks; China is also involved in the construction of the *Pakistan East Africa Cable Express³ (PEACE)*, again built by Huawei Marine. This is part of the much larger Belt and Road⁴ initiative, through which Chinese companies are building vast swathes of infrastructure throughout Asia, Africa and the Middle East.

OTT companies are also active investors in submarine cables. One example here is the *Monet* cable which connects Florida in the US to Brazil in Santos, São Paulo and Fortaleza. As well as Angola Cables, *Monet's* owners include Latin American telcos and Alphabet, Google's parent company.

Crucially though, countries and companies from the global south are also investing as they see the opportunity to exert increasing control over the cable networks and wider economic development efforts in the region. Angola Cables' own *South Atlantic Cable System* is an example of this, being the first subsea cable directly connecting South America and Africa with 40Tbps. [See *News*, Sep-Oct issue.]

As emerging markets continue to connect we will increasingly see new routes being built around the world. However, the new connections and new capacity they bring should only be regarded as one piece of the puzzle if we are to see truly transformative economic growth in the developing world.

Subsea cables are just the first step

While it is clear that the subsea cable market is entering a new era of fast growth, developing regions shouldn't look at better connectivity purely as an end in itself but also as a spur to opening up untapped economic growth. At the heart of this equation is the increasing value of data as a commodity, both in and of itself.

As more people are brought online who will seek to use the internet to change their lives for the better, and more content is produced and consumed not only in developed nations but around the world, emerging countries need to raise their sights and claim a bigger role in international data markets. This may not be an easy ride. While all telecoms operators must try to cope with the fast pace of technology change in their home territories, those from emerging or developing countries have the additional challenge of overcoming a lack of content allocation locally and a lack of reliable IP telecoms capacity.

As such, developing regions must look beyond cabling infrastructure. Data centre infrastructure in local markets complement planned undersea networks. Developing an ecosystem that allows for IP traffic to be exchanged locally and regionally will also improve the efficiency of networks that

are serving the southern hemisphere.

For the truly ambitious providers, there is also huge potential to adopt an international perspective. By building out data centre, colocation and data exchange infrastructure in other regions, both developed and developing, telecoms leaders in emerging markets will better serve the growing demand for digital transformation in their home markets and globally.

In particular, this approach will allow for future interconnectivity with other submarine systems — enabling OTT providers and content delivery networks (CDNs) to quickly reach multiple networks. This will go a long way in terms of levelling the disproportionate nature of the current northern/southern hemisphere divide in IP traffic and data handling.

By taking on this new role, developing nations will enable global companies to overcome previous prejudices or stereotypes and shift their attention to new regions and markets. In turn, this will allow new market expansions with reduced investment risks. A massive opportunity therefore exists for those who seek to connect the developing world — far beyond the immediate opportunity presented by providing the fundamental cabling infrastructure.

Focus on the value-add

To make this leap from a simple pipes model to a content-driven, big data business model, there are several things telecoms providers in developing countries can put in action.

First and foremost, they must develop product portfolios that meet international expectations. On the one hand, this means evolving capacity services to meet premium expectations — including offering 100 wavelengths and bandwidths of 100Gbps. On the other, it also means looking beyond simple capacity services to incorporate additional IP services like transit, peering, PNIs, MPLS, SDN, and international multi-homed IXP reselling.



Subsea cables, such as the Monet system being laid here, are providing the capacity, speed and low latency developing economies need. But connectivity infrastructure are only a means to an end are just one piece of the digital jigsaw.



Artur Mendes,
CCO,
Angola Cables

Marrying these services (network, IP, IaaS and security) with low latency, ultra-resilient subsea network and international data centre infrastructure can dramatically cut traffic time and costs, opening up new commercial opportunities for providers in developing regions.

Strategically, targeting markets in both the northern and southern hemispheres with potential for high growth will enable the development of cost-benefit-based business models in urban regions and the growth of OTT and CDN ecosystems. Targeted distribution of content and applications to their markets will also be easier.

Adopting an international perspective also impacts how businesses should operate. Providers need to be able to serve global ISPs and OTTs. This means customer support must be delivered by multilingual staff committed to delivering 24x7 real-time network monitoring.

Local growth requires a global view

For developing regions, building successful and profitable new digital economies requires local acceleration of digital transformation. To meet targets for increased user penetration in developing countries in the next few years, these locations will need to lead by example and embrace the opportunities that new technologies bring.

But maximising this opportunity also requires a more international perspective. Developing economies must start to play a more significant role in supporting the ever-growing volume of global data traffic — not just in terms of the fundamental infrastructure, but also in how it is managed and exchanged.

While many US-based global content providers are well-known for leading such developments, new international wholesale carriers from developing economies are the ones to watch as they seek to create new 'data hubs' in surprising and unexpected places. Continued exponential demand growth of data traffic means that with the right investments, these new providers have the potential to not only overhaul their economies, but also to change traffic management regimes globally. ■

¹ <https://www2.telegeography.com/new-submarine-cable-builds>

² <https://www.submarinetworks.com/en/systems/brazil-africa/sail/huawei-marine-contracts-to-build-south-atlantic-inter-link-sail-cable-system>

³ <https://subtelforum.com/pakistan-china-peace-cable/>

⁴ http://english.gov.cn/archive/publications/2015/03/30/content_281475080249035.htm

A movie's worth of data sent in seconds to autonomous vehicle

 Researchers at the UK's Warwick University claim to have set a new 5G communications speed record using a Level 4 autonomous vehicle.

Working in the 28GHz millimetre wave (mmW)band, they are said to have hit 2.867Gbps in over-the-air transmissions. According to the team, that's nearly 40 times faster than current fixed line broadband speeds and equivalent to sending a detailed satellite navigation map of the UK within a single second, or an HD film in less than 10 seconds.

As well as being used to deliver

high-definition content to in-car entertainment systems, the system will allow autonomous vehicles to rapidly share large quantities of data with each other and with traffic management systems. This will include precise 3D road maps created by LiDaR (a type of radar system that uses laser light instead of radio waves), HD video images of the vehicle's surroundings, and traffic information.

The team set the communications speed record working with an autonomous pod built by RDM, a UK-based manufacturer of Level 4 low speed autonomous vehicles. The

team optimised antenna placement both inside the pod, and on roadside infrastructure, such as a traffic light.

Researchers say their controlled trials are critical to better understanding the capabilities of 5G in mmW bands, and how infrastructure providers and vehicle manufacturers must carefully plan and deploy their 5G service and application rollout over the next few years.

An autonomous vehicle categorised as either Level 4 or 5 does not need a human driver and is fully responsible for all driving and safety responses. Level 4 vehicles are usually speed



High-speed comms will enable autonomous vehicles to quickly share masses of data with each other as well as traffic management systems.

restricted to 25 mph, or only driven in specific test locations.

Mavenir open RAN alliance SAS R&D centre for Poland

 Mavenir, which specialises in software-based and cloud native network solutions for service providers, is hoping to challenge the traditional radio vendors with the formation of a new alliance.

The company reckons its Open RAN partner ecosystem provides more options and makes it easy for operators to deploy an innovative, flexible cloud-based open RAN solution. Partners include MTI, Tecore Networks, Baicells, NEC, AceAxis, KMW, Benetel, CommScope, Blue Danube Systems and Airrays. Mavenir will act as the end-to-end systems integrator.

Interoperability testing has already been conducted based on the xRAN Option 7.2 split specification. Recently, the full xRAN (now ORAN) specifications

have been officially released containing the management plane making this a complete open specification.

According to Mavenir, this approach is now being favoured by operators who want to embrace Open RAN as it allows the deployment of whitebox RRUs to interwork with the virtualised cloud base band unit over Ethernet fronthaul.

With this, the company says communication service providers can break the "stranglehold" of closed proprietary specifications and the need to implement dark fibre for RRU fronthaul, which could pose "significant" economical burdens in some countries. They can continue to provide fronthaul and backhaul in the traditional ways like microwave and IP/MPLS technologies.

 Sky and Space Global (SAS), which is developing a fleet of low Earth orbit nano-satellites, has been awarded a PLN1.25m (USD333,450) R&D grant by the Polish government to initiate a project into M2M device and smart grid innovation. This follows an application submitted by SAS' Polish subsidiary to the country's government for funds set aside by the EU to support and encourage research into space technology.

The company will use the money to create an R&D centre in Poland, and for the purchase of equipment for a full-scale industrial research project into the innovation of M2M devices and smart grids via its *Pearls* nano-satellite constellation. The project will be established in collaboration

with the Faculty of Electronics at the Wrocław University of Technology.

SAS adds that the project will be dedicated to working with operators in remote regions in Africa and South America where conventional connectivity services are limited and very costly. The company says its aim is to "disrupt" the M2M and smart grid market by giving operators in remote locations easier access to connectivity allowing for easier aggregation of service offerings and effective network monitoring.

Separately, SAS has recently secured a number of binding MoU deals with several operators in the Americas, as well as global tech specialists such as Canadian data acquisition company SkyX, IoT engineering firm Penteon, and India's Unizen Technologies.

Airbus TETRA-hybrid enables flexible cross-border comms



Tactilon Agnet facilitates the secure exchange of information for emergency services in and around the Bolzano-South Tyrol region.

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 Airbus has announced details of how its TETRA collaboration tool has been used for the first time for secure cross-border broadband communication among public safety personnel.

Fire-fighters, paramedics and rescue workers in the autonomous region of Bolzano-South Tyrol used *Tactilon Agnet* for secure voice, data as well as geo-positioning.

Airbus said its technology allows emergency teams to speed up

complex rescue operations outside and within the region, especially for special operations.

For example, it said communications during patient transportations from Bolzano in northern Italy to Innsbruck in Austria can be followed using *Tactilon Agnet* without interruption. Rescue teams are able to maintain a constant connection with their colleagues and headquarters in South Tyrol. This was not possible previously, said Airbus.

The company added that this "flexible" exchange of information

is coupled with the South Tyrolian regional radio network which is based on Airbus' latest TETRA IP technology, and combines secure commercial LTE networks.

As a result, by using *Tactilon Agnet* it's claimed participants in the South network can quickly and securely integrate experts or other helpers from anywhere in the world into TETRA-based communication, even if they only have a smartphone with commercial broadband network access.

First network-connected device for prosthetic limbs

 AT&T has worked with orthotic specialist Hanger to develop a proof of concept for the industry's first standalone, network-connected device for prosthetic limbs.

The prototype, designed to attach to below-the-knee prostheses, syncs directly to the cloud via AT&T's network without relying on Wi-Fi, Bluetooth, or a separate mobile device. It collects data on prosthetic usage and mobility in

near-real time. Equipped with these insights, clinicians can proactively contact patients to address potential issues impacting usage, such as fit and comfort, and then increase their mobility.

The device itself combines an accelerometer, gyroscope, magnetometer and a modem that uses low power WAN technology, LTE-M. It is connected via AT&T's IoT network, and also has an accompanying

interactive iOS app equipped with patient and clinician portals.

The app will allow patients to view their day-to-day progress, such as number of steps taken. It also includes a video calling feature so patients can talk with clinicians about potential issues with their device. Clinicians can also use the app to view their patients' activity levels and contact those whose user data shows low activity or irregularities.



Hanger clinicians test the prototype IoT device which is designed to attach to below-the-knee prostheses.

Hanger is currently trialling five devices with existing patients. In the coming months, it will continue to work with AT&T to create a fully functional product for the next phase of the project.

Sigfox and Total improve trailer fleet management

 Oil and gas company Total has teamed up with Sigfox on an IoT service designed to optimise rolling stock and help manage trailer fleets.

Where's my Trailer? was developed by Total Marketing France through its subsidiary Stela and has been in test phase for a year with the company's transporter customers. According to the partners, it represents an "innovative" new way to improve how trailer fleets are used and kept secure.

The subscription-based service works using a box installed on the trailer which identifies any equipment that is underused or has been lost or stolen. The boxes are self-powered and communicate using Sigfox's IoT technology which, it's claimed, is able to provide a low bandwidth



Where's my Trailer? features maps and dashboards that can provide information on the status of trailers and any unauthorised movements.

connection network at a very low cost.

Where's my Trailer? localises any stationary trailers and allows users to set up notifications about unauthorised movement during time periods. Messages are displayed on the secure customer portal which can be accessed from the stela.fr and as24.com websites.

Vodafone tackles missed international call fraud

 Vodafone UK says it is now protecting its customers from international *Wangiri* scam calls by blocking them even before they reach users.

The scam is a worldwide problem, plaguing phone users and the telecoms industry at large. It involves fraudsters generating missed calls in a bid to get victims on the receiving end to call back their expensive international number (also see *this month's feature, 'Attacking the hackers', on pp22-24*).

Vodafone says it already blocks customers from unwittingly calling back *Wangiri* numbers where possible and reimburses any victim who has incurred a charge. It has now deployed new technology to prevent all identified *Wangiri* numbers from

reaching customers in the first place.

"The message we're sending to criminal gangs behind the scam is don't call our customers," says Vodafone UK chief executive Nick Jeffery. "We are determined to do what we can to stamp out fraudulent practices... We will also continue to share our intelligence with other mobile companies so we can act as one."



Fraud manager Katharine Daubney helps protect customers from scam calls at Vodafone's NOC in the English county of Berkshire.

Iridium and Amazon launch satellite-based IoT platform

 Iridium Communications has joined the Amazon Web Services (AWS) partner network to develop what's claimed to be the first and only satellite cloud-based solution that offers truly global coverage for IoT applications.

Enabled by Iridium's network of 66 cross-linked low Earth orbit (LEO) satellites that will be fully launched in 2019, the new *CloudConnect* platform will be available with AWS IoT, extending the reach of Amazon's suite of services to the more than 80 per cent of the Earth that currently

lacks cellular coverage.

Iridium says its customers will be able to take advantage of AWS IoT, while existing AWS customers will have a cost-effective way to expand their geographic IoT footprint to anywhere on the globe. It claims users will be able to reduce engineering efforts, lower fixed operating costs, and reduce time to develop new products and services.

Iridium CEO Matt Desch says: "*CloudConnect* will completely change the speed at which a satellite IoT solution can be deployed and will

allow existing AWS customers to keep everything the same on the back end, while opening up the opportunity to quickly expand their coverage.

"This is a major disruption for satellite IoT. Costs will drop, time to market will speed up, risk will be reduced, and AWS IoT customers that choose *CloudConnect* can now enjoy true global connectivity for their solutions."

With around 630,000 active devices as of 30 June 2018, Iridium says its IoT subscribers have grown at a CAGR of approximately 19 per cent over the last three years.

Iridium is currently in the final stages of its USD3bn mission to replace its entire original satellite constellation with new spacecraft. Seven launches have so far already taken place as part of the operator's *NEXT* programme, with launch provider SpaceX delivering 65 new LEO birds and the final launch of 10 satellites planned for later in 2018.

Upon completion, a total of 75 Iridium *NEXT* satellites will have been delivered to space, with 66 in the active constellation and nine serving as on-orbit spares.

IP backbone widened

 Sparkle, the international services arm of Italy's TIM Group, has expanded its global IP backbone in Asia with a new PoP in Ho Chi Minh City, Vietnam. Opened in partnership with local operator CMC Telecom, the PoP aims to provide high performing IP transit and Ethernet services to the country's ISPs and content providers. It is interconnected with *Seabone*, Sparkle's global IP transmission network, along with access to major submarine cables connecting Asia to Europe, such as *SEA-ME-WE 5*.

Wateen uses SES backhaul

 SES is providing Pakistani satellite and fibre operator Wateen Telecom with access to high-powered C-band capacity on its *NSS-12* satellite that orbits at 57°E. Wateen is using the capacity to provide 2G and 3G backhaul services to the country's leading mobile network operators. This will enable them to deliver reliable and enhanced voice and data signals in the country's remote mountainous northern regions, as well as its inaccessible areas in the south.

Bangladesh 5G demo

 Bangladesh has had its first taste of 5G following a demonstration conducted by Huawei and local operator Robi at *The Next Frontier for Digital Bangladesh* summit that was held in July. The purpose of the event was to show how a 5G ecosystem can be cultivated in the country and help transform its economy. Speaking at the summit, the prime minister's ICT adviser, Sajeeb Ahmed Wazed, claimed Bangladesh was the fastest country to move from 1G to 4G and now has some of the most affordable internet connectivity rates in the world. He added: "My goal is that we are going to be one of the first countries to deploy 5G in the world."

Hughes to power Bank Rakyat's satellite network

 Indonesia's largest bank, state-owned BRI (Bank Rakyat Indonesia), will use Hughes' JUPITER high-throughput platform to power services over its satellite.

The bank is the first to own and operate its own satellite which was launched by Arianespace in 2016 (see World News, May-Jun 2016 issue). Orbiting at 150.5°E, BRI_{sat} offers C- and Ku-band services across Indonesia, South East and North East Asia. It is part of BRI's strategic plan to strengthen supporting infrastructure for future digital services and banking technology across the Indonesian archipelago.

JUPITER provides the bank with an enterprise grade WAN to connect tens of thousands of sites. Hughes says its gateway provides a single platform that is compatible



BRI_{sat} was launched in 2016. Hughes's JUPITER system will now be used to enable reliable connectivity for banking applications across Indonesia. photo: arianespace

with both C- and Ku-band satellite capacity, resulting in what it claims is "enhanced" operational efficiencies and bandwidth utilisation.

The firm adds that its solution also incorporates redundant primary and secondary gateways to deliver 99.9 per cent availability, ensuring BRI can serve more customers in Indonesia

with the reliability and quality necessary for critical banking needs.

Following a competitive bidding process, Hughes says it was selected by BRI for having the highest performing terminals supporting up to 300Mbps of throughput, along with the multi-service capabilities necessary for future scalability.

"We required a solution with high reliability, efficiency and scalability to enable branch- and mobile-based business and consumer banking applications across Indonesia," says Meiditomo Sutaryjoko, head of BRI's satellite and terrestrial division. "Hughes will connect BRI sites and more than 50 million customers throughout Indonesia."

The vendor expects to fulfil the initial order for two gateways and several hundred sites by the end of this year.

First mass commercial 4G TDD in Thailand

 Dtac is deploying the first commercial 4G TDD network in Thailand. Once completed, faster mobile broadband speeds will be available to customers who subscribe to the mobile operator's *TURBO* service which uses 2300MHz spectrum and is operated in cooperation with state-owned telco, TOT.

The network is being deployed in the northeast, north and south regions of Thailand, including

major provinces such as Khon Kaen, Chiang Mai and Phuket.

According to Dtac, which is a subsidiary of Norway's Telenor, the deployment uses technology that creates an evolutionary path to 5G. The company is leveraging techniques such as 4x4 MIMO, beamforming, 3CC carrier aggregation, and 256 QAM.

Dtac is using Nokia's RAN solutions for its TDD deployment in the three

regions. The vendor is providing products from its *AirScale* range and claims this will enable the operator service to add "agility and flexibility" to the network as well as accelerate its journey towards 5G.

They include massive MIMO adaptive antennas which, says Nokia, deliver up to five times more network capacity, high peak downlink throughput, significantly improved uplink, and greater coverage.

Europe's largest rail freight company connects with IoT

 European railway freight carrier, DB Cargo, will use embedded IoT enablement technology from Eurotech to gain insight on the real-time status of its locomotive fleet.

A subsidiary of Deutsche Bahn, DB Cargo is said to be Europe's market-leader in rail freight transport. The Germany headquartered company has around 4,200 rail sidings, 93,000 freight wagons, and 3,000 locomotives.

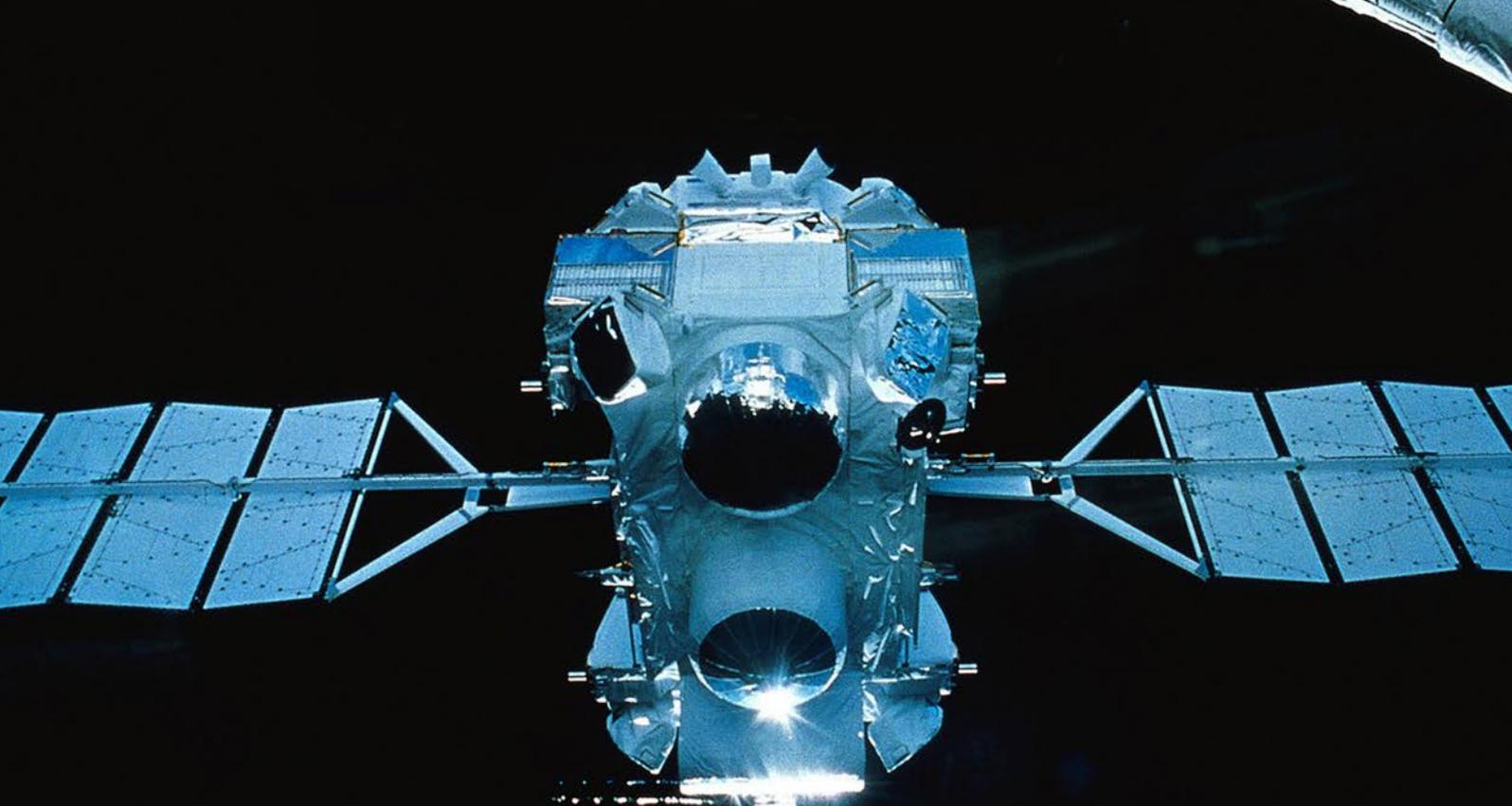
As part of investing in the technology of the future, DB Cargo is digitalising its locomotives,

freight cars and processes in the marshalling yards and workshops. It will install Eurotech's *BoltGATE 20-25* as the intelligent IoT Edge gateway on at least 450 vehicles. The vendor says this railway-certified on-board computer is designed to meet the demanding requirements of rolling stock installations. It is said to provide on-board functions for safe non-invasive signal sampling and recording of multifunction vehicle bus data, as well as features for real-time data communication.

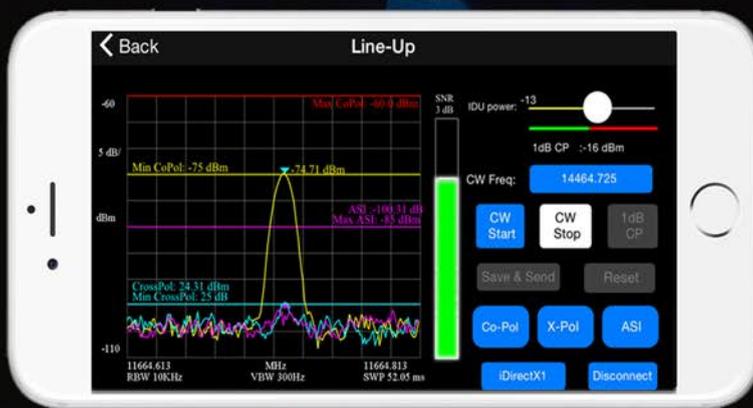


DB Cargo will use Eurotech's BoltGATE 20-25 IoT Edge gateway to gain real-time insights on its locomotives.

The *BoltGATE 20-25* is powered by Eurotech's *Everyware Software* IoT Edge framework. DB Cargo will also leverage the vendor's *Everyware Cloud* IoT integration platform.



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