

For communications professionals in north, west, east & central Africa

NORTHERN AFRICAN WIRELESS COMMUNICATIONS

DECEMBER 2018/JANUARY 2019

Volume 17 Number 6

- Advances in technology are future-proofing the SIM card
- The 2010 World Cup network that is now saving lives
- Virtualisation is helping drive Africa towards the 5G era




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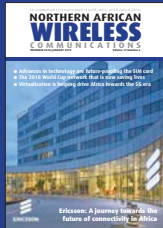
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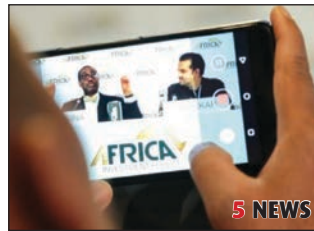
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Mara announces first African-made smartphone

The first, 'made-in-Africa' full-scale smartphone is soon to be manufactured in plants across Africa.

Maraphone is part of the Mara Group which started as a small IT business in Uganda. The group is now headquartered in Dubai and has operations in 25 countries in Africa.

The company says it will produce high quality and affordable smartphones primarily for African markets but also with the aim of exporting to other regions such as Europe.

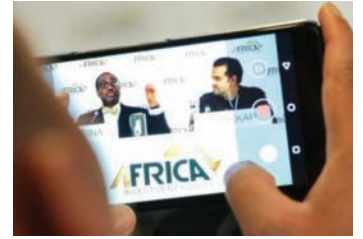
Speaking at the Africa Investment

Forum that was held in Johannesburg last November, group founder Ashish Thakkar said: "China has Huawei and Xiaomi, the US has iPhone, and finally Africa has Maraphone. This project will show the potential and ability that Africa can produce high quality and affordable smartphones in Africa, by Africans, for Africans and for the rest of the world."

Thakkar said that while global manufacture of mobiles is on the rise, none of them are produced locally. Maraphone's initial target

market will be first-time African smartphone users, while the first manufacturing plants are to be located in Rwanda and South Africa following USD100m investments. At the forum, Thakkar commended the African Development Bank (ADB) for its push to support the continent's industrialisation through its *High 5's* strategy under which the Maraphone had received support.

Delegates at the Africa Investment Forum also heard from ADB president Akinwunmi Adesina



The Maraphone is described as "high-spec, affordable, smart, and transformative". It will be manufactured at two plants on the continent.

who said: "By 2020, the value of Africa's mobile money industry is projected to top USD14bn. We need African-developed mobile phones to leverage this potential."

New 'smeature' phones aim to address affordability issues – News p7.

Tigo and Ericsson accelerate digitalisation in Senegal

Tigo Senegal has selected Ericsson for its nationwide network modernisation project.

Under the terms of a new three-year deal, the Swedish firm will cover more than 1,000 existing sites. It will deploy its latest radio system technology to refresh legacy infrastructure, roll out LTE across the country, and modernise and expand the operator's backhaul network using its *MINI-LINK* microwave radios. All sites selected for LTE will have a smart refresh of 1,800 radios that will be modernised to accommodate 1800MHz with the multi-standard 2219 radio.

Ericsson says it will also provide cloud packet core and cloud data management and policy solutions



The three-year nationwide modernisation project covers more than 1,000 sites and includes the rollout of Ericsson's Radio System.

for the modernisation of Tigo's core network to reduce opex and simplify the introduction of new user services. Additional solutions include the vendor's *Mobile Packet*

Backbone Network and OSS migration to *Ericsson Network Manager*.

Ericsson's MEA head Rafiah Ibrahim says: "By improving both indoor and outdoor network coverage, Tigo will be able to deliver digital services including mobile data and mobile financial services across the entire Senegalese market."

■ In separate news announced in January 2019, Ericsson is ditching part of its BSS business. It said that the business support system area is "not showing satisfactory progress" and is "jeopardising" its digital services segment's overall profitability target for 2020.

In an online press release, Ericsson stated: "The company's

past BSS strategy included pursuing large transformation projects based on pre-integrated solutions, including development of a next generation BSS platform, the full-stack *Revenue Manager*. The strategy has not been successful and to date the full-stack *Revenue Manager* has not generated any revenues... Delays in product and feature development has also made the full-stack *Revenue Manager* less competitive."

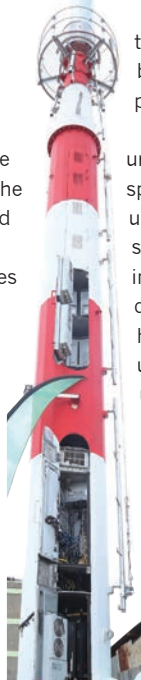
As part of a revised BSS strategy, the firm said there would be increased investments in its established platform, *Digital BSS*, and that it is refocusing the full-stack *Revenue Manager* to fulfil existing customer commitments only.

Safaricom trials new base stations for urban areas

Safaricom is trialling new network coverage technology aimed at enhancing coverage in urban areas.

Known as the *TubeStar* base station, the operator claims the solution replaces the standard tower base station with a tubular structure that occupies up to 75 per cent less land than typically required. In addition, it says the new BST eliminates the need for a protective compound and perimeter wall by incorporating all equipment within the tower structure.

Furthermore, it's claimed the technology eliminates



the need for diesel generators by replacing these with high-performance lithium batteries.

The *TubeStar* is targeted at urban areas which present a space constraint when putting up network towers. Safaricom says building standard towers in such locations has been difficult as most landowners have future plans for currently unused land or have already put up structures on the entire site

The TubeStar occupies much less land than typically required for a BST and also houses all equipment within a protective tower structure.

leaving little space for a typical BST.

Working in collaboration with its technology partner Huawei, Safaricom deployed the first *TubeStar* at Clay Works along the Nairobi-Thika Highway in December. It will offer coverage along the Roysambu drift which has long been plagued by call drops.

According to the operator, the location exemplifies the challenges of providing coverage in urban areas as it is in a depression where signals from surrounding base stations converge, resulting in interference and poor connectivity. Safaricom reckons its base station will exclusively provide coverage in the affected locality eliminating reliance on the other cells.

■ Earlier in November, Safaricom

announced a world first in partnership with Western Union. *M-PESA* mobile wallet holders can now send money globally with the activation of *M-PESA Global* which is powered by Western Union's cross-border, cross-currency, money movement platform. They can use funds from their wallets to send remittances across Western Union's retail agent network in more than 200 countries and territories, or directly via Western Union's access to billions of accounts. Western Union says that around 70 per cent of its digital transactions worldwide now originate on mobile devices.

Mobile money transfers worth trillions in Kenya as penetration hits 100 per cent – News, p9.

Konnect Africa launches internet offers in DRC

Konnect Africa, Eutelsat's pan-continental broadband initiative, has launched its first internet access offers throughout the DRC.

At the end of last November, it said internet access solutions for both households and SMEs were now available from a large network of local resellers across the country.

Konnect Africa unveiled a range of eight pre-paid offers for individuals and businesses. It described the packages as "suitable for all consumer profiles", with data usage deals ranging from 5GB to unlimited for professional users. The broadband speeds on offer are up to 20Mbps for downloads and up to 3Mbps for uploads.

The company says the packages are available in six major cities via a network of eight resellers totalling nearly 500 stores and retail points. Konnect Africa claims it has ensured the widest possible coverage by working closely with a large network of local partners specialised in various fields ranging from the distribution of telecom and television services to financial services.

The company adds that its initial offers will soon be supplemented by the arrival of a Wi-Fi hotspot service – *Konnect Wifi* will provide broadband internet access at heavy traffic points such as in hospitals, schools, universities, stores, etc.

'Mowali' to help scale up mobile financial services

The MTN Group and Orange Group have announced a joint venture to enable interoperable mobile payments across the continent. They say 'Mowali' – mobile wallet interoperability – will make it possible to send money between mobile money accounts issued by any mobile money provider, in real-time and at low cost.

Mowali is a digital payment infrastructure that connects financial service providers and customers in one inclusive network. It functions as an industry utility, open to any mobile money provider in Africa, including banks, money transfer operators and other financial service providers.

The partners say the objective is to increase the usage of mobile money by consumers and merchants. They claim their system will unlock further innovation in the digital financial space within the continent.



Mowali is said to bring together more than 100 million MTN and Orange mobile money accounts and operations in 22 of sub-Saharan Africa's 46 markets. The companies add that the platform is ready to enable interoperability between digital financial service providers beyond MTN and Orange to support the existing 338 million mobile money accounts across the continent.

Between them, MTN and Orange are said to have more than 100 million mobile money accounts and operations in 22 of sub-Saharan Africa's 46 markets.

■ In separate news, in mid-November 2018 Orange announced a new partnership with the Virtual University of Tunis, which provides digital training to students in Tunisia. The partnership aims to support access to the university's courses and training in the African countries within Orange's footprint. A similar partnership was later signed in December with the Virtual University of Senegal.

Briton jailed for Liberian cyber attack

A British court has jailed a cyber criminal who ended up knocking Liberia offline in 2016 (see *News*, Dec 2016-Jan 2017 issue).

30-year-old Daniel Kaye was sentenced to 32 months in prison by a court in London earlier in January 2019.

According to reports, the self-taught cyber criminal began selling his hacking skills on the dark web. The court heard how, in 2015, Kaye was hired by someone working for Liberian telco Cellcom to launch a DDoS attack

on rival firm Lonestar. There is no suggestion that Cellcom was aware of this and that the employee was therefore working on his or her own.

Lawyers said Kaye was offered up to USD10,000 a month to destroy Lonestar using a botnet that he built which exploited *Mirai* malware. Working covertly out of Cyprus, in November 2016 Kaye used his mobile to launch the DDoS and overwhelm Lonestar's systems.

Initially, Liberia's mobile phone users began to see their devices

go offline. But Kaye had sent so much traffic that the country's entire internet system became clogged and inadvertently ended up knocking Liberia offline.

Kaye was suspected of being behind the attack and was also thought to be behind DDoS attacks on three British banks. He was arrested after returning to the UK following a holiday in February 2017. Authorities say Kaye was carrying USD10,000 which was part of the payments received for the Lonestar attack.

NCC holds Sensitization programme on hazardous handsets



The event was attended by the chairman of Suleja Local Government, village heads, community leaders, and members of other citizen organisations.

The Nigerian Communications Commission (NCC) has warned against the hazards of using non-type approved handsets and the impact they have on quality of service and e-waste.

At a *Stakeholders' Sensitisation Programme* held in Niger State in December, the NCC described sub-standard, counterfeit or non-type approved handsets as a "global menace".

Delivering the opening address, Abubakar Usman, principal manager for zonal operations at Stanbic IBTC, said Nigeria's large population and

market size make it very attractive to sellers of non-type approved handsets.

According to the commission, the effects of non approved devices include impact on quality of service, health concerns associated with EMF emissions, and adverse environmental impact because of e-waste.

Delegates were told that in the fight against ICT product counterfeiting, the NCC has carried out a series of clampdowns on vendors, dealers and marketers of fake products, and that offenders are being prosecuted to act as a deterrent.

The NCC is to form a coalition of forces in a renewed strategic partnership with all the marketers of handsets in the sector so as to contain the so called "menace" of non-type approved handsets. Furthermore, it is collaborating with other national stakeholders such as Consumer Protection Council, Standard Organisation of Nigeria, law enforcement agencies, Nigerian customs service, and the Environmental Regulatory Agency to fight the import and circulation of substandard forms.

New 'smeature' phones aim to address affordability issues

Rather than forcing people to opt for a feature phone without internet access, or a budget smartphone with limited user experience, mobile users and MNOs in Africa now have a choice.

That's according to KaiOS which specialises in smart and feature phone operating systems. Following partnerships with MTN, China Mobile and Unisoc, and another with Orange, the company is bringing what's claimed to be a new category of affordable mobile devices to the continent.

These so-called 'smart feature phones' will run KaiOS' platform and are said to "combine the simplicity of a feature phone with the powerful capabilities of a smartphone".

The devices can run Google services such as *Assistant* and *Maps*, as well as popular apps like *Facebook*, *Twitter* and *YouTube*. They can also support functionalities like the KaiStore (the first app store for smart feature phones), Bluetooth and GPS.

MTN plans to launch devices in Nigeria and South Africa during the first quarter of the year. Meanwhile, Orange has announced that its first smart feature phone will be 3G followed by a 4G version later this year. As well as the apps mentioned above, Orange customers will also be able to *Google Assistant* in French, English and Arabic to help overcome language and literacy challenges.

KaiOS says that in Africa more than anywhere else, device affordability is a crucial barrier to moving people from 2G voice and text-capable phones to 3G/4G devices that can access the internet. Citing research from the GSMA, it says the threshold lies at USD34. Below that point, even those in the lowest income groups are said to be capable of upgrading to a data-enabled devices.

But the company goes on to point out that once a user has purchased a phone, there's still the "cost of ownership" in the form of a monthly data plan that has to be factored in. To reduce data costs, KaiOS says it works closely with MNOs to design new data plans that are priced between a 2G voice and text plan and a full-blown smartphone data plan.

It adds that there are several ways in which it achieves reduction of data costs together with carriers

and content providers. For instance, the technology behind its operating system minimises data requirements on both the OS and content side.

KaiOS Technologies' CEO Sebastien Codeville says that despite the availability of a few lower-cost budget smart phones

in Africa, figures from the GSMA revealed that in 2017, Eastern Africa had the world's lowest smartphone adoption level at 25 per cent, compared to the global average of more than 50 per cent. The GSMA also says that the USD100-200 price for a smartphone is

preventing 64 per cent of Africans from upgrading their 2G voice and text-capable phones to 3G/4G devices that can access the internet.



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Helios Towers expands DRC mobile infrastructure

Helios Towers has been upgrading and building backbone sites covering 1,800km in the DRC. In an announcement made in August 2018, the towerco said its investment in the project was in the “double-digit millions” and will improve mobile infrastructure and connectivity to around six million citizens.

The backbone network runs through multiple areas of DRC, including the equatorial rainforest and Kasai-Central province. Helios said that the project was due for completion by December 2018, and provides the infrastructure to connect major towns and cities, transmitting signals via microwave

from towers up to 40km apart.

Earlier last year, the DRC government awarded inaugural 4G licenses to the country's major cellcos, such as Vodacom, Orange and Africell. Helios said the new backbone network will support operators in their continued network improvements and expansions. It claimed the network adds “significant” capacity to replace existing satellite connectivity in the area, and provides the infrastructure needed for increased 3G capacity and the launch of 3G in Northern Kasai, as well as the launch of 4G in Kisangani, the DRC's third-largest city.

Helios Towers entered the DRC in 2011 with a 521 tower portfolio

acquisition from Millicom. Since then, the company said it has become the country's market leader with 1,819 towers and a share of 63 per cent.

According to CEO Kash Pandya, DRC has one of the lowest mobile penetration rates in the world, with only around 25 per cent of its 85 million population having a phone today.

He added: “Following the upgrade and construction of our backbone towers through some of the most remote areas in the country, last mile communications can eventually be created to connect towns and cities with increased reliability and speed, fit for the growing Congolese economy.”



The new backbone network was due to be completed by December 2018 and replaces satellite-based backhaul connectivity in the area.

Telecom Egypt doubles backbone network capacity



Telecom Egypt is claimed to have doubled the capacity on its Delta Region DWDM backbone network. Commercial deployment of its new high-speed service started earlier last year and is said to represent the first 200G long distance, single carrier transmission service in Africa.

The operator's MD and CEO Ahmed El-Beheiry says: “Doubling capacity on our existing backbone allows us to offer high-speed broadband and

Telecom Egypt has upgraded its existing Nokia 1830 Photonic Service Switch backbone network to offer higher-speed services to both broadband and mobile customers.

LTE services in addition to 100GE services for mobile operators, while reducing costs.”

With growth in demand for mobile video and ultra broadband services, Telecom Egypt worked closely with Nokia to enhance its current backbone network. It's claimed that by upgrading its existing Nokia *Photonic Service Switch (PSS) 1830* switches with the vendor's *Photonic Service Engine (PSE)* technology, the operator has not only doubled its capacity but has also reduced its operating costs.

The deployment includes Nokia's 500G DWDM muxponder, a programmable card that is said to provide wavelength capacities from

50G to 250G per line port. Based on Nokia's *PSE* coherent digital signal processor, this programmability is designed to allow Telecom Egypt to provision and tune wavelength capacity per optical route to ensure that its network is operated at peak performance, capacity and lowest cost-per-gigabit.

“This is exactly what we had in mind when we designed the *1830 PSS* platform,” says Nokia's MEA head Amr El-Leithy. “Its flexibility and easy upgradability will allow [Telecom Egypt] to proactively manage the data explosion and develop new revenue streams – all the while improving the experience for their customers.”

TCCA sets out roadmap for critical comms evolution

The TCCA (TETRA and Critical Communications Association) has released a new white paper that presents the current roadmap to the operational use of mission critical broadband.

According to the association, there has been much debate and discussion about the introduction of broadband for critical communications. It says that some public protection and disaster relief (PPDR) operators have plans for dedicated broadband in addition to their narrowband network; other operators are beginning a move from dedicated

TETRA or other narrowband networks to mission-critical broadband service relying on partnerships with commercial operator.

The new white paper is for organisations looking to move away from narrowband networks, or to introduce critical broadband to complement their existing services. It considers three phases: the current situation; the next three years to 2021; and 2022-2030. All this is set against the timetable of 3GPP Releases and the issue of interoperability.

The TCCA points out that the window of opportunity for the

introduction of critical broadband is up to each country. For example, the USA, UK and South Korea have been early in their planning, while other countries have renewed their narrowband systems to allow flexibility in their transition plans.

However, irrespective of the geography, the TCCA says replacing an existing PPDR network with a new broadband service, or adding critical broadband capability to narrowband services, involves a great deal of planning, coordination and cooperation.

“Developing standardised features and functions, engaging

service providers, undertaking procurement and operational processes, implementing trusted radio networks and finally convincing the users and management that the new service is fit for purpose takes time, expertise and patience,” states the association.

“For governments and operators looking to eventually transition from TETRA or other narrowband networks to critical broadband services, or to introduce complementary critical broadband services, TCCA recommends the process should be started as early as possible.”

Mobile money worth trillions in Kenya

The value of mobile money transactions hit the KES2 trillion milestone for the first time, according to figures released by the Communications Authority (CA) of Kenya in mid-December 2018.

In its latest industry sector statistics report, the CA said that 730.2 million transactions valued at KES2.027 trillion were recorded during the July-September 2018 period – that's up from 611.3 million transactions valued at KES1.9bn for the previous quarter.

At the same time, mobile commerce transactions went up by 8.8 per cent to reach 526.9 million valued at KES1.5 trillion, while person-to-person transfers were valued at KES718.2bn.

Additionally, the CA said there was a 5.6 per cent increase in the number of mobile money transfer agents operating throughout Kenya. This now stands at 218, 495, a rise from 206, 940, while actively registered mobile money transfer subscriptions are at 29.7 million.

The report also shows that mobile penetration rose by 2.3 percentage points to hit 100.1 per cent from 97.8 per cent in the previous quarter. The CA said this increase is mainly attributed to most users owning more than one SIM card, either from the same or different service providers. According to the authority, this fact is also supported by the Kenya Integrated Household Budget Survey report released by the National Bureau of Statistics in April 2018. This indicated that at least 30 per cent of mobile users in Kenya own more than one SIM, translating to an average of 1.3 cards per subscriber.

The number of active mobile subscriptions increased to 46.6 million from 45.5 million in the preceding quarter, marking a 2.4 per cent increase. In terms of market share, the report said Safaricom's was down 1.2 percentage points and comes in at 64.2 per cent, whereas Airtel gained 0.9 points to post a share of 22.3 per cent. Telkom Kenya, Finserve Africa and Mobile Pay recorded shares of 9.0, 4.2 and 0.2 per cent, respectively. Sema Mobile Services exited the market during the quarter.

The total number of active internet/data subscriptions grew 2.7 per cent from 41.1 million reported in the previous quarter to 42.2 million in the period under review.

The number of mobile data/internet subscriptions also grew 2.7 per cent, from 40.7 million registered users during the previous quarter to 41.8 million in the period under review.

However, terrestrial wireless data subscriptions declined substantially by 51.3 per cent to stand at 59,380 from 122, 037 in the preceding quarter. The CA attributed this drop to the regulatory guidance it issued

to Mawingu Networks to review its data on the number of data/internet subscriptions.

The report also noted a significant quarterly rise in international internet bandwidth available to Kenya. This is up from 3,277.72Gbps to 4,623.30Gbps. The CA said this is because EASSy (Eastern Africa Submarine Cable Systems) increased its capacity from 161.3Gbps to

828.144Gbps during the period.

Given the rapid growth in mobile internet related services and applications, together with increased 4G roll outs, the authority anticipates that Kenya's data/internet market will expand significantly. The development and growth of the country's e-commerce industry is also expected to drive demand for internet services.

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NCC issues guidelines

 The Nigerian Communications Commission (NCC) has developed commercial satellite communications guidelines for the local telecoms market. The guidelines came into effect on 21 November 2018 and regulate all commercial satellite services in all orbits in Nigeria. All commercial space segment providers with footprints covering the country as well as earthstation operators are now required to regularise their operations with the commission as specified in the guidelines on or before 29 February 2019. The NCC warned it is a criminal offence to provide communications services without a requisite license, authorisation or exemption. ncc.gov.ng/licensing-regulatory/legal/guidelines.

Spacecom makes news

 Spacecom has announced a partnership to provide satellite capacity for permanent SNG (satellite news gathering) services for what it describes as “one of Africa’s largest public broadcasters”. Globecast is providing a long-term solution for the unnamed broadcaster and will utilise Spacecom’s AMOS-7 Africa KU-band beam. Provision of the service began in September 2018. Spacecom said its satellite’s capabilities allow the broadcaster to uplink HD-on-the-move all within one beam that covers the entire Southern African region.

CETel expands coverage

 CETel, the Germany-based provider of managed end-to-end communications solutions, says it will deliver “fibre-like” connectivity into Africa utilising O3b’s medium Earth orbit satellite constellation. Under a long-term contract signed last November, the company said it will support a “leading” communications and technology solutions provider to further expand its network across the continent. The unnamed company will serve various vertical markets, such as mining, enterprise, construction, telecoms/ICT and government.

BRCK and Clear Blue to serve next billion

Clear Blue Technologies International has been selected as the power service provider for BRCK, a hardware and services tech specialist based in Nairobi.

BRCK says that because connectivity is too expensive for the average African to afford, the majority of citizens in developing markets rely heavily on Wi-Fi. The company has developed its free to consumer *Moja* platform of Wi-Fi hotspots but says powering them is crucial for success.

In 2018, Clear Blue supplied its *Smart Off-Grid* technology to power Wi-Fi hotspots at 10 sites in Kenya. With the success of these installations, BRCK is now planning a wider rollout. Clear Blue will provide its technology and service for a multi-year rollout of thousands of Wi-Fi hotspots across Africa, set to begin in 2019

and running through 2024. The company will manage, monitor and control the systems remotely from its service centre.

According to Clear Blue, its *Smart Off-Grid* technology provides a low-cost, highly reliable off-grid power solution. It also features automated remote management and control, predictive weather forecasting, and the ability to optimise systems remotely.

The vendor also claims that its “extensive” troubleshooting capabilities facilitate quick resolution of any issues, keeping systems running with “unmatched reliability and long-lasting performance, while at the same time reducing installation and maintenance costs by up to 80 per cent”. Canada-headquartered Clear Blue will manage, monitor, and control the systems remotely from its cloud-based service centre.



Clear Blue's Smart Off-Grid technology will be used to power thousands of Wi-Fi hotspots across Africa.

Clear Blue says this latest alliance with BRCK adds to a wide variety of similar strategic partnerships with innovative, visionary organisations and investors. The firm says its technology and services are now bringing off-grid power through more than 500 projects in communities around the world. It adds that they are being sold into an array of high-growth segments which, according to research, will represent an estimated addressable market worth USD38bn by 2023.

NIGCOMSAT adds second Newtec hub

NIGCOMSAT (Nigerian Communications Satellite) is expanding its enterprise, government and consumer Ka-band broadband services in Nigeria with the help of satcoms equipment specialist Newtec.

NIGCOMSAT was established as a company under the auspices of the Federal Ministry of Communication in 2006. It was set up to manage and operate the Nigerian Communication Satellite (*NigComSat*), the first geostationary

comms satellite launched by an African organisation for the sub-Saharan region.

Following on from its continued success with Newtec’s VSAT platform Newtec Dialog®, NIGCOMSAT will now deploy a second hub from Newtec together with thousands of its *MDM2210* and *MDM2510* IP satellite modems. The vendor’s long-term certified business partner, Abuja-based Content Oasis, is the system integrator.

As a multiservice VSAT hub, Newtec claims its *Dialog* platform enables operators to build and adapt satellite networking infrastructures according to specific needs.

The company adds that its modems offer a choice of three return technologies: MF-TDMA, SCPC as well as *Mx-DMA*, its proprietary system. It’s claimed the latter combines the best qualities of the other technologies to provide dynamic bandwidth allocation with the “highest level” of efficiency.

ATU appoints Kenyan as new head

The ATU has appointed John Omo, former director of legal services at the Communications Authority of Kenya, as its new secretary general.

Omo succeeds Niger’s Abdoukarim Soumaila and is the second Kenyan to head the union after Jan Mutai who served from 1999 to 2003.

Omo received the instruments of office in Nairobi on 24 December 2018 at a handover ceremony presided over by Kenya’s ICT cabinet secretary, Joe Mucheru, who is also the chairman of the ATU Conference of Plenipotentiaries. Speaking at the event, Mucheru said: “Africa is one



Incoming ATU secretary general John Omo (left) receives instruments of office from his predecessor, Abdoukarim Soumaila.

community and it is our hope that we will continue using technology and the goodwill that we have from

our leaders to ensure that we create that single digital market.”

He added that the ATU has a big role to play in ensuring that Africa has interoperable technologies, especially in the area of mobile money.

Omo acknowledged that he was taking over as ATU leader against a backdrop of challenges across the continent’s ICT landscape, particularly regarding internet policy. He said that in order to create a robust industry, African governments must create meaningful ICT policies and regulatory environments that attract investments, especially in broadband.

New CSquared CEO outlines Africa's options for a digital revolution

The new chief executive officer at pan-African broadband infrastructure provider CSquared has outlined some of the priorities facing ISPs and mobile wireless operators on the continent should Africa wish to welcome a digital revolution.

Speaking exclusively to *Northern African Wireless Communications*, Lanre Kolade said service providers should be able to concentrate on their core business and not get weighed down by infrastructure challenges.

He said one priority should be moving to open-access infrastructure, which offers several benefits for the operators, including "removing the capex burden by moving to an opex model".

"The cost of access to that infrastructure will be much lower than what each operator would incur on their own," he said.

Kolade added that another key benefit of open-access infrastructure for providers is that

they remove the operational burden that comes from deploying and managing a fibre network, such as obtaining right-of-way and permits, dealing with procurement and logistics for materials, preventing and repairing fibre cuts.

"Free of those concerns, the ISPs and operators will be able to concentrate on their core business and create innovative products and services for their consumers and grow their business," he said.

However, like many other industry leaders, Kolade said the "infrastructure deficit" remains a major hurdle for Africa as a whole and is a barrier to progress as things stand.

"For example, we have a lot of

submarine fibre cables at the coasts, but the metro and backbone networks are not there yet to disseminate the internet traffic from the coasts into the hands of consumers in the cities," he added. "So, we cannot yet exploit the full benefit of the internet as it is still very expensive and not pervasive."

There are also the age-old problems of access to cheap broadband and last-mile connectivity and regulation. However, Kolade is optimistic that Africa will experience a

digital revolution if the right people put their heads together.

"We will need our regulators to allow the industry to succeed by protecting intellectual property rights and investments," Kolade continued. "The private sector players must be seen as enablers of growth as they will create value for the entire ecosystem in the form of jobs, improved infrastructure, and payment of tax income to governments. The policy makers must be ready to provide the necessary oversight so that the capital investments are secured in terms of laws that protect private property, permits/operating licenses and fair taxes on the operations of the private sector."

Speaking earlier in the week, Kolade said "fibreising" Africa was a key driver for his company because there is "a dire need to have broadband" that would bring the internet to the people of Africa.



Lanre Kolade, the new chief executive of CSquared, said service providers should be able to concentrate on their core business rather than infrastructure challenges.

Axiz and Innova bring satellite connectivity into Africa

ICT firm Axiz has inked a deal with High Throughput Satellite (HTS) services aggregator Innova HTS to roll out broadband satellite across Africa.

Axiz said it will use such partnerships to further develop and grow its existing suite of solutions that are aimed at enhancing its digital platform offering.

Jacques Malherbe, Axiz CTO and managing executive of advanced

technologies highlighted the importance of this particular deal.

"Because of the geographical spread in both South Africa and the rest of Africa there are vast areas that have no connectivity," he said. "This hampers access to basic internet, IOT and cloud services. All these fourth industrial benefits can only be realised with connectivity."

Rob Griggs, Innova HTS director,

added that "while Ka-band HTS has been in the first world for three years", extensive coverage for Africa only came about with satellites being launched from late 2017 onwards.

"Ka-band HTS is a game-changing industry wide innovation that is vastly expanding the market for satellite communications," he said. "Furthermore, the economic broadband speeds, low-cost Ka-band

terminals and simple implementation lends itself to a channel model from a respected distributor such as Axiz."

Griggs also said the UN declared internet access a basic human right, but hundreds of millions of Africans still remain unconnected.

"Axiz and Innova HTS's vision is to accelerate the adoption of HTS satellite broadband enabled Wi-Fi to them," he said.

SES 'revolutionises' mining activity in Mali

Australian gold miner Resolute Mining has ramped up its operations in Mali by building what is claimed to be the world's first, purpose-built, fully automated, sub-level cave gold mine at Syama.

It is also adopting high-speed connectivity that enables the use of high-tech applications and equipment, among other capabilities.

The full-managed SES Networks satellite data connectivity platform enables enterprise cloud applications and improves the levels of safety and productivity. The fibre-like service

delivered via its O3b Medium Earth Orbit satellite constellation extends the high-capacity fibre-optic network that Resolute Mining is installing throughout the mine.

Jodie Hatch, chief technology officer at Resolute Mining said the SES Networks solution is a "game-changer" in that it allows for an unprecedented level of digitalisation of the remote mining site in Syama, delivering the same high speeds associated with fibre.

"With this transformational capability, we can increase our

technology adoption and as a result increase our safety and productivity performance," he said.

Carole Kamaitha, vice president of fixed data sales at SES Networks, said the remote mine at Syama had made a technological leap by adopting such advanced solutions and applications.

"In addition, the fully-managed solution means that Resolute Mining can focus on its business and the applications it requires to increase productivity, instead of network management," she added.



Carole Kamaitha, VP of fixed data sales at SES Networks, said the mine at Syama had made a 'technological leap' by adopting the solutions.

Moving Wireless Forward

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

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

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

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

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

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

Asset Tracking & RFID

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



We are now looking for distributors throughout Africa

Commercial Fleet Management

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

Public Transit & Bus Management

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

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

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

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

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

Remote Monitoring & Surveillance

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

Mining & Exploration

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

Smart Cities & Smart Highway

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

Let us know how we can help

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

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Liquid Telecom to invest billions in Egyptian network infrastructure

Liquid Telecom plans to invest EGP8bn (USD400m) in Egypt as part of a major partnership with Telecom Egypt that includes network infrastructure and data centres.

Over a three-year period, Liquid will initially spend USD50m in data centres and cloud services. It then plans to invest a further USD350m in broadband and financial inclusion initiatives, as well as what's described as "high capacity" data centres. The precise number and locations of these facilities have yet to be announced.

Telecom Egypt will partner with Liquid to build the data centres across the country as well as use the network to connect local businesses to the rest of Africa.

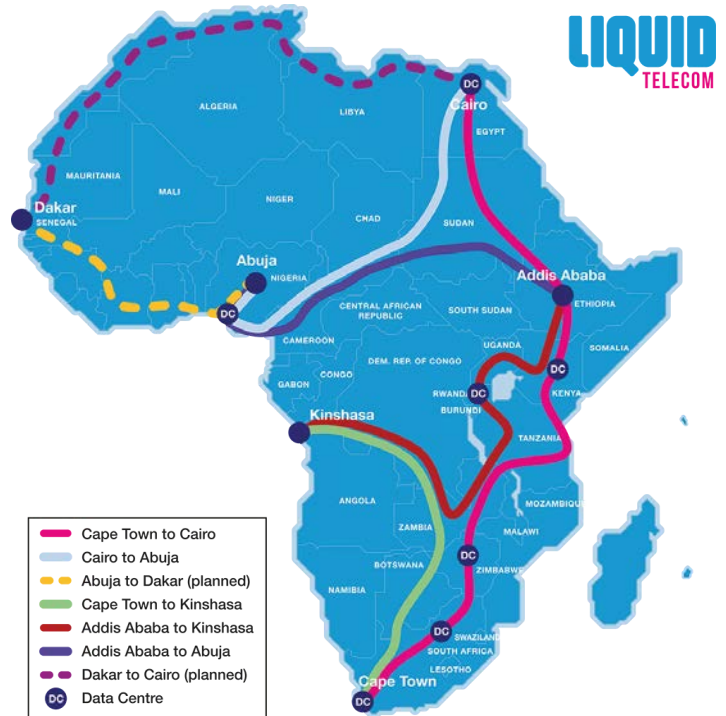
Egyptian president Abdel Fattah el-Sisi welcomed the development as a major milestone in connecting his country to the continent. el-Sisi said he would continue to push the initiative after he takes over from Rwandan president Paul Kagame as chair of the African Union (AU) later in 2019.

Liquid reckons this latest deal will

enable it to "significantly expand" its position as a connectivity and cloud solutions provider in North Africa. The company adds that through its data centre subsidiary, Africa Data Centres, it is providing a platform for cloud services to be delivered locally in many markets for the first time.

As part of the 'One Africa' broadband network initiative, Liquid signed a partnership agreement with Telecom Egypt last year to mark the completion of the first direct terrestrial fibre link from Cape Town to Cairo (see *News*, Jun-Jul 2018 issue).

Strive Masiyiwa, executive chairman of Liquid Telecom's parent company, Econet Group, the next mission is to complete a link between Cairo and Dakar as well as the rest of West Africa. He says "We have already crossed Africa from East to West through Sudan and Chad. We are at the Nigerian border and we expect to reach Abuja by the end of January in time for the AU summit. We want to reach Dakar before president el-Sisi finishes his term."



Liquid is expanding its pan-African data centre portfolio as well as its fibre network which currently stretches almost 70,000km across the continent.

MTN opens mobile money API and launches startups fund

Developers and programmers in Uganda are being given free access to MTN's mobile money proprietary software platform. The company hopes the move will spur innovation in the developer community around the country.

Third party developers will be able to access MTN's mobile money API (access programming interface) via <http://MoMoDeveloper.MTN.com/>. The operator says this replaces the previous system where developers had to physically submit paperwork to MTN Uganda and then go through a lengthy standard integration process. The company adds that its online system provides an option where developers can test their products before going live by using a free sandbox that is available on the website.

Elsa Muzzolini, GM of mobile financial services at MTN Uganda, says: "Our expectations are that this decision will enable innovators

to monetise their products, ensure that there is fast turnaround of innovations to get to market, and improve the value created for innovators and entrepreneurs. Why not a Ugandan Ebay or Amazon in the next few months?"

In partnership with several technology and innovation hubs around the country, MTN Uganda is facilitating the training of developers on how to use the platform.

MTN Mobile Money is said to be used by 10 million customers in Uganda, making it the country's most popular mobile money platform. According to the Consultative Group to Assist the Poor (CGAP), open APIs have the potential to further drive financial inclusion, which is already being accelerated by the usage of mobile money. In January 2018, MTN Uganda and CGAP formed a partnership aimed at driving customer growth and activity by facilitating a wider range of mobile wallet applications for all

customers through open APIs.

MTN Uganda has also announced the launch of a UGX1bn (USD270,000) fund that will be accessed by local technology startups. MTN Uganda CEO Wim Vanhelleputte says: "I encourage as many startups as possible to participate in the several innovation challenges we shall be hosting in order to access funding from the MTN Startup Fund."

Courtesy of the MTN Foundation, MTN Uganda has also unveiled a UGX310m (USD81,000) high speed internet connectivity package as part of MTN's *Innovation Village* programme. The package includes free internet connectivity for use by young developers and innovators.

Alibaba partners with government to promote economic development in Rwanda

The Rwandan Government has teamed up with Alibaba, the world's largest online commerce company, to establish an electronic world trade

platform (eWTP) hub in the country.

The eWTP is a multi-stakeholder global initiative promoting public-private dialogue. The aim is to foster a more effective and efficient policy and business environment to enable SMEs to participate in cross-border electronic trade. Rwanda is the first African country to establish an eWTP hub.

Under the agreements, Alibaba will work with the Rwanda Development Board to help Rwandan SMEs sell their products to Chinese consumers through Alibaba's online marketplaces which are said to attract more than half a billion consumers. The two organisations will also work together to promote Rwanda as a tourist destination, while Alibaba affiliate Ant Financial will share expertise in inclusive financial tools, such as mobile payments, to support the Rwandan digital economy.

Alibaba adds that it is also committed to providing capacity building to academics, policy-

makers and entrepreneurs on how to grow a digital economy. As well as hosting courses and workshops, the company says it will also continue to support Rwandan entrepreneurs through programmes such as the eFounders Fellowship. In partnership with UNCTAD, Alibaba is training 1,000 entrepreneurs from emerging markets over five years. Two hundred of these entrepreneurs will come from Africa, and five Rwandan entrepreneurs have already graduated from the programme.

Speaking during the signing of the MoU in early November, Rwandan president Paul Kagame said the eWTP opens up new frontiers in e-commerce and tourism for Rwanda, and will also boost business capacity and competitiveness. He said: "Rwandan producers will be able to sell directly to a much larger set of customers than before, while bypassing costly intermediaries. This improves productivity and profitability. There really are no downsides to doing business on a global scale."

Also speaking at the signing ceremony, Alibaba Group founder and executive chairman Jack Ma said: "Entrepreneurs in Rwanda, and elsewhere in Africa, are ready to seize the opportunities offered by the digital economy. It is up to all of us to help them succeed."

Avanti signs multiple service and distribution agreements for satellite broadband in Africa

Avanti Communications has signed various agreements with several companies in Africa for the distribution of services via its *HYLAS 4* satellite that was launched last year.

In November, the operator announced that South African satellite integrator Logical Wireless will provide communication and connectivity services to enterprises and end-consumers. Under a Master Service Agreement (MSA), the company will use *HYLAS 4* to complete its coverage of sub-Saharan Africa and provide "cost-effective and reliable" satellite internet services into regions that suffer from unreliable or non-existent connectivity.

Logical Wireless MD Gavin Behr said: "The partnership with Avanti enables us to deploy satellite broadband services that can be installed anywhere and provide a complete communication and connectivity solution to allow individuals and companies to conduct business as if they were in a city."

Pan-African telco Paratus Group also signed an MSA in November to provide high-speed satellite broadband across the continent using *HYLAS 4*. Kallie Carlsen, Paratus' MD for South Africa, said: "With *HYLAS 4* we are further

extending our reach and ability to provide high throughput connectivity throughout Southern Africa."

This latest agreement extends the strategic partnership between the companies – Maxwell Technology, which is part of the Paratus Group, has been using Avanti's *HYLAS 2* services since 2012.

Avanti added that each MSA will enable Logical Wireless and Paratus to deliver high capacity sites for carriers and telecom providers to directly access cloud and content platforms in Africa's largest data centre, making services more efficient and cost-effective.

Meanwhile, following on from its partnerships with COMSAT and iWayAfrica announced last August (see *Wireless Business*, Aug-Sep 2018 issue), Avanti has also signed another Master Distributor Agreement with Afrique Telecom. The pan-African service provider said it will provide affordable high-speed satellite broadband to connect homes, small businesses and enterprises, especially in rural and remote locations where terrestrial networks are limited or unreliable.

Early last November, Afrique Telecom tested its first live site in Abidjan. Using *HYLAS 4*, it's claimed the site can reach superfast broadband speeds of 100Mbps. Avanti said the new MDA will enable Afrique Telecom to

deploy similar high-quality services throughout sub-Saharan Africa.

Hytera says court ruling has "no impact" for customers – but Motorola claims company is "serial infringer"

Hytera claims its customers and end users "remain completely untouched" following a German district court's ruling as part of the long running patents dispute with Motorola Solutions.

In late November 2018, the Düsseldorf regional court ruled in the first instance that a combination of functions that could previously be selected for certain Hytera DMR radios in connection with direct mode communication violated a Motorola patent that is valid in Germany.

Speaking right after the verdict, Matthias Klausung, CEO of Hytera's German subsidiary, Mobilfunk, said: "We respect the decision of the district court, but we are still firmly convinced that we in no way violate an existing patent and will therefore appeal."

Hytera claims that in early September 2018, following the release of software release (9.0) for its entire DMR product portfolio, it had already removed the features complained about by Motorola.

Furthermore, Hytera says it added more than 20 "new and innovative" functions to its radio devices, repeaters and DMR system technology. Therefore, thanks to the

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
8/11/18	Emmanuel Lugagne Delpon	Next Generation Mobile Networks (NGMN) Alliance	Chairman	–	Also continues as SVP of Orange Labs Networks,
13/11/18	Federico Guillén	Nokia Group	President, customer operations, EMEA & Asia	Nokia Group	President, fixed networks
13/11/18	Ashish Chowdhary	–	–	Nokia Group	Chief customer operations officer – resigned
22/11/18	Tommi Uitto	Nokia Group	President, mobile networks	Nokia Group	SVP, global product sales, mobile networks
22/11/18	Marc Rouanne	–	–	Nokia Group	President, mobile networks – resigned
26/11/18	Barbara Bergmeier	Airbus Defence and Space	Head of operations	Dräxlmaier Group	COO
26/11/18	André-Hubert Roussel	Ariane Group	CEO	Airbus Defence and Space	Head of operations
28/11/18	Jeremy Prince	Sigfox	Chief strategy officer	Mikros Image	CSO
12/12/18	Ayush Sharma	Sterlite Tech	Head of programmable networking & intelligence	Reliance Jio	SVP of engineering & technology
12/12/18	Rajesh Gangadhar	Sterlite Tech	Head of wireless broadband converged platforms	Epigenia Wireless	Founder & principal
13/12/18	Ursula Burns	VEON	Chairman & CEO	VEON	Executive chairman
31/12/18	Sandra D. Motley	Nokia Group	President, fixed networks	Nokia	COO, fixed networks

court decision and the long running patents dispute with Motorola, Hytera brazenly claims its products now benefit from new features and “even better performance”.

In an online statement released on its website on 29 November 2018, Motorola Solutions said Hytera should provide open communications with customers and dealers regarding the previous ruling from the US International Trade Commission (also see Wireless Business, Jun-Jul 2018).

“The numerous court rulings across the globe have confirmed that Hytera is a serial infringer of Motorola Solutions’ intellectual property,” claimed Mark Hacker, general counsel and chief administrative officer, Motorola Solutions.

Citing an unidentified source, Hacker continued by saying that it had been reported in a recent interview that Hytera admitted its new i-Series will lack important features available on Motorola devices. “While Hytera has stated that the features are ‘minor,’ we believe [it] is deliberately misleading its own customers and distributors as our patented technologies provide important benefits that vastly improve performance.”

Hacker also added that Hytera’s contention that its i-Series has been broadly cleared by the trade commission is not supported by the organisation’s public materials.

“Hytera has been fighting hard in court to keep as much as possible of the ITC’s rulings redacted and secret, and we urge Hytera to permit the

rulings to be made public,” stated Hacker. “Dealers and customers deserve the right to make informed decisions about the risks they run in purchasing products lacking the critical functionalities covered by Motorola’s patents, and in doing business with a company that has engaged in intentional copying, infringement and misappropriation.”

Spacecom targets growing data and video markets

Spacecom, operator of the AMOS satellite fleet, has launched a vertical solutions division targeting MNOs, government programmes, service providers and other commercial groups operating in what it says are the “fertile” data, mobile and video markets. The company claims the division will enable customers to reach a broader range of new business opportunities as they add complementary applications and push further into digital markets. Its first deal is a multi-year contract with an unnamed, “leading” Southern Africa VSAT services provider via AMOS-7. Based on its growing satellite fleet, Spacecom says it is working with clients and partners to determine the optimal solution for the new services utilising capacity on AMOS-3, AMOS-4, AMOS-7 and AMOS-17, following the latter’s scheduled launch in 2019 to service Africa.

The company adds that it is partnering with select international and local vendors as well as

integration, installation, operation and management experts on a case-by-case basis.

GSMA highlights policy reforms to lift Nigerian economy

Modernising regulation and policy reform will be crucial to boosting Nigeria’s digital economy and boosting mobile broadband penetration, according to the GSMA.

Speaking after an event held in conjunction with the Nigerian Communications Commission at the end of last November, the GSMA’s sub-Saharan Africa head Akinwale Goodluck said: “For Nigeria to take full advantage of the next phase of its digital transformation, it’s vital that collaboration between industry and government enables the right policy environment for millions to benefit from ultra-fast mobile broadband.

“If policies don’t keep pace with the needs of society and technological innovation, there is a risk that citizens will be left behind and productivity and competitiveness will suffer.”

In its Spotlight on Nigeria: Delivering a Digital Future report, the GSMA said the mobile industry contributed USD21bn to Nigeria’s GDP in 2017, representing 5.5 per cent of the total. In addition, it said the growth of the country’s digital economy resulted in the creation of nearly 500,000 direct and indirect jobs.

The association’s research also found that smartphone adoption in Nigeria has risen to more than 53

million connections. Forty-nine per cent of the population is currently connected by mobile technology, compared to less than one per cent who have a fixed-line.

With increased spectrum harmonisation and licensing reform, Nigerian mobile penetration is forecast to rise to 55 per cent by 2025, with 70 per cent having 3G connectivity and 17 per cent having 4G access. Currently, only 44 per cent and four per cent of mobile subscribers in the country are using 3G and 4G, respectively. That’s compared to more than 18 per cent 4G penetration in South Africa and 16 per cent in Angola.

The report therefore concludes that there is still broad scope for Nigeria to increase its mobile penetration.

For instance, the GSMA believes the harmonisation of the 1427-1518MHz and 3.3-3.6GHz spectrum bands makes them “critically important” for mobile operators seeking to offer new mobile services to consumers and businesses. It said: “Making these bands available for assignment to mobile operators will be a core component in reinforcing Nigeria’s position as Africa’s leading mobile market.”

The association also reckons Nigeria’s active participation in the ITU World Radiocommunication Conference 2019 process will prove “hugely influential”. It said: “With a year to go until WRC-19, leading the region in support of identifying new IMT bands that 5G will benefit from, especially the 26GHz, 40GHz

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”.
31/10/18	HTA Group (Helios Towers)	Standard Bank of South Africa, Barclays Bank Mauritius, & Mauritius Commercial Bank	Loan	USD100m	Helios Towers CFO Tom Greenwood: “The term loan facility will provide us with additional flexibility to support our long-term growth initiatives. 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.” Company adds that loan will be drawn as required.
28/11/18	n/a	Qualcomm	Ventures AI Fund	USD100m	Qualcomm will use its recently launched Ventures AI Fund to invest up to an aggregate of \$100m in startups that aim to transform artificial intelligence. The company says the fund will focus on startups that share the vision of on-device AI becoming more powerful and widespread, with an emphasis on those developing new technology for autonomous cars, robotics and machine learning platforms.
3/12/18	Nokia	Nordic Investment Bank	Financing	EUR250m	Nokia says the loan, which has an average maturity of approximately five years after disbursement, will finance its “extensive” R&D programme focused on 5G activities in Europe in 2018-2020. In particular, the investment will focus on developing new 5G-related end-to-end product offerings for different business areas.
11/12/18	Liquid Telecom	CDC Group	Investment	USD180m	Owned & managed by the UK government, CDC Group supports companies that help poor countries grow. Liquid says the \$180m will enable it to expand its high-speed broadband connectivity to some of the most underserved communities across Africa, including supporting the continent’s thriving tech start-up ecosystem with high-speed internet & cloud-based services.

and 70GHz bands, will be crucial."

The association continued by saying that changes in the market and technologies have resulted in a licensing framework and licensing conditions in Nigeria that could benefit from a review and update. Building on the progress already achieved by the NCC, the GSMA report recommends the following reforms:

- Retire the Digital Mobile License, the National Carrier License and the International Gateway License
- Eliminate superseded conditions in the Unified Access Service License (UASL), and migrate many others towards a supplementary general UASL conditions document or to parallel regulations
- Transition to an indefinite duration for the UASL
- Guarantee a true unified approach to licensing, permitting licensees to offer the full range of services, as per the UASL scope of services provision
- Provide coverage obligations via radio frequency licenses

According to the GSMA, a "future-fit" licensing regime will help promote market growth, boost investor confidence and enable increased connectivity. Left as is, it warns that Nigeria's current licensing

framework and conditions could pose an "impediment" to future growth.

Boomplay and UMG in "landmark" music distribution deal

Universal Music Group (UMG) says it has become first music company to partner with leading African music streaming and download service

Boomplay Music (formerly 'Boom Player') is a music and video streaming app that was developed and is owned by Transsnet Music. It was first launched in Nigeria in 2015 by TECNO Mobile and has since gone on to become what's claimed to be Africa's biggest and fastest growing music app. According to July 2018 figures on Boomplay's website, the service has 31 million users and 17 million monthly active. It is also said to add nearly two million new users each month.

Under the terms of a multi-year agreement signed last November, Boomplay will distribute music from UMG's labels through its streaming and download platforms in Nigeria, Ghana, Kenya, Tanzania, Rwanda, Uganda and Zambia. Users will now have access to UMG's extensive catalogue of both global and local recording artists including Tekno,

Post Malone, Lady Zamar and Cina Soul, to name but a few.

UMG says it is accelerating its focus on growing the entire African music ecosystem, including recordings, publishing, production, live events, brand partnerships and merchandising efforts. Earlier last year, the company launched its Universal Music Nigeria division. It claims this provides "comprehensive opportunities" to artists throughout the region, as well as giving pan-African talent the "best possible launchpad for wider international success".

IN BRIEF...



Intelsat has joined the GSMA. The company hopes its membership of the mobile industry's trade association will "further strengthen" the integration of satellite and terrestrial technologies, and advance 5G deployments. Jean-Philippe Gillet, Intelsat's VP and GM of networks, said: "We will collaborate even more closely with companies across the mobile ecosystem and build innovative partnerships that incorporate the complementary strengths of satellite and terrestrial

technologies and create the hybrid networks that advance the cost-effective deployment of mobile connectivity around the world."



Facebook claims 2018 saw its momentum grow and investments increase in Africa. Among some of the highlights for the year, the company says it hosted around 300 events across the continent, and that more than 139 million people across Sub-Saharan Africa use its services every month, of which nearly 98 per cent come back on mobile.

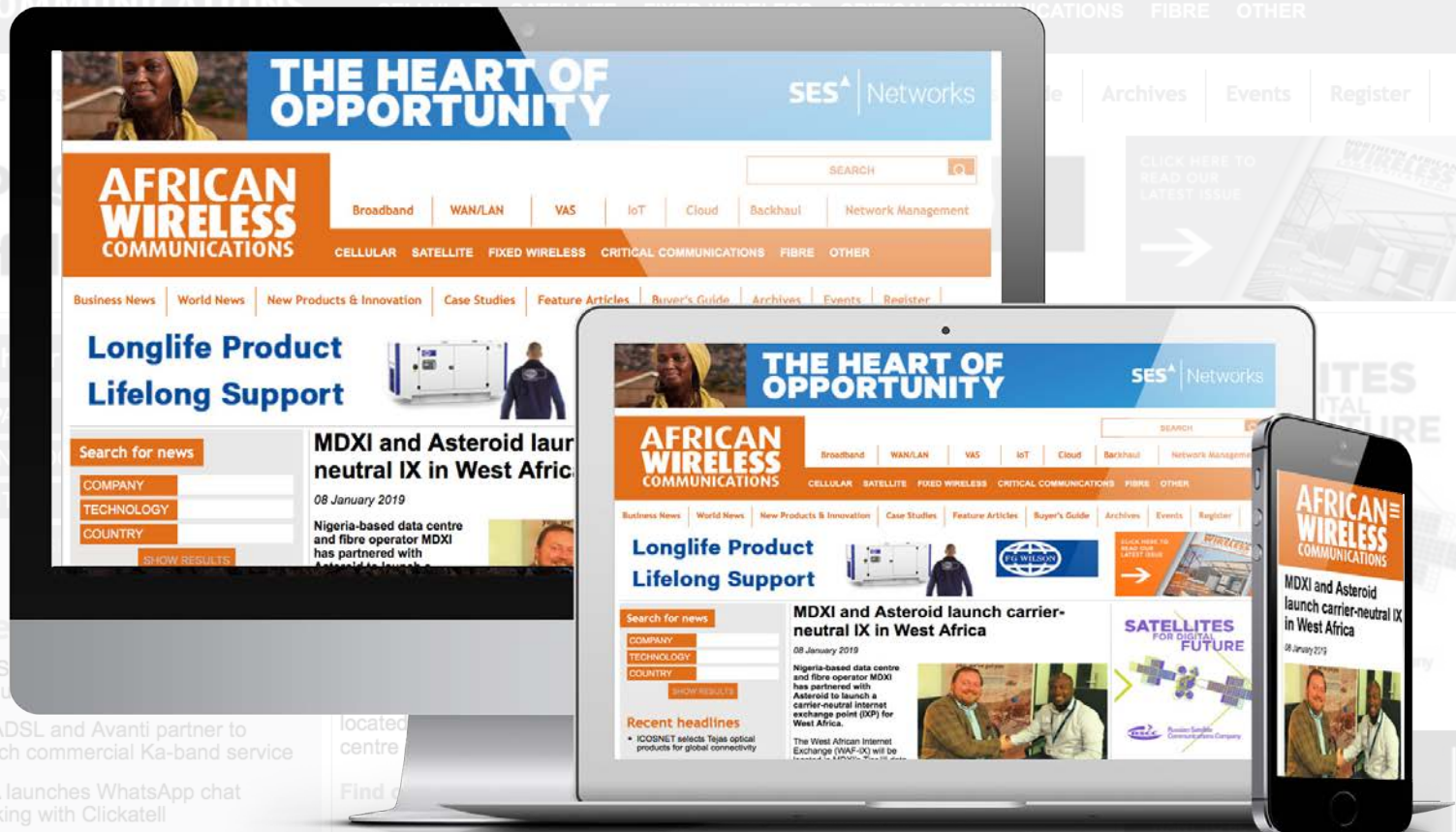


Qualcomm has posted security bonds totalling EUR1.34bn (USD1,53bn) following a German court ruling in its favour. As part of various ongoing legal disputes, Apple was found to be infringing Qualcomm's patented power savings technology used in smartphones. On 20 December 2018, Apple was ordered to cease the sale, offer for sale, or importation for sale of all infringing iPhones in Germany. The court also ordered Apple to recall infringing iPhones from third-party resellers in Germany. Qualcomm needed to post the EUR1.34bn bond with the court for the ruling to take effect.

LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
26/10/18	SES	Luxembourg	3Q18	EUR	1,469.4	927.7	NA	First nine months' results in line with expectations, supported by growth in underlying revenue on the back of double-digit growth in SES Networks division. Company says it is "on track" to deliver on financial outlook for FY18 and FY20.
30/10/18	Intelsat	US	3Q18	USD	536.9 m	416.3	(2.74)	Intelsat reports net loss attributable of \$374.6m for quarter. Company says that in 1Q18, it adopted the provisions of ASC 606 (Financial Accounting Standards Board Accounting Standards Codification Topic 606). As a result, total revenue for 3Q18 reflects \$25.1m primarily related to significant financing component identified in customer contracts. Total revenue for period excluding effects of ASC 606 was \$511.9m.
8/11/18	VEON	Netherlands	3Q18	USD	2,317	848	NA	Total revenue grew organically by 2.9% YoY & EBITDA by 4.6%YoY, driven by Pakistan, Ukraine & Uzbekistan. But total reported revenue decreased by 5.7% YoY largely due to currency weakness of USD289m, causing decline of 11.8% on prior year revenue, more than offsetting the organic growth of 2.9% and the positive impact from Euroset of 3.2%. Reported EBITDA declined by 18.7%, or USD 194m, primarily as a result of currency headwinds (USD122m), Euroset integration impact (USD10m), & effect of an adjustment to a vendor agreement (USD106m) in 3Q17.
30/11/18	Avanti Communications Group	UK	Jul-Sep 2018	USD	10.8	10.6	NA	As part of its outlook, company said current activity levels & pipeline gives it confidence that it will see "strong growth" in bandwidth revenues in final quarter of 2018. It added that recently signed contracts underpin "significant growth" in core bandwidth revenue throughout 2019.
30/11/18	Eutelsat Communications	France	1Q18-19	EUR	349.1	NA	NA	€334m revenues of operating verticals down 1.8% like-for-like. CEO Rodolphe Belmer said: "The underlying performance of the five operating verticals is globally in line with our expectations at this stage of the year, where the revenue profile is back-end loaded due to the ramp of African Broadband & the China Unicom contract in the second half."

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increased by 8.5 per cent to KES252.3bn (USD2.47bn) in the twelve months to June 2018, according to the country's Communications Authority (CA).

In its ICT sector statistics, Kenya is still the dominant revenue



DOWNLOAD
The Solution Brief



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 in 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 process.

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

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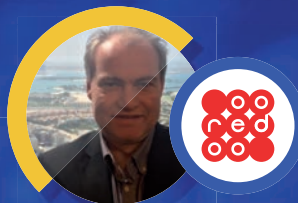
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The cards that mean business

IDEMIA says its FuZion single card system means that the compromise between having a second SIM or more room for storage is a thing of the past.

It may be getting smaller, but the humble SIM card is the major link between the subscriber and the mobile operator. RAHIEL NASIR discovers that a future dominated by connected devices and 5G means there's a whole lot of life still left in this fantastic plastic.

It is estimated that the total available global market for SIM cards grew by 2.75 per cent in 2017, with units rising from 5.45 billion to 5.6 billion. That's according to figures published in April 2018 by the SIMalliance. Its members are said to represent around 90 per cent of the worldwide SIM market, and their collective shipments totalled 4.9 billion units in 2017.

Speaking at the time, SIMalliance chairman Remy Cricco said: "Technology advances and continued LTE migration continue to be the key growth drivers globally, contributing to the largest total available SIM market ever reported. These are transformational years for the global SIM industry as our technology and ecosystem evolve rapidly to serve an increasingly connected digital world, with unprecedented security requirements."

The SIMalliance's membership includes Gemalto, the France-based digital security specialist which claims to be the world's largest manufacturer of SIM cards. It currently serves nearly 60 mobile operators across Africa with various solutions for

mobile security, digital identity and cloud backup.

Sherry Zameer, the company's SVP of IoT solutions for the CISMEA region, says that despite rising unique subscriber numbers and accelerating smartphone penetration, the continent's operators continue to face "serious challenges" in the fight for market share and profitability. "In a region where price sensitive pre-paid markets are particularly significant, voice revenue continues to be squeezed. Churn rates of 10 per cent are not uncommon."

So what challenges does Zameer see when it comes to SIM cards and SIM technologies? "With more devices coming with SIMs, and with the consumers' propensity to use multiple SIMs, there are growing concerns about the non-renewable resources used in all this."

"eSIMs [embedded SIMs], which are built into the devices, have a role to play in making mobiles more environment-friendly by simplifying the manufacturing process and enabling a sleeker, more ergonomic design with fewer moving

parts. This could reduce the amount of material used in the device manufacture and thus the environmental impact."

Zameer goes on to say that eSIMs fundamentally alter the dynamics of the relationship between the operator and its customers by shifting the focus from the SIM itself to the services provided. He believes this sets the stage for a customer experience that is constantly improving, and also the evolution of a mutually beneficial customer-service provider relationship.

"In particular, because eSIMs effectively provide an operator-agnostic platform, they make it easy for users to subscribe to the services they want from multiple providers, and also for providers to manage and service their subscriber base more effectively. For example, consumers will be able to link their mobile devices – phones, tablets and now wearables – easily to the mobile operator and package of choice. In addition, eSIM technology means that activating a mobile package in a foreign country is seamless."

Germany headquartered Comprion provides services and products for testing smartphones, eSIMs, NFC, etc. The company's marketing director Hajo Sandschneider agrees that, while plastic SIMs will continue to prevail for quite some time, eSIMs represent a big part of the future: "With eSIMs being really small chips integrated into the device, a lot of plastic, energy and complexity can be saved – as can a lot of physical letter handling for shipment of the actual SIM cards or PIN codes. The higher flexibility and [eventual] lower costs combined with advantages for device makers will inevitably lead to a success of eSIM technology."

The eSIM edge

So what exactly are the advantages of an eSIM compared to its plastic, conventional counterpart? Sandschneider reiterates that one technical benefit is that it gives end users greater freedom to select their mobile subscriptions more easily by directly choosing it on their cellphone without needing to go to a shop and without physically changing the SIM. He says that the approach is the same when it comes to eSIMs in M2M environments but with the added benefit of simplified logistics for mobile network operators who need to make changes to globally connected devices or appliances. "In both architectures, PIN handling becomes more digital and thus less susceptible to analogue attack vectors."

IDEMIA – the rebranded company which came about in 2017 following the merger of Oberthur Technologies and Safran Identity and Security (Morpho) – agrees that the advent of eSIMs enables MNOs to digitalise the entire subscriber journey.

In a blog posted in May 2018, Mathilde Barends, the company's strategic positioning and product marketing manager, mobile operators, wrote: "[eSIMs make] it possible for customers to select their tariff plan, enrol themselves, and instantaneously activate their mobile devices in complete security – whether in a mobile operator boutique, via a third-party reseller in a supermarket, or even from the comfort of their home on their smartphone. And this is just the beginning. Experts predict that the number of



Hajo Sandschneider,
marketing director,
Comprion

"With eSIMs, a lot of plastic, energy and complexity can be saved – as can a lot of physical letter handling for shipment of the actual SIM cards or PIN codes."



Over-the-air SIM management is an essential part of the eUICC architecture where robust remote SIM provisioning must be ensured.

connected devices with eSIM capabilities will near 500 million by 2022."

As has been well documented, connected devices and the Internet of Things signify huge opportunities for the mobile industry. Africa is no slouch here, and a variety of stakeholders across the region are already leveraging mobile network coverage to usher in the new era in machine interconnectivity.

Zameer reckons that crucially, Gemalto can combine long-term reliability with the privacy and security essential for bringing trust to M2M deployments. "[Our] ruggedised Machine Identification Modules (MIMs) are used in applications that range from transport and fleet management to security and power. For example in South Africa, MiX Telematics is using Gemalto MIMs to enable vehicle tracking, while separately, TLC Engineering has chosen them for a system designed to eliminate derailments on the national rail network.

"Another innovative application is the *SOLARKIOSK*, a self-contained, solar-powered business hub that can provide sustainable energy in virtually any location without the need for additional cabling or infrastructure. Wireless connectivity is supported via Gemalto's robust *Cinterion* M2M modules."

The *SOLARKIOSK* enables and empowers the sustainable economic, social, and environmental development of 'base-of-the-pyramid' (BoP) communities worldwide through the provision of clean energy services, quality products and sustainable solutions. It is a modular, robust, secure and lightweight unit that is designed to be expandable and easily transportable even to remote areas. The kiosk combines technology with an inclusive business model to foster local entrepreneurship at the BoP.

Comprion also believes the future will see an increasing number of M2M devices with an eSIM. As a result, in 2018 the company claimed a first with the launch of a test eSIM (also known as test eUICC) for M2M architecture to ensure that switching to another mobile operator and the related remote SIM provisioning (RSP) work reliably. The firm said its *Test eUICC M2M* enables MNOs and infrastructure suppliers to test the interoperability of the included components in the eSIM M2M environment during product development and integration.

According to Comprion, running RSP functions is protected by credentials that are normally not known to the user. It said the *Test eUICC M2M* is personalised with test certificates and test keys to allow technicians to set up an RSP test infrastructure.

OTA management

For Sandschneider, one of the real advantages of SIM cards in general lies in their flexibility thanks to their remote provisioning and remote management capabilities. He says over-the-air (OTA) SIM management is an essential part of the eUICC architecture which states that "robust" RSP must be ensured, adding: "Most SIM card vendors who already have strong experience of OTA management are offering the required OTA servers for eUICC remote provisioning and can also offer this service for MNOs."

Zameer reckons another big challenge for mobile operators is managing large numbers of subscribers at any one time. He says Gemalto offers the capability via dedicated offshore centres to undertake this on their behalf, and goes on to claim that the company's eSIMs are set to "radically transform" card management and OTA support. "They enable secure remote provisioning and can be used to manage identity securely and effectively, authenticating IoT devices and securely connecting to cellular networks globally.

"Gemalto's integrated approach thus enables mobile operators to secure both their own networks as well as those of the service providers using it, creating a trusted and secure platform on which mobile operators can build profitable ecosystems."

Giesecke+Devrient (G+D) Mobile Security describes itself as the "market leader" in eSIM management. Since May 2018, Orange has been using the German company's eSIM management platform to provide customers with secure, seamless and on-demand connectivity throughout the lifecycle of their devices. G+D says this has enabled subscribers to remotely activate devices and add or remove services at their convenience, thereby reducing the need for customer service intervention.

Carsten Ahrens, CEO of G+D Mobile Security, said: "Our unparalleled experience in eSIM management is driving the market toward a new norm, where remote provisioning and lifecycle management of devices will become commonplace."

Following the deployment of G+D's platform last year, Orange affiliates became among the first European carriers to commercially launch eSIM devices. They include the latest smartwatches from Apple, Huawei and Samsung, as well as Apple *iPads* and *iPhones*. G+D added that further eSIM devices were also in preparation and will be supported with its services.

CALLUP is another company specialising in eSIM remote management as well as VAS and mobile device management. At *AfricaCom* last November, the firm introduced a secured version of its eSIM remote management system for IoT. The firm claims its *IoT eSIM Engine* features two key and innovative network elements: *Subscription Manager Data Preparation (SM-DP)* and *Subscription Manager Secure Routing (SM-SR)*.

According to CALLUP, the *IoT eSIM Engine* allows operators to upload their eSIM profile and issue control commands to eSIMs embedded in M2M and IoT devices. It says this enables

remote lifecycle management of the eSIM from its activation, through upgrades and updates, and until it is cancelled.

With SM-DP, it's claimed operators who use the engine can securely encrypt their credentials ready for OTA installation within the eSIM. The SM-SR then allows them to deliver securely the encrypted credentials to the eSIM, and remotely manage eSIMs embedded in various devices.

CALLUP adds that the *IoT eSIM Engine's* automatic report subscription system enables the operator's executive and technical teams to subscribe to system reports and receive them directly via email. It says the system will automatically repeat the update process on eSIM cards that could not accept the original update due to various reasons, such as devices that were turned off or subscribers who were in roaming.

The engine is also said to support the GSMA standard for subscription management, as well as all standard files of the eSIM IP Multimedia Services Identity Module (ISIM). Furthermore, CALLUP says it includes an "advanced" GUI-configurable general OTA script that fits many operators for the activation and swap of eSIMs. This GUI is said to include a variety of functionalities, such as editing features for eSIM profiles, cards, scenarios, scripts, and more.

SIMS, storage and security

According to IDEMIA, two clear trends have emerged with the rise of the smartphone: the desire for a second SIM in the same device so that users can separate work and personal calls without needing two handsets; and a growing demand for more storage. The company says the solution to this has so far been a two-slot tray that offers room in the smartphone for either a second SIM or a storage card – it says having extra connectivity and extra memory at the same time was simply not possible until now. IDEMIA reckons it has solved the problem with *FuZion*, a single card that combines a SIM and a 128GB MicroSD storage device while occupying only one slot on the tray of a dual SIM smartphone. *FuZion* is said to be fully compatible with 55 models of dual SIM smartphones marketed by 15 major brands. IDEMIA says future applications for the system can be developed in areas such as the IoT, or secure transactions in banking and government.

When it comes to the future of SIMs, most commentators agree that it is not only about eSIMs but that these will then be further integrated with digital ID security systems.

"Using official digital IDs and biometrics such as facial recognition, Gemalto is developing technology to safely and reliably create digital IDs on mobile devices," says Zameer. "Such digital IDs can then be used to verify transactions of all kinds, thus reducing fraud, which is a major challenge in the digital world."

Zameer believes that for mobile operators, OEMs and other enterprises, trusted digital IDs mean smoother digital workflows, faster customer acquisition processes, and consistent

customer data. "Operating costs are reduced and the customer experience enhanced. Moreover, a Trusted Digital Identity can serve as a gateway for subscribers to access multiple security-sensitive services such as mobile money, e-gov and online banking, allowing MNOs to take the lead in these fast-growing sectors.

"In time, offering identity-as-a-service solution will help mobile network operators facilitate greater uptake of cloud services by enabling secure access to online resources and protecting the digital interactions."

Zameer goes on to state that trusted identity management services can help cellcos enhance their value proposition by securing not only their own networks but also the growing number of transactions that take place on their platforms. He says effective cyber security will have to encompass both cloud security and device security, covering the whole data lifecycle.

"Industry research consistently shows that security and trust are two of the top barriers to mobile technology adoption and innovation. Telcos must remain abreast of the risks, constantly upgrading security standards to ensure a seamless service – secure identity is the cornerstone of a dynamic and flexible security ecosystem."

IDEMIA also talks about a future where secure and reliable digital ID systems will be crucial. In the blog mentioned above, Barens wrote: "As digital advancements increase the physical space between mobile operators and subscribers, the need for convenient, secure and reliable 'Know Your Customer' (KYC) solutions (the process of collecting customer identity information) will only become more apparent. Today, mobile operators are implementing more rigorous KYC solutions, with 150 countries requiring mandatory registration for contract and pre-paid users. These regulations vary according to the specific challenges countries may face – including terrorism, identity fraud or money laundering."

Barens continued by saying that a streamlined, fully digitalised registration process also generates the need for mobile operators to guide their customers through this new journey. "After all, they are evolving from simple connectivity providers to providers of what we call 'Augmented Identity'. This is a verified digital identity created through the embedded KYC process that can be used by subscribers to access other online services – an identity so reliable that mobile operators vouch for their customers with third-party services."



Comprion's Test eUICC M2M enables MNOs to test the interoperability of components in an eSIM M2M environment.



"Industry research consistently shows that security and trust are two of the top barriers to mobile technology adoption and innovation."

When asked about the future of SIMs, Comprion's Sandschneider says for the SIM, it will be the eSIM, and then there will be further integration such as iSIM (integrated SIM). "A VPP (virtual private platform) and SSP (smart secure platform) might help these tamper-resistant tokens not only in terms of remote configuration updates or MNO subscriptions, but also operating system updates. This will also enable the rollout of new features during the [eSIM's] full lifecycle and is a huge win in terms of flexibility."

So what about 5G? As Sandschneider points out, this will support low latency, higher bandwidth and massive IoT, all of which will mean a whole host of new, cellular-based (i.e. SIM-enabled) network services, applications and connections. Will all this impact the subscriber identity module as we know it?

In December, the SIMalliance published guidance for the optimisation of 5G SIM capability beyond network access. The recommendations provided in the technical document (*3GPP R15 5G SIM Card: A Definition*), specifically relate to 5G Phase 1 (the document can be downloaded for free at <https://simalliance.org>).

The alliance says its recommended 5G SIM addresses, among other things, subscriber privacy issues, offers reduced power consumption for extended battery life, and supports delivery of IP services.

SIMalliance chairman Remy Cricco says a SIM is the only platform that can be used to secure 5G network access according to 3GPP. He adds: "SIMalliance recognises in its technical definition that a number of SIM technology options may enable 5G network access, yet the different capabilities they offer, which are defined for different 5G deployment use cases, are also outlined. On behalf of the SIM industry, [we] advocate only one type of 5G SIM which promotes the highest levels of security and functionality in 5G networks."

"By deploying the recommended 5G SIM at 5G launch, MNOs will offer their customers the best possible experience, services, security and privacy, while optimising their investments and positioning themselves to realise the full potential of 5G as future use cases and possibilities unfold." ■



The Pretoria skyline, the largest place of the Tshwane Metropolitan Municipality (City of Tshwane)

From football to the emergency services

A network originally introduced for crowd control at the 2010 FIFA World Cup is now saving lives and detecting criminals.

Just a few years before the turn of the millennium, the general consensus was that the conventional analogue radio network used by what is now South Africa's City of Tshwane Metropolitan Municipality was in urgent need of updating. The world was about to ring in the year 2000 and this part of South Africa had a radio network that had been in place since the 1960s. So, when various municipalities amalgamated in the previous decade to form the City of Tshwane Metropolitan Municipality, there was a genuine fear that a geographical area of some 6,500 Sqkm could experience its radio networking clogging up in the event of a disaster. The situation was made worse as VHF/UHF radio frequencies became scarce and the City of Tshwane's emergency services were at risk of not being able to exchange critical information.

However, the City of Tshwane, like the rest of the country, experienced some good fortune when South Africa won the right to be the first country on the continent to host the FIFA World Cup in 2010. Of course, it wasn't just the City that was going to benefit from this – the whole nation was buzzing. The domestic problems weren't going to go away as a result of it, but fans from around the world descending to the southern tip of Africa

gave the 'Rainbow Nation' and its inhabitants something to bond over and look forward to.

Still, winning the bidding process was just

the start and the hard work was about to begin for South Africa and its regions. Negative press coverage in other countries that focused on fan and traveller safety more than the tournament itself meant South Africa faced a bigger PR battle than most other host nations had experienced in the past.

So, when Pretoria was named one of the host cities – the Loftus Versfeld rugby and football stadium being one of the grounds slated for use – the City of Tshwane was charged with various projects.

With such a big task in hand, the City knew that new technology and a solid infrastructure were key – so it called in specialist Rohill for help.

The brief was to implement a new metropolitan mission critical TETRA communications network. The challenge? To supply the network, install it and make it operational in time. One of the reasons for its creation was crowd control.

So how does the whole thing work? The all IP mission critical network is built around a redundant TetraNode eXchange Industrial that serves a TETRA network with 27 base station systems and 58 TETRA carriers. The TETRA network offers interfacing with telephony and 40 analogue channels with legacy networks that are



distributed over the network.

The World Cup may be a thing of the past, but the metropolitan mission critical TETRA communications network most certainly is not. In fact, its role has become broader and far more important.

The core TETRA technology provided by Rohill and implemented by its partner Global Communications – the latter also provided TETRA terminals as part of the project – has had a lasting effect.

Today, the network is an integral part of the day-to-day operations in the region. Although it is mainly used with the Tshwane Metro police, fire brigade and ambulance services, city electricity and water service delivery also use the network.

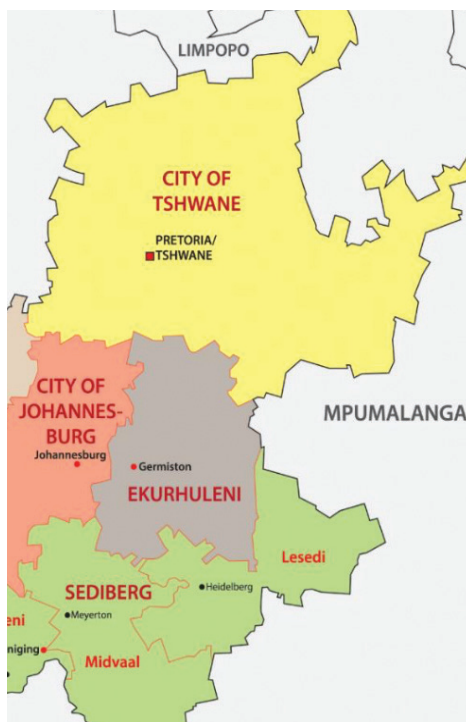
Like many places in developing nations, the City of Tshwane is evolving rapidly, and more TETRA base stations are being added to improve coverage. James Masonganye, deputy director, electronic systems management at City of Tshwane, said most City departments make use of the Rohill TETRA network on a daily basis, while officials and emergency personnel face increasing pressure from the politicians to address the service delivery expectations of the City of Tshwane residents.

“Rohill has provided the City of Tshwane with the best and effective radio communication network that meet the requirement of a mission critical network,” he says,

There are a number of key benefits. The true multi-agency network, powerful dispatch solution and the fact it is fully interoperable with legacy networks are among its unique selling points.

Although the new network replaced many legacy networks, a large number remain operational as an important part of the TETRA network.

In addition, the network includes dispatch rooms with Chameleon dispatch stations



City of Tshwane Metropolitan Municipality



The new network was first used at the 2010 World Cup

with an integrated positioning application to communicate with the mobile workforce based on their geographical position. What's more, a centrally displayed NodeView in the main dispatcher room shows the network resource usage in real time.

How to upgrade a communications network in a most dangerous place

In 2013, South Africa's only inland crude oil refinery decided it was time for a major overhaul of its ageing communications system. However, the plant soon realised it would not be as straightforward as it sounds – here's why.

Natref in Sandton, South Africa describes itself as a technologically advanced refinery. A joint venture between Sasol Oil and Total South Africa, its raison d'être is to refine heavy crude oil.

With such a big and important function to carry out every day in what can only be described as lethal conditions, bosses at the plant were only too aware that a cutting edge communications system was of paramount importance. Natref began investigating the upgrade of the communications system with a view to adopting new technology. However, it soon became evident that with the upgrade of the plant itself, the environment was no longer conducive to IS radio because of the hazardous materials being manufactured in the plant.

The initial RFI went out in 2013 but was later retracted because there was no clear indication or guidance as to which technology platform would be most suitable to the plant. Then in late 2015, the tender was issued for a Mission Critical Communications Network that could supply ATEX/IS equipment (technology permitted for use in highly flammable places).

However, from the start it was clear that the tender was flawed with regards to its specifications

as a lot of safety boxes needed ticking.

Meanwhile, the Natref plant upgrade began in 2014, which led to serious challenges with regards to the usage of MPT and DMR Tier III.

The Natref plant is densely constructed, so its telecoms equipment supplier Verstay recommended an extension of the existing Sasol TETRA network in addition to upgrading the system from MPT to ATEX TETRA.

This spurred the likes of Motorola, Airbus and Sepura into action and they all offered TETRA solutions in competition with Hytera. Motorola's pitch was highly cost effective and so stood out, but the equipment was in the process of being withdrawn from the market.

In addition, the client also had to contend with under two watt output instead of five watt output on the MPT 1327 radios. With diligent training this obstacle was overcome, but another remained – how to interface MPT 1327 with TETRA.

What could have been a tricky situation turned out to be the opposite. Luckily, a local company called Expert System Solutions, which has implemented a Hytera TETRA network for Sasol in the past, submitted a solution compatible with the current Sasol TETRA network. ESS had form, so it made sense for obvious reasons.

The POC between MPT and TETRA was proven and that cleared the way for a total ATEX solution. Once the network order was issued, so was the terminal tender.

Verstay, the former incumbent, also submitted a tender. Part of its pitch was the fact it had carried out prior direct end user conferences and endless supporting visits to Sasol and Natref.

However, Hytera complied to all the specifications that were listed. Furthermore, what actually clinched the deal for Hytera was the fact that all of the equipment, as well as the software, was developed and manufactured in-house.

A total of two base stations were added to the existing Sasol network and 600 ATEX terminals and spare batteries were deployed. The rest is history.

The plant now benefits from a safe and secure communications environment and cross communication into the existing Sasol network.

The first plant in South Africa to embrace a fully-fledged Hytera ATEX network, it can now pave the way for fellow petrochemical plants in the region and further afield to upgrade from non-ATEX standard equipment to a full ATEX radio set up when required.

Most importantly, for Hytera anyway, is that the feedback from the client has been nothing short of complimentary. It says the new communications network at the plant came about after many years of investigating various possible networks and platforms that would fit easily in to such a risky environment.

It adds that the pure functionality of the radio network and the end user terminals lives up to the expectations required, as promised.

What's more, additional equipment for both the network, as well as terminals have been procured since the handing over and commissioning of the entire system, says Hytera.

The future of mobile networks

Virtualisation will help drive Africa's journey towards the 5G era, as LUX MAHARAJ explains.

5G technology has already started to make its presence felt in Africa. MTN and Vodacom are in the process of conducting 5G trials, and recently South African operator Rain announced that it would be launching services soon. It is heartening to see Africa taking significant steps towards the deployment of 5G in the region.

At the same time, the service providers face tough choices, since nearly 600 million African citizens continue to be without basic connectivity. Even today, the continent is one of the most under-penetrated regions in the world with even primary 2G networks yet to reach more than 110 million people, according to a GSMA report.

Meanwhile, internet penetration in Africa is still at just 25 to 30 per cent against the global average of 43 per cent. Smartphone usage in the sub-Saharan region is only 34 per cent as compared to 57 per cent globally. As has been well documented, affordable communications is crucial to overall social and economic growth; it opens up new business opportunities and promotes entrepreneurship. More importantly, access to connectivity is known to lead to expansion of education opportunities and improves access to government services.

While African telcos have started exploring 5G, the GSMA predicts that only three per cent of the continent's population will be using 5G by 2025. Should service providers therefore focus on connecting the unconnected or on deploying 5G networks?

Growing relevance of 5G in Africa

Going beyond popular use cases such as remote surgery and autonomous driving, 5G offers a number of other applications that are extremely

relevant to Africa. The technology can help the region in addressing the problems of poverty and challenges in accessing the infrastructure. The relevant authorities can use the technology to provide e-learning and e-health through digital platforms, and improved literacy promotes social inclusion.

5G technology promises sustainable development and is an opportunity for developing regions like Africa to use digital platforms for the social and economic growth of the people. The use cases are immense and promise to change the way people live and work in the 5G era, with overall economic growth helping to reduce poverty in the region.

A few use cases that are especially relevant to a growing country include transformation of public safety and disaster relief infrastructure, remote surgery, a more efficient waste management system, among others. And because 5G technology enables low latency and ultra-high-speed mobile broadband, it allows many innovative use cases. Unlike previous standards, 5G is not just about a faster network. AR, VR, IoT and automation are some of its many smart applications. For enterprises, the technology promises to come up with many uses to improve processes and enhance productivity. Innovative and disruptive use cases mean that service providers will be able to come up with new revenue streams.

Present-day networks are not capable of addressing the vastly different and dynamic requirements of 5G technology. Africa's service providers will need to adopt new technology approaches to prepare for the fifth generation era. The three technology concepts of network densification, network slicing and, most importantly, virtualisation, are likely to play key role in the networks of the future.

Network densification:

Global Mobile Data Traffic Forecast Update says mobile data traffic has been growing by 60 to 100 per cent every year and that total traffic will rise seven-fold between 2016 and 2021. This unprecedented growth in data traffic is fuelling



With only three per cent of Africa's population predicted to be using 5G by 2025, should operators focus on connecting the unconnected or on deploying the latest mobile technology?

the demand for network densification. This has already started with 4G/LTE but is likely to gather pace with 5G, since there will be more connected devices using the technology, with 20 billion connected devices likely by 2020. Further, as the IIoT (Industrial Internet of Things) catches on, service providers will need to add to network infrastructure in order to boost capacity and ensure quality of experience.

What's more, low latency of less than one millisecond in 5G is only possible with network densification. Service providers will therefore need to ensure that the user devices are closer to the content providers' data centres. Thus, service providers will need to add more macro and small cells to enhance the quality and capacity of the network.

Lux Maharaj,
Director sales –
Africa,
Parallel Wireless



Network slicing:

By dividing a network, each part can function as a separate, virtualised network. This approach allows mobile operators to offer customised services to a different set of clients in the same network.

Network slicing will help in bringing down opex while at the same time adding to service provider revenues. It also helps in faster scalability of operations, especially in the IoT.

A vast number of IoT devices, including cars, wearables, machines and meters are going to be connected, and network operators will need to support different services. They will need to deploy networks for different service types over one infrastructure. The concept of network slicing will allow them to offer different type of services over one infrastructure. The providers will be able to bring new services rapidly in keeping with changing market dynamics.

Slices can be defined in keeping with the requirements. The control and user planes for every slice remains different and there is no impact on the user experience.

Virtualisation:

This involves moving from a primarily hardware-based system to software-based infrastructure. Since it is software-driven, the network consumes much less energy and space, and it is also easier to upgrade and manage the network.

Virtualisation is especially relevant to address the digital divide in Africa and, at the same time, prepare networks for 5G rollout. Shifting the network to a virtualised platform means that the service providers will be able to meet the requirements of their 2G subscribers and still be ready to move to 3G, 4G or 5G as and when the market is prepared, or when it is commercially viable to move to new technology.

Right now, the telcos are reluctant to invest in expensive 2G equipment to expand, and the market is not yet ready for 5G. Virtualisation resolves this dilemma. This way, operators are able to respond to market demand without making major changes to their networks. At the



By using virtualisation, operators can continue to support 2G while at the same time preparing their networks for 5G.

same time, they are ready to move to newer technology in keeping with that demand.

Virtualisation also comes with self-optimising and self-organising capabilities, making it easier to deploy and manage. It also makes it easier for service providers to expand in newer geographies as the cost of network deployment and management significantly comes down with virtualisation.

The solution is part of the Facebook-led Open RAN Telecom Infra Project (TIP) initiative to promote innovation, and has already been successfully deployed by operators such as Telefonica and Vodafone. The Open RAN initiative was started to bring down the cost of radio access networks by segregating hardware and software components. It also uses white box

equipment to reduce the capex involved in setting up the network. Bringing down the cost of network infrastructure will help telcos to expand in newer geographies, offer better tariffs to their subscribers, and thus bridge the digital divide.

Easy and affordable access to communication services is crucial to Africa's overall social and economic growth. 5G technology can play a vital role in connecting the unconnected, and also help the continent in addressing major issues such as challenges in accessing state infrastructure. Meanwhile, virtualised 2G can support telcos in expanding their networks to reach new subscribers. That means operators continue to support 2G networks while at the same time preparing their networks for 5G. ■

Unprecedented growth in data traffic is fuelling demand for network densification. This has already started with 4G/LTE but is likely to gather pace with 5G.



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 RRU 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 Wroclaw 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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SÜDTIROL LANDESVERBAND



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.

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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 *'Attacking the hackers'* feature, Aug-Sep 2018 issue).

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.

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Information & Analytics,
Unilever



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*, Apr-May 2016 issue). Orbiting at 150.5°E, BRIsat 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



BRIsat was launched in 2016. Hughes' 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,

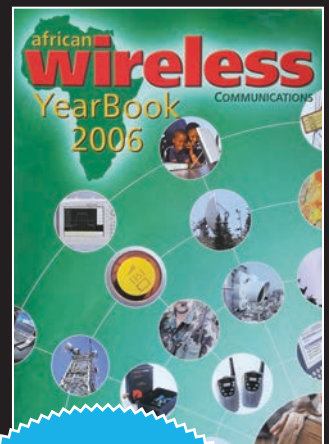
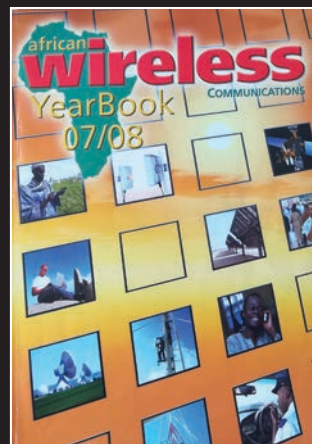
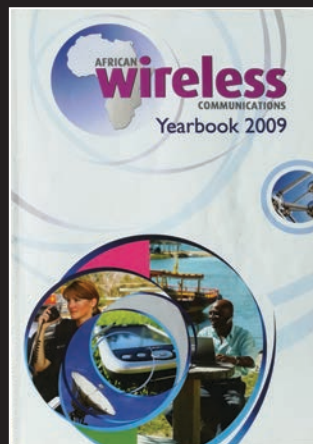
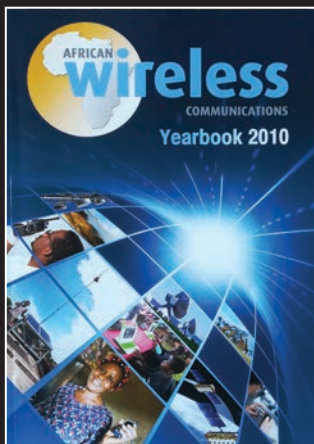
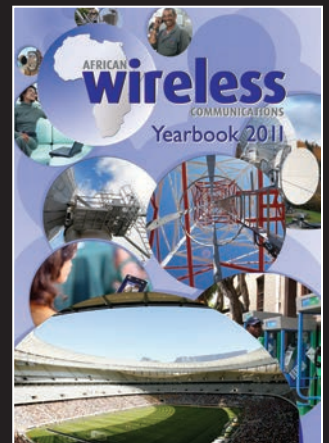
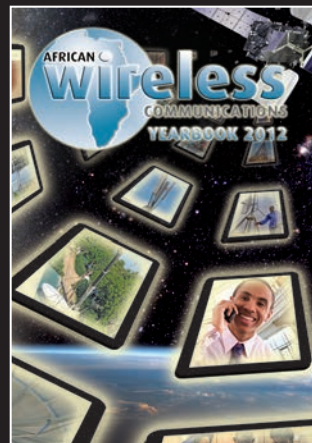
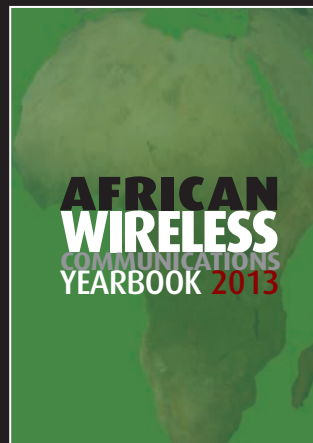
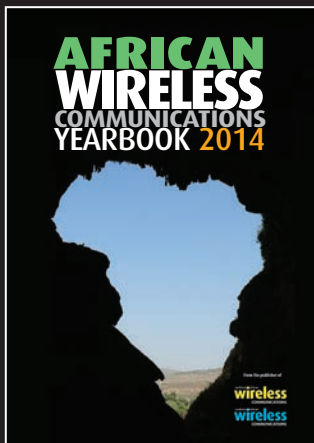
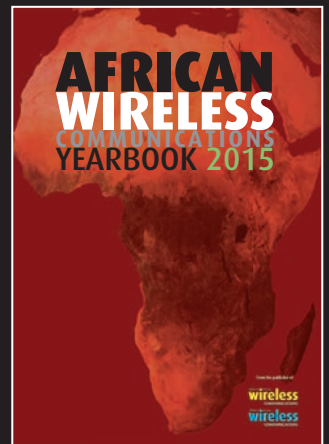
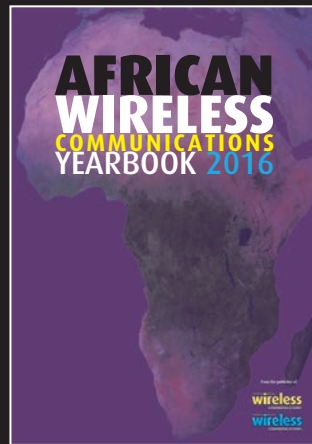
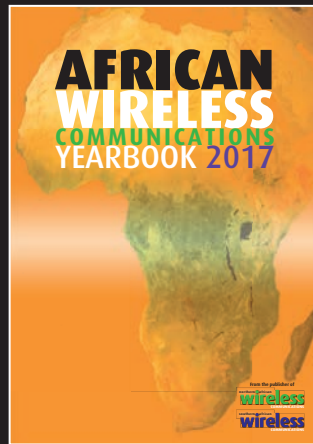
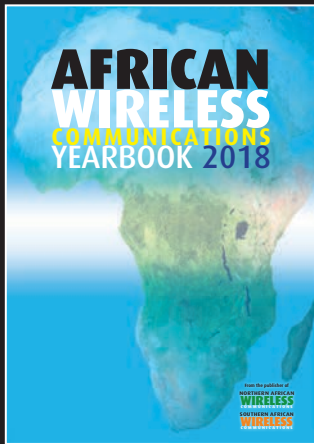
freight cars and processes in the marshalling yards and workshops. It will install Eurotech's *BoltGATE 20-25* as the intelligent IoT Edge gateway on at least 450 vehicles. The vendor says this railway-certified on-board computer is designed to meet the demanding requirements of rolling stock installations. 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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