- **Innovative solutions for remote networks**
- **How the financial sector is banking on wireless tech**
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Liquid to acquire Neotel

In a move that will create what's claimed to be the "first pan-African fibre player", Liquid Telecom plans to acquire South African converged communications operator Neotel.

Liquid is partnering with investment group Royal Bafokeng Holdings (RBH) which will have a 30 per cent equity stake in the venture. Neotel's current owners – Tata Communications together with minority shareholders led by Nexus Connexion – have agreed a sale price of ZAR6.55bn (USD4.28bn).

Liquid said the acquisition will create the continent's largest broadband network comprising 40,000km of cross-border, metro and access fibre.

"For the first time, African companies will be able to connect with each other in a cost-effective and reliable way, all on a single fibre network," said Liquid Telecom CEO

Liquid Telecom Group CEO Nick Rudnick (left) said companies in Africa will be able to connect with each other on a single fibre network. Also pictured: Strive Masiyiwa (right), Econet Wireless Global and Liquid Telecom chairman; and Troy Reynolds (centre), deputy group general counsel for Tata Communications.

Nic Rudnick. "We will also be increasing investments into Neotel to cater for rapidly accelerating mobile and enterprise traffic, enabling us to launch exciting new products and services."

The transaction is subject to approval by South African regulatory authorities and is expected to be completed later this year.

In 2015, Vodacom announced plans to acquire Neotel but met with criticism from rival operators (see *Wireless Business, Sep-Oct 2015)*. In its end-of-year results statement published in June 2016, Vodacom Group CEO Shameel Joosub said: "The proposed acquisition of Neotel lapsed in March due to regulatory complexities and certain conditions not being fulfilled."

Neotel runs a converged communications network which offers tailored services to enterprise users based on voice, internet and data. As well as fibre, the company operates data centres in Johannesburg and Cape Town, and directly connects South Africa's major centres to the world via all five undersea cables.

Second ABS all-electric satellite for Africa

ABS has successfully launched *ABS-2A*. The satellite left Earth on board a SpaceX *Falcon 9* rocket from Cape Canaveral on 15 June.

ABS-2A is equipped with an all Ku-band payload of 48 high-performance transponders connecting Africa, the Middle East, Russia, South Asia and South East Asia. It will be co-located with *ABS-2* and deliver enhanced broadcast and data services from 75°E.

ABS-2A is the second of a pair of innovative satellites from ABS that use all-electric propulsion systems. Its launch comes a year after *ABS-3A* which was one of the first to use such a system (see feature, 'The new space race', Jan-Feb 2015). Both were built using Boeing's *702SP* platform. According to the manufacturer, electric propulsion is more efficient and helps lower the mass of a satellite allowing for larger, high-power payload capabilities.

This is the third satellite ABS has launched since 2014 and completes its USD700m capex programme. The company says: "*ABS-2, ABS-3A* and *ABS-2A* are extremely capable satellites which have been optimised for CATV and DTH services. [They are] unmatched by any other forms of technology for video distribution, and it has been ABS's intention to strategically build satellites that have been designed for this purpose."

ABS adds that its video business has grown from 10 per cent in 2012 to 45 per cent today.

"Critical milestone" for delivery of broadband satellite services in SSA

Hughes Network Systems will supply the technology platform for the satellite broadband services that Eutelsat and Facebook are preparing to launch in sub-Saharan Africa.

Eutelsat and Facebook are assembling dedicated infrastructure that will extend cost-effective broadband to parts of the region that are beyond the reach of fixed and mobile terrestrial networks (News, Sep-Oct 2015).

They will now use Hughes' *JUPITER System*, along with high-gain Ka-band spot beam capacity provided by Spacecom's forthcoming *AMOS-6*.

According to Hughes, the selection of its system marks a "critical milestone" for the delivery of broadband satellite services across the region. It says *JUPITER* features a "flexible and robust" gateway architecture with lights-out operation, enhanced IPoS air interface for bandwidth efficiency, and high-throughput terminals. Hughes claims the platform enables operators to achieve the "highest possible capacity and efficiency for any satellite broadband implementation".

The company adds that *JUPITER*'s underlying technology is a "powerful" System on a Chip (SoC). This is a custom–designed microprocessor that uses multi-core architecture and is said to enable

100Mbps of throughput on every terminal in the *JUPITER* range.

The configuration purchased by Eutelsat includes three gateway stations, two centralised data centres, a comprehensive network management system, and an initial number of user terminals.

For Facebook, the system will support its *Express Wi-Fi* project which aims to expand connectivity to underserved locations by working closely with operators, ISPs, and local entrepreneurs. The company plans to use satellite technology to provide high-speed broadband services to Africa as part of its *Internet.org* initiative.

PMP helps ISP boost business broadband in Malawi

RADWIN claims *JET*'s antenna beam cancels interference and delivers the highest capacity for longer range than any other PMP system.

Malawian ISP Skyband is using RADWIN's point-to-multipoint (PMP) platform to serve major corporate customers in Blantyre and Lilongwe.

RADWIN specialises in sub-6GHZ wireless systems. Skyband has deployed the company's *JET Beamforming* PMP solutions in the licensed 3.X GHz band for its enterprise users which include banks and government organisations.

Skyband says the major challenge during implementation was the high interference in the cities where many of its customers operate. The ISP says *JET*'s *Smart Beamforming* technology mitigates interference, enabling it to maximise frequency planning and channel reuse.

"[The] solutions will allow Skyband to stay ahead of the competition and provide valued enterprise clients with ultra-capacity

SLA service," claims Skyband CTO Asif Kassam. "It was an easy choice for us to upgrade to the *JET* platform as the demands on our network grew based on the excellent experience we've had with the *RADWIN 5000* products these past five years."

RADWIN's certified partner Beacon Telecom worked closely with Skyband to redesign the network and supported the migration process. *PMP cuts opex – Wireless Business, p14.*

Networks built using universal funds should not ignore data

It is no longer sufficient just to plan to introduce voice connectivity using universal service funds (USF), as data is now also a key requirement. That's according to World Telecom Labs (WTL) which recently published the findings of its survey looking into the management and rollout of USF-financed deployments.

At the Innovation Africa Digital summit held in Abuja in April, WTL questioned less than 100 vendors, operator, ISPs, NGOs and government officials. The Belgium-based company said 25 per cent of the respondents had been directly involved with a network built using money from universal funds. It found that while the majority of projects were for voice services, a growing number were also for extending data connectivity.

WTL anticipates that demand for data will soon surpass that of voice. When asked if new services should be voice oriented or include both voice and data, the firm said its data showed that the combination of voice and data was "450 per cent" more popular as an option.

"People recognise the advantages afforded by data services, and the availability of high-quality VoIP means that perhaps it's time to end the conceptual separation," said WTL. "It seems to be a hangover from legacy approaches that are no longer relevant – data gives you voice as well as much more besides, and it is clear that our subject group recognises this."

When asked how this can be delivered, 46 per cent stated that such infrastructure should be completely USF-financed, while 54 per cent said it should be a combination of sources that includes both the private as well as public sector.

WTL said this is in line with its finding that coalitions of partners are important to projects intended to connect the unconnected. It found that operators, NGOs and government agencies all expressed an interest in delivering connectivity to unconnected areas with 86 per cent feeling strongly that a combination of all three is required in order to unlock investment.

Solutions for expanding networks to remote and rural users – feature pp20-22.

Vodacom ends M-Pesa in South Africa

Vodacom will discontinue its *M-Pesa* mobile money services in South Africa with effect from 30 June 2016.

The company said the decision follows a "thorough review" and the fact that the business sustainability of *M-Pesa* is predicated on achieving a critical mass of users.

"Based on our revised projections and high levels of financial inclusion in South Africa there is little prospect of the *M-Pesa* product achieving this in its current format in the mid-term," said Vodafone CEO Shameel Joosub.

He added that the company is "fully committed" to mitigating any inconvenience to customers impacted by the decision, and assured all *M-Pesa* South Africa customers that their funds remain safe and readily accessible.

Vodacom believes opportunities still exist in the financial services environment and said it will continue to explore these.

The operator also pointed out that the decision in South Africa does not affect *M-Pesa* customers in Tanzania, Lesotho, Mozambique and the DRC.

Cape Town gets smarter with Wi-Fi

VAST Networks has partnered with the City of Cape Town to deploy Wi-Fi to all MyCiTi buses. The first stage of the project will involve ten buses across various routes, with commuters being able to benefit from 50MB of free data per day.

The initiative forms part of the metropolitan authority's efforts to improve the attractiveness of the public transport system and encourage residents to minimise the use of their cars.

According to VAST Networks, Wi-Fi connectivity is the next step in making Cape Town a "truly smart

Cape Town mayor Patricia de Lille tries out the free Wi-Fi on myCiti buses.

city". Mayor Patricia de Lille says: "This is indeed an exciting time for the City of Cape Town as we take another innovative step towards becoming the 'Digital Capital' of Africa. Internet access is also a key part of our strategies to build an opportunity city where we connect residents to resources and economic opportunities."

In separate news, WirelessG will use VAST's open access network to grow its own business and brand. The company, which is said to be one of the oldest players in Wi-Fi in South Africa, says that all its *G-Connect* customers will now be able to use their Wi-Fi bundles on almost 2,000 VAST hotspot locations throughout the country.

Mission-critical TETRA for Stellenbosch

Public safety personnel working in the South African region of Stellenbosch and its municipal area will be equipped with TETRA radio terminals from Airbus Defence and Space (ADS).

Over the next five years, ADS will provide various devices that will enable users to communicate "more safely and efficiently" in an area that covers around 830km².

Stellenbosch's administration has chosen different terminals for each public safety service: fire brigades will use the *P8GR* and *THR9 Ex*; traffic police will be equipped with the *TH1n*; while the cleaning department has opted for the *THR880i*.

In contrast to standard analogue paging devices, ADS says the *P8GR* enables secure two-way communication

Left: the *TH1n* is claimed to be the world's thinnest and lightest TETRA radio. Right: Firefighters will be equipped with the *P8GR* pager.

between the control centre and operational units. The *THR9 Ex* is described as a robust radio designed for explosion-prone environments. ADS says it is also offers the best protection against physical and environmental exposure. The slimline *TH1n* is claimed to be the thinnest and lightest TETRA terminal in the world, while the intrinsically safe *THR880i* offers uses unique features such as multiple ways to communicate.

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New Asia-Africa cable

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

Spectrum pricing

CRASA (Communication Regulatory Authorities in Southern Africa) and the GSMA have organised a workshop on spectrum pricing and auction. Hosted by the Communications Regulatory Authority of Namibia, the event will take place in Windhoek on 18-19 August. It will focus on bridging the skills and knowledge gaps in spectrum valuations and auctions and how these can be used to achieve policy objective. Participants will also gain insight into how license conditions, reserve prices and regulatory policy impact spectrum values, auction participation and outcomes.

Satellite dispensers

Arianespace will design, qualify and supply 21 payload dispenser systems for the deployment of OneWeb's satellite constellation. The systems will first secure the spacecraft during their flight to low Earth orbit and then release them into space. They are designed to accommodate up to 32 spacecraft per launch, allowing Arianespace to deliver the bulk of the OneWeb constellation over a period of 18 months, starting in 2018. Swedish firm RUAG Space will be the prime contractor in the development of the systems.

Battling for 4G in Tanzania

Vodacom and Tigo are expanding their LTE networks in Tanzania, with each claiming it now offers the country's fastest mobile broadband service.

Vodacom went live with 4G in Dar Es Salaam on 11 May. The company said it had worked with its long-term technology partner Nokia to roll out "the fastest 4G network in Tanzania", initially delivering up to 70mbps.

The cellco has connected its LTE sites in the capital to its metro fibre network. Vodacom said it will introduce 4G to all major cities in Tanzania and the rest of the country in "due course". It added that 200Mbps mobile broadband access will be offered "very soon".

Within 24 hours of Vodacom's announcement, Tigo issued its own press statement declaring that it now offered the "fastest and widest" LTE network in Tanzania. Since launching 4G in April 2015 in Dar Es Salaam, Tigo said its network has expanded to Arusha, Tanga, Dodoma, Morogoro, Moshi, Mwanza, Tabora, Musoma,

Members of Tigo Tanzania's management and local government officials celebrating the launch of 4G in Mwanza City earlier this year.

Bukoba, Kigoma and Shinyanga. It added that plans are under way to cover all major cities before the end of 2016.

Tigo also said it will be investing more than USD75m this year on a network modernisation programme that includes increasing capacity to all LTE covered cities, increasing 3G coverage nationwide, optimising 2G, and scaling-up fibre.

According to the latest quarterly statistics issued by the Tanzania

Communications Regulatory Authority in March 2016, Vodacom currently has more than 12.3m registered subscribers and is the country's overall market leader with a 31 per cent share. Tigo is second with more than 11.3m subscribers and a 29 per cent market share, closely followed by Airtel with its 10.7m customers and 27 per cent market share. Zantel, Halotel, Smart and TTCL make up the rest.

Standard Chartered claims biggest roll out of mobile banking services in Africa

In what's claimed to be the most extensive digital roll out of its kind in Africa by an international bank, Standard Chartered will bring its latest mobile and online banking platform to a million clients across eight countries on the continent.

It is launching the new platforms in Botswana, Ghana, Kenya, Nigeria, Tanzania, Uganda, Zambia and Zimbabwe. Users will be able to

check balances, transfer money and pay bills securely via their mobiles, laptops or tablets. Standard Chartered also plans to launch fingerprint recognition technology in these markets later, giving customers a more secure way to log in to their accounts.

Last year, Standard Chartered announced it will invest USD1.5bn in technology globally over three years. "We are committed to making

banking easier, faster and safer for our more than one million retail clients across Africa," says Jaydeep Gupta, Standard Chartered's regional head of retail banking for Africa and the Middle East. "By early next year, we expect at least 35 per cent of all client transactions to be done through online channels, significantly advancing the transformation of banking in Africa." *Connecting the financial sector – pp24-26.*

Imarasat expands connectivity for SMES

Imarasat is aiming to expand its business internet services across 14 countries in sub-Sahara Africa with the help of satellite operator Avanti Communications.

Kenya-based Imarasat offers a Ka-band satellite broadband service which it says includes a "highly differentiated" QoS feature. The company claims this ensures real-time prioritisation of mission-critical applications for enterprise customers using its packet shaping technology which is implemented on hubs at Avanti's gateway ground stations. It adds that

Imarasat has developed a VSAT platform for SMEs.

the technology avoids contention and the interruptions to enterprise broadband services associated with non-business traffic such as infotainment and peer-to-peer file sharing.

Imarasat says it will particularly target what it sees as the "significant opportunity" presented by the growing SME market in countries such as Kenya. Citing Frost and Sullivan, it says an estimated 1.1 million SMEs contribute 45 per cent to Kenya's economy. However, the firm points out that almost 75 per cent of them do not have internet access, and 32 per cent of are outside of 3G coverage entirely. "They're therefore unable to benefit from the growth and productivity gains that broadband can offer," says Imarasat.

Cable thefts cost Telkom ZAR100m

South African operator Telkom says it's ramping up efforts to migrate customers to wireless and fibre technologies in an effort to tackle cable theft syndicates.

The company says more than 6,000 incidents of theft have occurred across its copper network during the past year, and that thieves are becoming more sophisticated.

Telkom spokesperson Jacqui O'Sullivan says: "These criminals now target our manholes armed with customised heavy duty vehicles, allowing them to hitch the cable to the vehicle and drive out kilometres of cable, cutting off thousands of customers in a single incident."

O'Sullivan says dealing with the crimes is challenging. For example, she says there are areas in the Western Cape where gang violence sometimes makes it dangerous for the company to send in technicians to replace stolen cables. "In many high-theft areas, cable is repeatedly stolen, sometimes within days after replacements or repairs."

For the 2015 financial year, Telkom spent ZAR100m on cable theft repair costs and an additional ZAR107m on security services. The company is now looking at migrating customers in high copper theft hotspots to alternative technology platforms such as Wi-Fi and fibre which are not so desirable for criminals.

For instance, Telkom says 4,000 customers have already switched to its wireless *Waya Waya* service which does not rely on a copper network. Using a mains-powered GSM device, subscribers can retain their landline numbers while also benefiting from SMS functionality and other features.

Earlier this year, Telkom also launched a trial giving customers an opportunity to upgrade their copper-based connectivity to fibre for free (*News, Jan-Feb 2016*). As part of its ongoing efforts to reach more people and places across South Africa, the operator will now use Vumatel's open access fibre network to complement its own cable infrastructure.

Telkom Retail CEO Attila Vitai says: "While Openserve holds the lion's share of the national fibre footprint, there are currently areas not covered by their fibre network. To this end, it makes commercial sense

to leverage the networks of other open access fibre network providers to ensure that our customers in these areas can be served immediately."

Telkom will use Vumatel's fibre network to launch services in more than 21 new suburbs across Gauteng. The operator adds that it will also consider the commercial viability

of dealing with other network infrastructure providers in order to expand its fibre reach.

"Leveraging infrastructure from various open access network providers is a step change in how we previously procured our network requirements and is consistent with the ideals of functional separation

between Telkom's wholesale and retail business units," says Vitai.

Through its wholesale network division Openserve, Telkom claims it already has the most extensive fibre network footprint in South Africa with more than 81,000 homes passed. Its target is to reach one million homes across the country by 2018.

Enhancing QoS and QoE

Astellia's onsite telecom data scientists are working with Airtel Madagascar to improve network performance and ensure excellent QoS and QoE to high-value customers. Astellia says the aim is to prevent any service degradation and pinpoint the root cause of issues that jeopardise customer loyalty and revenue growth. The France-based firm is now training the operator's staff to support these objectives. It is also monitoring the *Airtel Money* service to ensure that it is functioning well.

EMTEL upgrades

Airtel subsidiary EMTEL Mauritius will expand its call completion and MDX platform to enable the rapid roll out of new messaging and voice services. Finland-based Tecnotree will help the operator enhance its digital strategy by supplying a content management and service delivery platform. This will be used to upgrade EMTEL's legacy voicemail system to the latest SIP-based call completion stack within a virtualised environment. Tecnotree will also supply a call completion solution that enables hardware and network modernisation.

FTTP set up in Zambia

iWayAfrica Zambia has launched fibre-to-the-premises (FTTP) services for enterprises and consumers. The firm says the new service has already been successfully deployed to major corporates seeking to establish dual-links for redundancy purposes. Ulrich Lassen, head of business at iWayAfrica Zambia, says: "The launch offers customers a full turnkey solution for their communication needs. This extends from dedicated internet, IP transit, MPLS, VSAT backhaul and redundancy, to numerous value added services such as mail hosting and backup."

Vodafone Foundation sets up Instant Schools

The Vodafone Foundation has launched one of the largest philanthropic programmes in its 25-year history.

During the coming months, it will roll out its *Instant Schools For Africa* initiative in the DRC, Ghana, Kenya, Lesotho, Mozambique and Tanzania. The programme will offer access to online learning materials developed in conjunction with Learning Equality, a not-for-profit provider of open-source educational technology solutions, as well as with government ministries and local education experts in each country.

The Vodafone Foundation says digital learning resources provided via mobile networks offer a cost-effective alternative to conventional teaching materials, and can be updated instantly to ensure pupils receive the

Students in the Kakuma refugee camp in Kenya using tablets from Vodafone Foundation's *Instant Classroom*.

PHOTO: DAVID MUYA, UNHCR

very latest information and insights in the classroom and at home.

Under the *Instant Schools For Africa* programme, pupils will be able to access basic tablets while educators will be equipped with a laptop and projector. The foundation says the educational materials will be aimed

at pupils from primary through to high school level, and comparable in quality, range and depth to those available in developed world schools.

Customers of Vodafone or its African subsidiaries will not incur any mobile data charges when accessing the resources. The company says it will encourage the other major mobile operators in the countries involved to adopt a similar approach.

This latest development is part of the Vodafone Foundation's ongoing mission to use digital and mobile technologies to bring critical educational resources to those who need them most. Last year, it announced the creation of the *Instant Classroom* which is being deployed in partnership with the UNHCR in refugee settlements in Kenya, Tanzania and the DRC.

CWS enhances networks with TEOCO

Cable and Wireless Seychelles (CWS) is aiming to improve the performance of its 2G, 3G and LTE-A networks with the help of TEOCO.

CWS is the largest telecoms operator on the islands. It will use TEOCO's *ASSET* tool to increase the accuracy and effectiveness of planned enhancements to all of its networks. It will also use the software to improve the efficiency of its business processes.

According to the vendor, *ASSET* can boost the capacity and coverage of

mobile networks, and also improve cell positioning and parameter planning. CWS chose the tool as it needed a network planning solution with the capability to integrate with the 3G dual carrier technology it uses for its HSPA network, and support LTE-A to deliver optimal performance.

"Using *ASSET*, we can deliver a reliable and first-rate quality of mobile service to our subscribers and also the many international visitors who visit our country, in the most

cost-effective way possible," says Sebastien Bec, chief technology and information officer, CWS.

TEOCO adds that maintaining a mobile network that properly covers the Seychelles presents unique challenges that require "innovative thinking and a flexible and intelligent approach to network planning". The country is made up of more than 115 islands spread across a large geographic area, and has a widely dispersed population as well a densely inhabited areas.

CSG helps MTN cut the costs for billing

MTN South Africa has extended its managed services agreement with CSG International.

The agreement entails system management and support of MTN's retail billing operations, credit vetting, and number portability. Under a new, five-year deal, CSG's responsibilities have been extended to cover all of the proprietary and bespoke platforms currently in use by the operator. It is estimated that this will provide a 30 per cent cost reduction for MTN's Billing-as-a-Service offerings.

MTN South Africa's CIO Benjamin Marais says: "The extension of the

CSG's Phillip Yoo says his company's mission includes helping clients "innovate for the future".

business relationship with CSG International will go a long way towards helping MTN to simplify and streamline operations, while ensuring that we improve the quality of the services we provide to our customers."

The two companies have a long-standing partnership that spans

more than a decade. MTN initially deployed CSG's BSS solutions to provide a flexible and scalable service. This was extended in 2014 when CSG was appointed to provide its "deep domain expertise" of technology and processes, as well as knowledgeable resources for MTN's wholesale and business operations.

Phillip Yoo, president of CSG International's global carrier business, says: "As MTN's business continues to develop and transform, CSG is prepared to offer the people, processes and technology they will need for success."
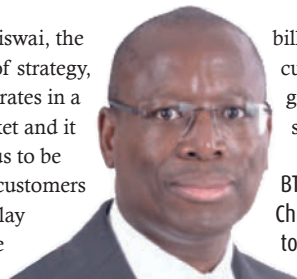
BSS supports Botswana triple-play

Botswana Telecommunications Corporation Ltd (BTCL) is modernising its BSS to enable service convergence, give it more billing and customer care options, and reduce opex.

Around 800,000 customers are said to use BTCL's fixed, mobile and broadband services. Under a five-year managed services contract, Amdocs will deliver its *C1* converged billing system to replace three legacy billing systems that currently support the telco's different lines of business.

As a result, BTCL will be able to offer customers triple-play bundles and price plans and, for the first time, a single bill across all services. The operator will also be able to support its customers on new channels, including self-service via the BTCL website and mobile apps.

Christopher Diswai, the company's GM of strategy, says: "BTCL operates in a competitive market and it is important for us to be able to offer our customers attractive multi-play bundles and price plans, a single bill across services, and new customer service options for greater end-user control and satisfaction."

BTCL's GM of strategy Christopher Diswai wants to give end-users "greater control and satisfaction".

C1 was formerly known as *Comverse One* and is now part of Amdocs' portfolio following its acquisition of the majority of Comverse's BSS assets last year. Since then, the firm says it has developed managed services and user acceptance testing services for the system which it will also deliver to BTCL.

Openserve to peer at NAPAfrica

Openserve, the wholesale and networks division of South Africa's incumbent operator Telkom, is now a member of NAPAfrica, the continent's largest IXP.

Based within Teraco's vendor-neutral data centre, NAPAfrica is said to be four times the combined size of all of Africa's IXPs and regional services offered by multiple countries including South Africa. Its client base of more than 280 members includes five of the largest content providers globally.

According to Teraco, NAPAfrica's rapid growth has proven that peering exchanges are a much-needed facility in the region's internet ecosystem. The firm says Openserve's decision to use the facility for peering is in keeping with the broader evolution of a deregulated market in South Africa.

Teraco CEO Lex van Wyk says: "As a country, we are still grappling with a digital divide, and Openserve's decision to peer will undoubtedly assist them to deliver increased innovation and more choice, ultimately increasing broadband access."

Telkom formally launched Openserve as its wholesale division in October 2015. It says the business will operate on the basis of offering all clients open access to its "pervasive network" *(News, Nov-Dec 2015)*.

DAMM deployed in Airports in Oman & Saudi Arabia

King Khalid International Airport (KKIA), Muscat International Airport & Salalah International Airport in the GCC, are now utilizing the intelligent, decentralized DAMM TetraFlex® System to secure critical radio communication.

King Khalid International Airport (KKIA), located north of Riyadh in Saudi Arabia, served 18.58 million passengers in 2013, and there is a current expansion in the airport to increase the capacity to 35 million passengers. In KKIA, the system deployed includes redundant DAMM TetraFlex® High Power Indoor Base Stations and the system provides full coverage for one of the world's largest airports in the world.

Muscat International and Salalah International Airports will be the new gateway to the Sultanate of Oman. The New Salalah International will able to handle one million passengers per annum and the new Muscat International Airport will

have capacity to handle 12 million passengers per annum. Further expansions planned in three subsequent phases will ultimately boost the airport capacity to 24, 36 and 48 million passengers when the demand is required. DAMM TetraFlex® deliveries include multisite redundant High Power Indoor Base Stations. The built-in application enabled for this system includes Voice and Data Log System, Group Bridge to interconnect from TETRA to analog radio systems and the open API for easy integration of applications customized to the airport.

Khaled A. Karim, Regional Executive states: "The progress in the Middle-Eastern markets clearly demonstrates the reliability of DAMMs TetraFlex® solutions in a very demanding and complex mission critical environment. The new DAMM Multi-Tech Platform, will continue to provide tomorrows airports with the right balance between security, simplicity and operational effectiveness."

Allan Detlefsen, CCO, DAMM, elaborates: "For both Muscat and KKIA the key factors for choosing DAMM were a successful evaluation and analysis of the customer requirements, as well as the easy integration of 3rd party applications. With these two airports and more projects already won in named GCC countries, DAMM, along with our regional partner Waves, is proud of these achievements setting yet another milestone in the region as the leader of future proof mission critical radio communication systems"

About DAMM Cellular Systems
DAMM is a world-leading provider of scalable, flexible and user-friendly digital radio infrastructure systems to industrial, commercial and public safety customers. Built for the future of critical communications, the DAMM Multi-Tech Platform enables voice and data communication across technologies, including TETRA, TEDS and DMR in one single system. With over 30 years of experience in critical radio and broadband communication, we take the lead through superior engineering and a constant focus on customer needs and reduced complexity. To find out more about Damm Cellular Systems or any aspect of our solutions or services, visit **www.damm.dk**

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Critical communication made easy
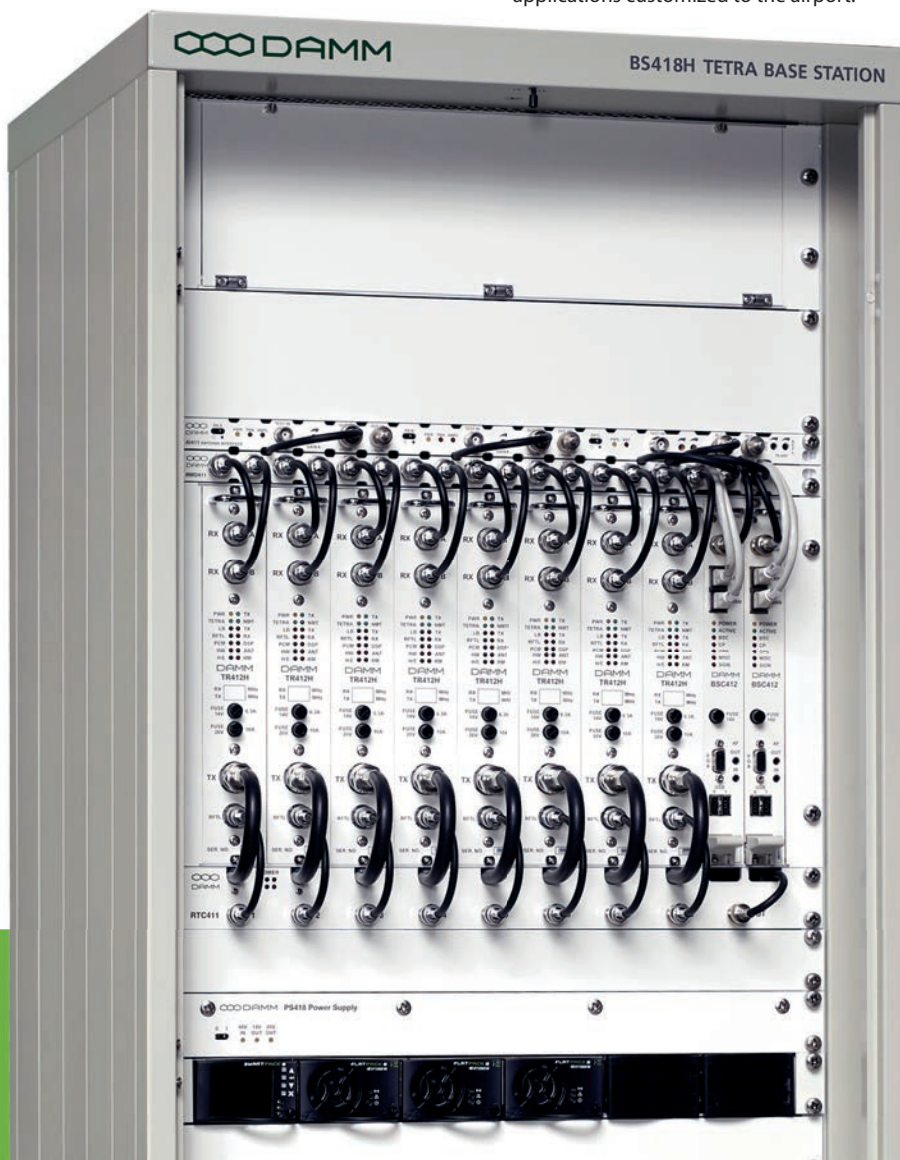
Global mobile infrastructure market enters "post-LTE" era

The global macrocell mobile infrastructure market declined 18 per cent in 1Q16, according to IHS Technology. But in a separate study, the analyst says the telecoms sector is likely to emerge as a leading source of capital expenditure for East Africa.

IHS says the global macrocell mobile infrastructure market was worth USD10bn during the first quarter of this year. That compares to around USD11bn for 1Q15 – an eight per cent downturn on a year-over-year basis.

Stéphane Téral, IHS Technology's senior research director for mobile infrastructure and carrier economics, believes the market has entered the "post-LTE peak era" with infrastructure for the technology seeing a decline of six per cent YoY.

"For the first time since the beginning of LTE rollouts in 2012, all generations of mobile technologies experienced a sharp decline," he says. "Even India, the only BRICS nation bright spot last year, slowed down dramatically in Q1 2016 due to spectrum issues and various deals between local mobile operators."

Téral adds that Ericsson retained its leading position in the macro 2G/3G/4G radio market in 1Q16,
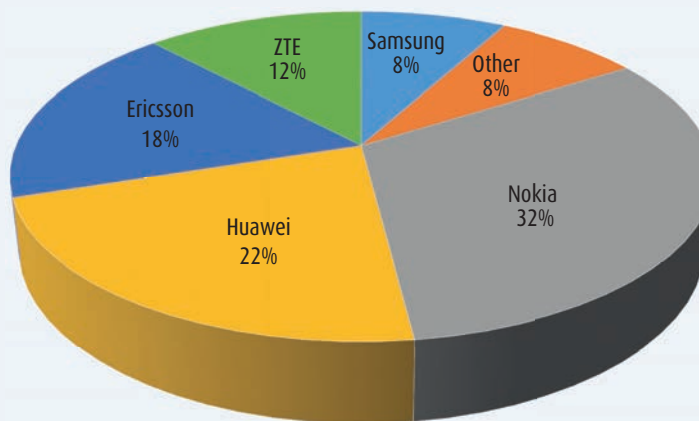

Nokia and Huawei lead the global LTE infrastructure market with 32 and 22 per cent shares, respectively.

SOURCE: IHS © 2016

sustained by its mix of geographically distributed large tier 1 accounts. It was followed by Huawei at number two and then Nokia (including Alcatel-Lucent's share). All three companies also lead the global LTE infrastructure market, according to IHS (*see chart, above*).

East Africa boom

In a separate report, IHS says East Africa's telecoms sector looks set to become more attractive for investors. It believes Tanzania presents cellcos with a "favourable" operating environment

due to competitive licensing agreements, while in Uganda, the recent rollout of a regulatory framework for mobile and agency banking services provides new opportunities.

Kenya is particularly noteworthy. IHS says its government's commitment to encourage growth in the sector should improve competition and interoperability among existing MNOs and stimulate MVNO activity.

The firm adds that Kenya's telecoms infrastructure is largely concentrated in the south-east and west, but new projects could potentially drive 600,000

people to emerging areas of economic activity in the north-west, particularly in the Lake Turkana region, with consumer spending on mobile services expected to increase as a result. By forecasting population change and analysing population demographics, IHS identifies potential tower locations in three towns in the Rift Valley Province likely to benefit from the largest net increase in population: Lokichar, Kitale and Eldoret.

"These projects would create new centres of economic activity and employment opportunities," says Natznet Tesfay, director of sub-Saharan Africa analysis at IHS' economics and country risk division. "This example highlights how companies might miss faster growth and attractive opportunities in medium-sized cities if they only focus on the traditional major cities."

She adds that the refurbishment and expansion of the Lokichar-Kitale-Eldoret highway into neighbouring South Sudan will also increase opportunities for wholesale and retail trade, as will the UK-owned Tullow Oil's concession close to Lokichar which is due to start oil production by 2020.

MTN settles Nigerian dispute and appoints new CEO

Following the record-breaking fine imposed on it by the Nigerian Communications Commission (NCC) last year, MTN has now agreed a settlement with the country's Federal Government.

The NCC imposed a fine equivalent to USD5.2bn on MTN Nigeria for the untimely disconnection of 5.1 million subscribers last August and September. The situation led to Sifiso Dabengwa announcing his resignation as MTN Group CEO in November (*Wireless Business, Nov-Dec 2015*).

As a full and final settlement of the matter, MTN Nigeria has now agreed to pay a total cash amount of NGN330bn (USD1.671bn) over the next three years. In addition, the operator has reiterated that it will ensure compliance with the NCC's codes of conduct and its license

conditions. The company says it will also take immediate steps to ensure the listing of its shares on the Nigerian Stock Exchange as soon as commercially and legally possible.

With the NCC dispute resolved, the MTN Group has now named its new president and CEO. A South African national, Rob Shuter has also held senior management roles at Standard Bank and Nedbank. He will start his new role in 2017 after completing his current tenure as CEO of the European cluster at Vodafone Group. Phuthuma Nhleko, who had assumed the position of executive chairman following Dabengwa's resignation last year, will then revert to his post as non-executive chairman.

As part of an overall review of its governance and management structures announced earlier (*Wireless Business, Jan-Feb 2016*),

MTN Group has named Rob Shuter as its new CEO. The firm says it will now resume its "rightful role" in increasing connectivity across Africa and the Middle East.

MTN has also announced a number of other new executive and non-executive appointments (*also see New Appointment table overleaf*).

They include Godfrey Motsa who will oversee operations in the South and East Africa regions (excluding South Africa). Motsa joins from Vodacom where he was chief officer for consumer business. He has also previously served as CEO of Vodacom DRC as well as CEO of Vodacom Lesotho.

Afrimax and Vodafone partner in Zambia

Under a non-equity deal, Vodafone and Netherlands-based Afrimax Group will work together in Zambia to offer high-speed 4G data services to consumers and enterprise customers.

The two companies will share their skills and expertise to launch an LTE network under the Vodafone Zambia name. The rollout will include the opening of Vodafone-branded retail stores and kiosks in key locations, bolstered by a network of distributors and resellers offering a full range of 4G handsets and devices.

The partners says Vodafone Zambia will offer businesses of all sizes a range of connectivity products, including 4G and Wi-Fi mobile data services, fixed internet and a suite of office solutions, via retail and direct sales channels.

Vodafone Zambia will be headquartered in Lusaka and led by Lars Stork who has been appointed CEO by Afrimax.

The launch builds on the framework agreement between Afrimax and Vodafone that was announced in November 2014. Under Vodafone's Partner Market agreement, the two companies are exploring potential opportunities in a variety of territories in sub-Saharan Africa, and have already launched 4G services in Uganda.

PMP can cut costs for last-mile infrastructure

The latest point-to-multipoint (PMP) technologies offer up to 50 per cent TCO savings over alternatives, according to Real Wireless. The independent wireless specialist says this is largely due the aggregation of multiple links to a single hub site.

The firm considered a range of transport options, including managed fibre, V-band and E-band PTP, microwave PTP and PMP, and sub-6GHz unlicensed PTP and PMP. As part of the research, it modelled a case study of an ISP building-out a network to supply carrier-grade connectivity to enterprises. The model included not just the initial outlay for equipment but also the more significant aspects of installing and running it over time.

Real Wireless found that PMP microwave and sub-6GHz resulted in the fastest time to break-even, potentially enabling an ISP to connect 67 per cent more customers and generate 1.8x higher ROI compared to PTP equivalents.

The report also highlighted the increased revenue possible with PMP at licensed microwave frequencies. Real Wireless said this can generate a further 30 per cent increase in returns compared to PTP in sub-6GHz bands. It said the increased revenue of PMP microwave was due to its ability to offer both higher capacities and a "superior" grade of service than its unlicensed equivalent.

The company found that managed fibre networks, albeit scalable to higher capacities, had a significantly higher TCO when compared to wireless approaches. Here, PMP solutions were shown to offer a much quicker ROI because they lend themselves to the sharing of hub sites and bandwidth between customer terminals. However, PTP links were found to more suitable for longer links and lower site densities.

DAMM teams up with Tait on DMR

Tait will supply DMR radio terminals that can be deployed with systems from Danish PMR specialist DAMM.

The strategic alliance agreement extends the global market reach for both parties. DAMM adds that it also complements its position as a full solution provider within critical radio and broadband communication.

"We see the high-performance Tait DMR radios as an ideal match for our new cross technology platform offering DMR, TETRA and TEDS in one integrated system," says DAMM CEO Kjeld Pharao. "Combining the intelligent DAMM infrastructure and Tait terminals will provide a one-stop-shop for our system partners. End-customers opting for the trunked DMR Tier III solution from DAMM, will benefit from the expertise and innovative solutions of two state-of-the-art communication providers."

He goes on to claim that the alliance will lead the way to help customers

NEW APPOINTMENTS

Date	Name	New employer	New position	Previous employer	Previous position
9/5/16	Obafemi Banigbe	Kirusa	Advisory board member	Silver Rock Technology Services	Managing partner
11/5/16	Babak Fouladi	MTN Group	Group executive for technology & information systems	Vodafone Spain	CTO
7/6/16	Marcio Saito	Opengear	CTO	Cyclades	CTO
20/6/16	Rob Shuter	MTN Group	President & CEO	Vodafone Group	CEO of European cluster
23/6/16	Abdelkrim Benamar	Astellia	CEO	Astellia	COO
23/6/16	Christian Queffelec	Astellia	Chairman	Astellia	CEO
24/6/16	Paul Taylor	–	–	Botswana Telecommunications Corp.	MD (contract ends 19/7/16)
24/6/16	Anthony Masunga	Botswana Telecommunications Corp.	Acting MD	Botswana Telecommunications Corp.	COO
4/7/16	Stephen van Coller	MTN Group	VP strategy & M&A	Barclays Africa CIB	CEO
4/7/16	Brett Goschen	NA	NA	MTN Group	CFO (resigned)
4/7/16	Christian Leicher	Rohde & Schwarz	President & CEO	Rohde & Schwarz	Executive board member

INVESTMENTS, MERGERS & ACQUISITIONS

Date	Buyer	Seller	Item	Price	Notes
9/5/16	Global Eagle Entertainment	Emerging Markets Communications (EMC)	Company	USD550m	Following the merger, GEE says its global satellite-based connectivity platform will service more than 700 planes, 1,600 vessels, 100,000 cruise ship cabins, & several thousand land-based sites.
26/5/16	Flexenclosure	European Investment Bank	Finance deal	EUR7.5m	Loan will support expansion of Flexenclosure's R&D activities in intelligent power management systems and prefab modular data centres. Swedish firm's key markets include sub-Sahara Africa, Latin America, central & South East Asia.
13/6/16	Microsoft	LinkedIn	Company	USD26.2bn	Microsoft believes acquisition of "world's largest & most valuable" professional network will complement its line-up of enterprise products & services.
4/7/16	SES	O3b Networks	Shares	USD730m	Following the increasing of its shareholding earlier this year, SES has now received all regulatory approvals to acquire the remaining shares and warrants of O3b. Its fully diluted ownership has now increased from 49.1% to 100%.

benefit from the world's first and only truly universal DMR base station, mountable indoor and outdoor.

This latest alliance for DAMM follows on from its partnership deal with Airbus Defence and Space last year *(see Wireless Business, May-Jun 2015).*

Famous brand returns to mobile

Under a strategic agreement covering branding rights and intellectual property licensing, HMD global Oy has been granted an exclusive global license (excluding Japan) to create Nokia-branded mobiles and tablets for the next ten years. Nokia Technologies will receive royalty payments from HMD for sales of the branded products.

Recently founded in Finland, HMD will be led by Arto Nummela as CEO. He previously held senior positions at Nokia and is currently the head of Microsoft's mobile devices business for Greater Asia, MEA, as well as Microsoft's global feature phones business.

The company intends to invest more than USD500m over the next three years to support its global marketing campaigns. Its new smartphone and tablet portfolio will be based on *Android*.

HMD has also conditionally agreed to acquire the rights to use the Nokia brand on feature phones as well as certain related design rights from Microsoft. The transaction is expected to close in H2 2016.

Meanwhile, FIH Mobile has announced that it will acquire the remainder of Microsoft's feature phone business assets, including manufacturing, sales and distribution. FIH is a subsidiary of Hon Hai Precision Industries and is perhaps better known by its trading name, Foxconn Technology Group.

HMD and Nokia have signed an agreement with FIH to establish a collaboration framework. HMD will have full operational control of sales, marketing and distribution of Nokia-branded devices, along with exclusive access to the global sales and distribution network to be acquired from Microsoft by FIH, access to FIH's manufacturing, supply chain and engineering capabilities, and to its growing suite of proprietary mobile technologies and components.

IN BRIEF...

The Malawi Communications Regulatory Authority has launched a new five-year strategic plan covering 2015/16 and 2019/20. Its implementation will run on a financial yearly basis in order to allow MACRA to evaluate its performance and refocus efforts in subsequent years as necessary. DG Godfrey Itaye says: "The strategic plan is vital to the success of not only MACRA as an organisation but of the entire ICT industry. The creation of an ICT enabling environment focusing on regulatory issues and ICT infrastructure that promote development is a critical factor to this success."

In response to increased business growth in sub-Saharan Africa, UK-based satcoms provider NSSLGlobal has opened a new office in Cape Town. It will focus on delivering sales and support for partners, resellers and end-users in the region as part of the firm's ongoing global expansion plans. Steve Tunks, NSSLGlobal's head of sales and business development in Africa, will head up the new office. He has been with the firm for more than 10 years and has been helping it to develop business in the region since 2015.

SEACOM has grown its South African base of channel partners servicing the business market to more than 65 companies, up from 20 in October 2015. In addition, the operator claims its channel partners have been processing orders from enterprise customers at a rate of around 60 a month since it formally launched its full set of business offerings. SEACOM is leveraging capacity on its undersea cable system and continent-wide IP-MPLS network to enable businesses in South Africa and East Africa to smoothly transition to the cloud. Its next step will be to ramp up the rollout of business solutions in Kenya, and to start looking at growth opportunities in Uganda, Mozambique, and Tanzania.

The Commonwealth Telecommunications Organisation (CTO) has called upon African nations to meet their obligations from treaty agreements they have signed up to for ICTs. Speaking at the *Digital Broadcasting Africa Forum* that took place in Lagos during May, CTO secretary-general Shola Taylor said: "They must accelerate the completion of the digital switchover process. Among other things, they must address the key challenges of funding, adequate regulatory frameworks consistent with new digital multimedia services, as well as the need for effective coordination with their neighbours."

Based on its Stock Option Plan 2011, Nokia Corporation says a total of 314,150 shares were subscribed for between 1 January and 15 June 2016. Subscription prices ranged from EUR5.76 to EUR1.86 per share, amounting to a total subscription price of EUR1,022 814. The total number of Nokia shares now recorded in the Trade Register is 5,835,536,262. At its AGM held in mid-June, the company agreed to distribute a special dividend of EUR0.10 per share in addition to an ordinary dividend of EUR 0.16 per share for the 2015 financial year.

LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
28/4/16	Intelsat	US	1Q16	USD	552.6	407.5	NA	Total on-network revenue declined by $58.2m, or 11 per cent, to $493.8m compared to 1Q15. Off-network revenue (income from consulting & other services plus CPE sales) reported aggregate increase of $8.5m, or 17 per cent, to $58.8m compared to 1Q15.
28/4/16	Gemalto	Netherlands	1Q16	EUR	691	NA	NA	Revenue is up 1% at historical exchange rates & flat at constant exchange rates. Mobile segment posted revenue of €258m, 20% lower at constant exchange rates compared to first quarter of previous year.
29/4/16	SES	Luxembourg	1Q16	EUR	481.6	356.2	NA	Earnings up 0.8% over the prior year but down 1.9% at constant currency. FY2016 revenue expected to be between €2,010 million & €2,050 million.
12/5/16	Eutelsat	France	3Q15	EUR	383.0	NA	NA	Total revenues up 1.1% at constant currency, but growth in the quarter below expectations, reflecting a worse than expected environment in several emerging markets, particularly Latin America. Full year earnings now expected to be broadly flat & at bottom-end of previously anticipated 2-3% range.
7/6/16	Vodacom	South Africa	FY16	ZAR	80,077	30,345	0.833	Group revenue up 7.5% – South Africa increased 5.2% while earnings from international operations grew 16.6%. Looking ahead, CEO Shameel Joosub said the company will continue to expand fibre rollouts in South Africa as well as explore spectrum opportunities for increasing broadband access in the country.

Netscout claims first with 802.11ac handheld tester

Netscout has enhanced its *AirCheck* handheld tester. The latest version includes features such as trouble-shooting and diagnosing Wi-Fi networks built using the 802.11ac

MANUFACTURER:
Netscout Systems

PRODUCT: AIRCHECK2

MORE INFORMATION:
www.netscout.com

standard, AP backhaul testing, and free access to the Link-Live Cloud dashboard for more effective results management.

AirCheck G2 is designed to enable frontline engineers to quickly and easily identify issues responsible for spotty connections, dead zones and slow speeds, as well as locating rogue APs and unauthorised devices.

Among the new features, the device includes 802.11ac 3x3 radios to support next-generation wireless initiatives such as the

Internet of Things, Ethernet tests for AP backhaul verification, and a five-inch touchscreen for improved ease-of-use.

Netscout claims the tester provides technicians with a "broader range" of detailed insights into the wireless network than is currently available using freeware applications or other commercially available software packages.

The Link-Live Cloud service is a centralised management, collaboration and archival workspace

for network connectivity test results. It is said to provide greater job visibility, project control and fleet management for larger distributed environments, and also works with the *LinkSprinter* and *LinkRunner Auto Tester*.

Test system paves the way for latest LTE deployments

Rohde & Schwarz (R&S) says its *TS8980 RF* conformance test system has achieved the world's first valida-tion for both LTE-A uplink carrier aggregation (UL CA) and LTE-A

MANUFACTURER:
Rohde & Schwarz

PRODUCT: TS8980

MORE INFORMATION:
www.rohde-schwarz.com

Pro uplink 64QAM (UL 64QAM).

The *TS8980* is a scalable and validated GCF and PTCRB test system. It provides test coverage for Rel. 8 to Rel. 13 versions of 3GPP 36.521-1 (TX, RX, and performance), 36.521-3 (radio resource management – RRM), and supplementary RF/RRM test plans for wireless network operators.

R&S claims the validation paves the way for wireless operators worldwide to make use of the latest LTE features. It says both functionalities will grant individual users higher uplink

data rates and offer all users higher average uplink data rates.

LTE UL CA is a new feature in the 3GPP Rel. 12 specification that combines two LTE uplink channels for a single user. It increases the currently available maximum uplink rate of 50Mbps per LTE user to 100Mbps per LTE user (using the traditional 16QAM modulation in the uplink).

LTE 64QAM is part of LTE-A Pro, and UL 64QAM was introduced in 3GPP Rel. 13 as a new modulation scheme.

Virtualised small cell gateway to lower TCO

Small cells specialist ip.access says the new *nanoVirt* integrates its 2G, 3G and 4G small cell management and access control functions as virtualised components, running in a carrier-grade virtual machine (VM) environment.

nanoVirt is delivered as software that can be deployed by mobile operators on their preferred server hardware, or hosted in a third-party data centre *(pictured)*. By enabling small cell operators to use generic

MANUFACTURER: ip.access

PRODUCT: nanoVirt

MORE INFORMATION:
www.ipaccess.com
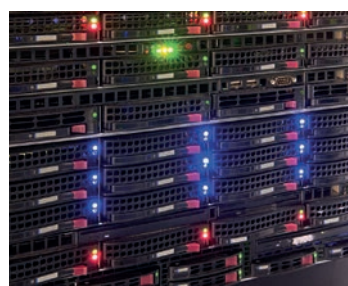
server hardware, ip.access says the platform reduces TCO, removes the need to hold dedicated spares, allows better utilisation of space in the data centre, and simplifies maintenance and support.

nanoVirt is licensed-based on net-work capacity, providing what's said to be a "cost-effective pay as you grow" solution for small cell deployments.

Carlson introduces first chipset-based TVWS radio

Carlson Wireless Technologies reckons its new TV white space (TVWS) chip module will dramatically reduce infrastructure costs while enhancing broadband throughput and IEEE 802.11af interoperability, making affordable broadband connectivity feasible for billions of people.

Developed in collaboration with chip designer MediaTek, Carlson says the *Picasso Gen3* enables a reliable broadband connection with data download speeds up to 96Mbps from a single base station.

The company claims the range of the UHF signal is three to five times greater than a traditional microwave Wi-Fi signal. Unlike other wireless technologies, it says the *Picasso Gen3*'s low-band non-line-of-sight signal

penetrates walls, trees, foliage, and bends over hills even at long distances.

According to Carlson, its radio module is an application-specific IC and direct baseband to final TV fre-quency, meaning it does not suffer the EVM or S/N ratio losses of frequency re-banding solutions. These boards can now be bought and integrated into new Wi-Fi routers to help drive connectivity in emerging markets.

MANUFACTURER:
Carlson Wireless

PRODUCT: Picasso Gen3

MORE INFORMATION:
www.carlsonwireless.com

"Fastest" vehicle network for public service vehicles

Sierra Wireless has launched an LTE-A vehicle router for mission critical applications in public safety, public transportation and field services.

The *AirLink MP70* is said to enable multiple high-bandwidth applications to work simultaneously, more than 10 times faster and four times further

from the vehicle than ever before. The built-in connectivity options include 300Mbps LTE-A, Gigabit Wi-Fi and Gigabit Ethernet via four ports.

The router also provides GNSS and inertial navigation (activated in an upcoming software release), enabling what Sierra says is "superior" vehicle location accuracy, even when out of satellite coverage.

The *MP70* has an integrated events engine, as well as built-in vehicle I/O and support for *AirLink Vehicle Telemetry* to enable advanced awareness and instant insight into vehicle diagnostics, connected mobile assets, fleet

operations and the workforce.

Purpose-built for vehicles and continuous operation in harsh environments, the device features a ruggedised form factor with hardened aluminium casing, and is designed to survive extreme transient surges and maintain performance in noisy vehicle power environments.

MANUFACTURER:
Sierra Wireless

PRODUCT: AirLink MP70

MORE INFORMATION:
www.sierrawireless.com

Hytera handset gets highest safety rating

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

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

to users in the mining and oil and gas industries, or fire brigades.

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

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

data can be transmitted to control centres/ dispatchers with AVL for further analysis.

In addition to voice and data comms, some of the *PT790 Ex*'s other features include encryption, programmable keys, a 1,000 entry phone book, and an interface for extensions and accessories.

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

MANUFACTURER: Hytera

PRODUCT: PT790 Ex

MORE INFORMATION:
www.hytera-mobilfunk.com

SMS Booster can help MNOs with traffic

Sparkle, the international services arm of Telecom Italia Group, has worked with managed service provider 365squared to develop *SMS Booster* for mobile operators.

According to the company, operators currently have limited

control and visibility on all incoming application-to-person SMS traffic, resulting in revenue leakage, high signalling costs and complaints about spamming and fraudulent traffic.

SMS Booster combines Sparkle's A2P gateway with 365squared's firewall managed services. Sparkle says the all-in-one solution uses its SMS transit platform that comprises a wide network of worldwide aggregators and direct connection with major OTT players. This is integrated with 365squared's SMS managed filtering service, including round-the-clock business intelligence

and monitoring by a dedicated team.

Sparkle adds that the service enables cellcos to take control of their SMS traffic and generate new revenue streams in a capex- and opex-free model, while also protecting their subscribers against fraudulent traffic.

MANUFACTURER:
Telecom Italia Sparkle

PRODUCT: SMS Booster

MORE INFORMATION:
www.tisparkle.com

C-COM tests Ka-band phased array antennas

C-COM has successfully tested the first Ka-band phased array modules based on its patent-pending phase shifter technology.

According to the Canada-based satellite antenna specialist, 4x4 phased array/phase shifting technology will make it possible to deploy low cost, low weight and low profile Ku-, Ka- or hybrid Ku/Ka-band antenna combinations. It adds that the new antenna technology and its extension to higher millimetre-wave (MMW) bands will mean it can also be used for 5G and MMW automotive radar systems.

C-COM's working prototype of a 4x4 Ka-band intelligent antenna module is the size of a business card and uses a low-cost multi-layer planar circuit, based on architecture that is said to be highly flexible, thin, modular, conforming and adaptive.

Tests showed that even with a few of the antenna elements turned off, the module can still deliver an acceptable radiation pattern and without significant performance degradation. C-COM says this is essential in situations when one or a few of the many elements of the active devices may have failed.

Another 1x4 prototype passive phased array module was also tested and validated for Ka-band electronic beam steering capability using C-COM's engineered material phase shifter technology. It's claimed the results clearly showed that electronic beam steering of up to 30º from the norm with minimal impact on beam shape is possible using an extremely simple and low-cost structure consisting of the patent pending phase shifter.

C-COM adds that no active devices were required to accomplish this task, and there was no need to adjust the antenna excitation amplitude.

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Building Africa's digital future

Blue sky thinking

As well as the digital divide, the industry needs to bridge the energy divide. Vodacom has shown how this can be done with its solar and wind powered based stations in remote parts of Lesotho.

While traditional options such as satellite offer one way for mobile operators to expand their networks into remote and rural areas, they may not always be economically viable. RAHIEL NASIR looks at other innovative alternatives.

Whether you take data from the ITU, Ericsson's regular *Mobility* reports, or even Facebook (which has been studying global internet access since 2014), the conclusion is always the same: more than half of the world's population is still offline. And according to the 2015 edition of the ITU's *State of Broadband* report, the lowest levels of internet access in the world are mostly found in Africa where in some countries it is available to less than two per cent of the population *(see News, Aug-Sep 2015)*.

One of the key barriers to access is the lack of infrastructure needed. As a recent survey from World Telecom Labs (WTL) reveals, it is no longer enough for mobile operators to expand their networks to remote and rural areas just to provide voice connectivity – data (i.e. internet connectivity) is now also crucial.

According to 96 per cent of the respondents in WTL's survey *(see News, p6)*, universal service funds (USF) offer huge potential to solve connectivity

and service delivery issues in rural environments. But concerns were raised about the sustainability of rural investments, and many respondents were unfamiliar with the specialist companies that have developed equipment specifically designed to build commercially viable networks for rural communities.

Smart networks

WTL itself offers *Vivada (Village Voice and Data)* to enable operators to build GSM, Wi-Fi and fixed data networks in rural villages for what's claimed to be minimised capex and opex. The system is said to operate on less than 200W which can be supplied by solar cells with a battery backup.

In addition, by using patented VoIP compression techniques that reduce bandwidth requirements, WTL claims satellite backhaul costs are cut in half. It adds that just 256Kbps is needed for 30 simultaneous calls.

Vivada provides everything needed for an operator to rapidly deploy a GSM and data network to a rural area – from a low power BST and mast, to the SMS server that supports 100,000 messages per day, BSS and other back office equipment and services. WTL reckons operators typically see a return on investment over a 15-month period.

The company has built a number of networks in rural Africa, including one for AMO Telecom (AMOTEL) in Tanzania. Its project is being financed by the Universal Communications Service Access Fund as part of a USD9.6m investment to improve connectivity in Tanzania that was announced last year.

AMOTEL is the country's first MVNO operating through national incumbent Tanzania Telecommunications Company Ltd (TTCL). In a proof of concept trial, the operator is initially deploying *Vivada* to three villages that are not currently covered by any kind of network. The system will bring voice and data connectivity

to remote rural communities close to Lake Tanganyika in Katavi Region, and will later be rolled out to other villages in Kigoma, Njombe and Kilimanjaro regions.

WTL says traffic from the villages is validated by its real-time charging system. Voice calls are then converted into VoIP and compressed before being transferred to a hub in Dar es Salaam where a WTL switch routes them onwards. The first calls on the network were due to go live at the end of June.

Elsewhere in the world, other innovative solutions to create wireless networks in remote and hard-to-reach areas are also being trialled or deployed.

For example in Australia, researchers behind the *Serval* project are testing a small USB-powered Wi-Fi transmitter that can be connected to smartphones to create a mesh-style wide area network *(see World News, p32)*. And in New Zealand, Vodafone is trialling its portable *Z-Car* system that features a 4G small cell built into a car boot to provide temporary mobile coverage in disaster zones even while the vehicle is in motion *(see photo below)*.

Vodafone is of course no stranger to creating solutions for areas that lack connectivity. Over the years, its CSR arm, the Vodafone Foundation, has been developing the *Instant Network* programme. This now includes a variety of innovative products such as the *Instant Network Mini*, an 11kg mobile network in a backpack that can be deployed in just 10 minutes, enabling aid workers to connect and carry out life-saving work in disaster situations.

Bridging the energy divide

Before bridging the digital divide, industry stakeholders need to bridge the energy divide. As is well-documented, lack of grid power is another key obstacle MNOs face when it comes to expanding their networks to remote and rural areas. This is where renewable energy sources can help.

For instance in 2012, Vodacom Lesotho said 40 out of its 165 base station sites in the country were now powered through a combination of solar and wind, along with other environmentally

Z-Car is a prototype mobile network on wheels developed by Vodafone New Zealand. The vehicle has a 4G small cell built into its boot which provides coverage over a 2km radius, even as the vehicle is in motion. Download speeds of up to 10Mbps and 2Mbps upload are said to achievable. The car can also communicate with the digital trunked radio systems used by the emergency services.

MVNO AMOTEL has deployed World Telecom Lab's *Vivada* system in rural Tanzania. It includes a micro GSM base station, Wi-Fi routers and modems, backhaul integration, billing software, VoIP switches and an SMS server.

conscious technologies. These include power system optimisation to ensure that in the event of a power failure, a traditional site can continue to operate for up to three hours on stored battery energy before a diesel generator kicks in. In addition, the operator is using smart meters to monitor power consumption while centralised control systems are used to operate base station sites remotely. Both technologies had reduced the need for physical site visits.

Speaking at the time, Vodacom said Lesotho's physical geography lends itself to supporting the latest sustainable base station technology based entirely on solar and wind power. Its aim was to pioneer work in the area in an effort to provide mobile communications to previously unconnected communities in the country's most remote areas.

Across the border in South Africa, Vodacom has supplied electricity for the first time to a rural community in Northern KwaZulu-Natal. Twenty-five per cent of the total electricity generated by the cellco's base station in Emfihweni is being used to supply power to the water pump, a shop that provides a cellphone charging station for local residents, and the high school which was able to switch on the power to its computer centre for the first time.

Of course, not all cell sites are able to totally benefit from renewable energy sources such as solar or wind power, which means MNOs still having to bear the high and often prohibitive costs of using diesel to run their BSTs in rural locations. But even here, technology has the answer.

Earlier this year, Eltek announced that it had now installed more than 10,000 hybrid solar-grid power systems to remote telecom sites around the world since launching its systems in 2008.

Instead of using diesel as a backup, the Norwegian energy specialist's hybrid solutions combine solar and high-efficiency DC power systems. The company claims their use has led to more than 900,000 tons of CO_2 being eliminated from the atmosphere, and cut electricity opex for

operators by more than USD400m. While the savings at each site vary significantly and depend on the equipment configuration and site power requirements, Eltek says energy expenditure is typically cut by 70 to 80 per cent. This is mainly due to less diesel consumption by generators and a reduced service cost. The company adds that a hybrid solution also provides significantly improved reliability and uptime.

Whether input power comes from solar panels, wind turbines, diesel generators or mains, Eltek reckons its hybrid energy power conversion equipment will make sure that power conversion loss is minimised. It says that by optimising the control and using the hybrid solution, energy is not just replaced kWh by kWh, but the emissions per kWh also drop significantly.

All the energy sources, solar and wind chargers and the diesel generator at a cell site are managed by a single controller. Eltek says its *MultiSite Monitor* makes it possible to have a network wide overview to optimise utilisation of energy sources and site performance.

If a region does benefit from some existing fixed telecoms infrastructure, Albis-Elcon reckons it's new remote powering system can help bring broadband to rural areas. The company (which is now part of German-based telecoms solutions specialist UET United Electronic Technology) says its *RPS 1600* remote powering system for FTTx nodes and small cell networks is being used by a number of global network operators for affordable delivery of broadband services to major cities and rural areas. Various companies are currently trialling the system in Africa, including Botswana Telecommunications Corporation and Swazitel.

The *RPS 1600* leverages existing copper lines and has been designed to enable network operators to supply power to remote equipment without having to lay new cables or engage in third-party contracts. It is said to support

long-distance power consumption for up to 1.4kW per site at a distance of up to 6km. By enabling copper infrastructure to be reused for the electricity supply of micro DSLAMs in the field, Albis-Elcon reckons its system provides network operators with significant opex and capex savings. It says the *RPS 1600* eliminates AC powering, digging, battery maintenance and installation, reducing the cost of rollouts by an estimated 40 per cent.

The system is said to feature a carrier-grade design, high level of safety protection, and an "intuitive" network management functionality via Albis-Elcon's *MetroIntegrator* software. It includes the vendor's *Power Supply Central 1600* unit with 16 sources and the IP68 rated *Power Supply Remote 080x* with 120W of output power per *PSR*-unit. Albis-Elcon says up to six *PSC1600* and 12 *PSR080x* units can be combined into a single system, increasing the total output power per location by up to 1.440W.

End-to-end solutions

Earlier this year, Nokia unveiled an end-to-end system that enables operators to use LTE to deliver high-speed broadband connectivity in hard-to-reach areas while maximising spectrum use in the process.

FastMile leverages unused, higher frequency LTE frequencies in rural areas, and harnesses them to extend coverage for LTE-based fixed wireless broadband.

Nokia says the system combines a specific fixed wireless radio antenna topology solution with interference mitigation techniques. It uses the company's smart scheduler and is enhanced with small cells to delivers what's claimed to be 2.5x throughput of a comparable mobile network. A cloud-based controller running on Nokia's *AirFrame* system is said to ensure high data rates, enabling guaranteed throughput. *FastMile* also includes a router and outdoor modem with a self-tuning, high gain antenna. Nokia says this provides up to 12x typical coverage area compared to standard mobile broadband. All of this can be installed on top of any existing LTE network.

Nokia adds that *FastMile* focuses on keeping operator deployment costs to a minimum. It has an integrated installation capability that covers the residential equipment, RAN, controller, and smartphone applications to help users.

Meanwhile, rival Scandinavian vendor Ericsson says that despite the rapid growth in mobile communications, commercially viable business models are still lacking in many rural areas. To help address this challenge, the company has developed its *Managed Rural Coverage* solution.

In essence, this provides "connectivity as a service", enabling operators to provide mobile coverage for a set period according to SLAs and defined KPIs. Access is delivered via low-power Ericsson base stations running on solar energy to avoid the opex and emissions associated

with diesel generators. The vendor adds that satellite is used for backhaul to avoid the high costs and civil works associated with building a microwave network in remote villages.

Last year, Ericsson partnered with MTN to deploy *Managed Rural Coverage* to parts of central and northern Benin where there were previously no services and people have to survive on less than two dollars a day. Under a five-year contract that covers 50 sites, Ericsson says they now have affordable mobile connectivity, and will be able to benefit from increased access to information and services that support health, education and small businesses. ■

Eltek's hybrid energy systems combine solar and high-efficiency DC power systems. The company claims their use has cut electricity opex for operators by more than USD400m.

CREATING THE WIDEST AREA NETWORK ON THE OPEN SEAS

US-based connectivity specialist Peplink – which offers its products in Africa via resellers in Mauritius, Morocco, Uganda and South Africa – has developed internet load balancing and VPN bonding solutions based on SD-WAN routers and access points. Last year, it announced that its solution was used to provide diverse connectivity on the world's longest ship.

With an overall length of 382m *Pioneering Spirit* (formerly *Pieter Schelte*) is the largest twin-hulled vessel ever built and is also the widest at 124 metres. Owned by Swiss company Allseas, the USD2.3bn ship is ostensibly a crane platform and is being used for the decommissioning of Shell's 24,000 ton Brent Delta oil rig off the coast of Scotland.

Instead of using VSAT, Allseas wanted additional diversity and communication redundancy to supplement *Pioneering Spirit*'s existing ship-to-shore communications.

At the core of its new system is Peplink's *Balance 710*. This prioritises WAN connections initially from point-to-point Wi-Fi, LTE/3G

using the vendor's IP67 *MAX HD2* router, VSAT, and finally from tethered data via an Iridium satellite phone.

To maximise WAN diversity, one *MAX HD2* is placed on each side of the vessel spread 300 metres apart to maximise signal reception. Peplink says this setup is designed to maintain a continuous connection and is also configured to prioritise the most affordable WAN connections.

At shore, *Pioneering Spirit* connects using point-to-point Wi-Fi or cellular connections provided by the routers if this is unavailable. When the vessel moves out of all terrestrial coverage, VSAT takes over with the Iridium phone as an additional failover option.

While the main reason for choosing Peplink was its ability to prioritise WAN connections and failover between them, another benefit was the company's *InControl 2* management software. This is said to offer convenient cloud-based remote access and monitoring, along with powerful GPS tracking features.

With an overall length of 382m *Pioneering Spirit* (formerly *Pieter Schelte*) is the largest twin-hulled vessel ever built and is also the widest at 124 metres.

Cashing in on wireless

How banking institutions and mobile operators are helping each other deliver better financial services across Africa.

Jumping on the bandwagon: while many MNOs in Africa now offer mobile financial services, wireless technologies are also helping banks to rollout their services to remote and rural communities.

Over the last few years, the industry's battle cry of 'banking the unbanked' has almost come across as loudly as 'connecting the connected'. For many of the continent's big name cellcos, offering mobile financial services now seems *de rigueur* and for some, such as Econet Wireless, it is imperative.

Speaking at a conference on mobile money in 2014, Econet Wireless Group founder Strive Masiyiwa said: "Our competitor is cash because we basically want to get rid of banknotes. We want people to do all their business using platforms like *EcoCash*. It is quicker, cheaper, safer, and cleaner."

Econet Zimbabwe launched its *EcoCash* service in 2011. By August 2012 it had 1.7 million subscribers which increased to three million just 12 months later. That made *EcoCash* Africa's second-fastest growing mobile money solution after Safaricom's *M-PESA*. Today, Econet Zimbabwe says more than five million customers now use its mobile financial services.

More than just cash transfers

When it was first introduced, *EcoCash*'s initial focus was on person-to-person money transfers. Since then, additional services have been added including savings, international remittances, salary disbursements, payment for public transport, and more.

VAS specialist Mahindra Comviva supplies the core platform for *EcoCash*. The vendor claims the "power" of its *mobiquity* solution lies in bringing together telcos, banks, merchants, billers, enterprises and government entities into a cohesive ecosystem centred around the consumer. It says this convergence makes it possible for financial service providers to deliver a range of granular, scalable and secure financial services and system flows. End customers benefit from a multifunctional and secure account to receive salaries, initiate international and domestic remittances, buy airtime, and pay utility bills and merchants.

Mahindra Comviva says *mobiquity* ensures that service and payment implementations are safeguarded with multi-level, bank-grade security in order to reduce fraud and increase consumer confidence. The security framework includes multi-factor authentication for access and transaction control, while all data are encrypted with the industry-standard 3DES algorithm. The platform also complies with international anti-money laundering requirements, and implements the best practices in PIN, password management and configurable 'Know Your Customer' processes.

Econet has also taken the step of acquiring its own bank grade switch from ACI Worldwide. This switch acts as a layer between the core mobile money platform and third-party banking platforms. The switch is based on banking standards (ISO 8583) and is said to enable fast, efficient integration with banking partners that include Stanbic (the first international bank in Zimbabwe to integrate with *EcoCash*), CBZ, and TN Bank (which is 100 per cent owned by Econet Wireless).

In 2014, Econet Wireless Zimbabwe claimed a first in Africa with the launch of *EcoCash* MasterCard debit cards. CEO Douglas Mboweni (centre) said it signalled "the end of paper money" in the country.

Econet has built a network of *EcoCash* agents throughout the country as this is said to be the key to the success of mobile money in emerging markets. The company pays out most of its *EcoCash* revenues in the form of commissions to more than 25,000 agents that include sole traders, post offices and other small businesses, as well as nationwide retailers such as the OK Zimbabwe supermarket chain.

In July 2014, Econet Zimbabwe announced a landmark deal that was expected to result in more than three million MasterCard debit cards being issued to *EcoCash* customers by 2019. The operator said this was the first time MasterCard debit cards would be available to people using mobile money services in Africa, and was the largest rollout of secure chip and PIN payment cards in Zimbabwe to date. At the time, Econet Wireless Zimbabwe CEO Douglas Mboweni said *EcoCash* MasterCard debit cards would replace paper money in everyday buying and selling. He said: "Econet is determined to make Zimbabwe totally cashless. We see this as the end of paper money in this country."

Mobile banking world firsts

In February 2014, Millicom launched what was claimed to be the world's first international mobile money transfer service with currency conversion automatically included. Two of the company's operations in Africa began pioneering the new system during that year – subscribers in Tanzania and Rwanda were able to send each other money from their *Tigo Pesa* and *Tigo Cash* accounts, respectively. It enabled them to make transactions in either Tanzanian shillings or Rwandan francs, and they were delivered already converted into the currency of the recipient's country.

Millicom said the new service would be of particular benefit to businesses with cross-border trade, diaspora families, truck drivers, and importers and exporters from both countries. Tanzania is Rwanda's second most important trading partner. In 2013, its exports to Rwanda amounted to more than USD80m while its imports from the country were valued at more than USD2.31m.

Speaking at the time, Tigo Rwanda GM Tongai Maramba described the service as a "welcome convenience" for subscribers in his country where the traditional money transfer companies mostly deliver only dollars. The situation is the same in Tanzania where Rwandan francs need to be exchanged for US dollars in order to make international remittances.

Millicom claimed another world first towards the end of 2014 with the launch of a mobile money service that offers users the opportunity to automatically earn a return on their balances direct to their mobile wallets without the need for a separate registration.

Called *Tigo Wekeza* ('*Tigo Invests*'), the service was launched in Tanzania where it is authorised by the Bank of Tanzania. It allows *Tigo Pesa* users to benefit from quarterly payments based on their account balances. They also have the option to

EcoCash is built on Mahindra Comviva's *mobiquity* platform. It has enabled Econet Wireless to launch additional mobile financial services such as savings, international remittances, salary disbursements, payment for public transport, and much more.

nominate a non-profit beneficiary in line with their personal cultural beliefs. Earlier this year, Tigo announced it had paid its mobile money users a total of TZS5.2bn for the first quarter of 2016. This represented an 18 per cent increase from the TZS4.4bn paid out for the previous quarter.

Branching out with satellite

Of course, 'banking the unbanked' is not just all down to mobile operators. The financial institutions themselves need network connectivity not just for their own internal operations but also to expand their services to customers – not so easily done when you have remote and rural communities that lack any kind of network infrastructure. (Indeed, this prompted Bank Rakyat Indonesia to launch the world's first satellite dedicated to banking services – *see World News, p33*).

Founded in 1976, UNACOOPEC is said to be the largest microfinance and micro insurance institute in Côte d'Ivoire. Today, the organisation offers its customers complete banking services, even in the most remote areas, via a secured satellite private satcoms network provided by SkyVision.

The company claims it offered a "highly efficient and reliable" solution to support UNACOOPEC's 97 branch offices nationwide. SkyVision said its 'smart network design' gave the bank the crucial flexibility it needed in connecting its branches and head office via voice and data applications. It also helped to secure the organisation's vital data and information.

SkyVision managed the entire project for UNACOOPEC. This included network design, full head office hub and teleport installation, remote site installation and commissioning, pre- and post-sales customer training, support, and day-to-day network management. The company said the complete project was up and running throughout all 97 branches within a month.

With SkyVision managing network deployment and operation, UNACOOPEC was able to focus its efforts on the development of its microfinance and micro-insurance services.

The network planning process, tailored to suit the organisation's requirements, resulted in high reliability and availability of the network. It enabled UNACOOPEC to provide its employees and customers with faster online access, seamless connectivity and what's describer as a "more gratifying personal banking experience".

"As a leading, widely-dispersed institution, we knew we needed an experienced and skilled vendor who really understood our needs," said Savane Issaka, general manager, UNACOOPEC. "SkyVision [delivered] a strong and reliable private satellite network. It changed the way we do business and totally improved the service level we wish to [give] our customers."

SkyVision claims it is "highly experienced" in providing the African banking industry with reliable network solutions suited to their unique requirements across geographic boundaries, particularly in rural areas. Some of its other customers in the sector include Unity Bank in Nigeria which is using satellite-based VPN services to connect 236 branch offices nationwide, and Bank of Africa (BoA) in Burkina Faso which has a full communications solution connecting its central office in Ouagadougou to a nationwide network of 32 branches.

In a separate project, Bank of Africa has been working with Orange over the last three years to enable users of its *Orange Money* service to transfer funds directly between their accounts via their mobile phones. According to the mobile operator, it has a large network of licensed *Orange Money* distributors that are able to supplement BoA's network of branches across the continent in countries such as Côte d'Ivoire, DRC, Mali, Niger, Senegal, amongst others.

SkyVision says it has "vast experience" of connecting banks on the continent. For example, the Bank of Africa in Burkina Faso uses satellite to link its central office in Ouagadougou (pictured) to a nationwide network of 32 branches.

The *Tranwall Transaction Control* system enables two-way communication with Old Mutual's OMCARD holders in Namibia. Using USSD, SMS or a smartphone app, customers can securely switch their cards 'on' or 'off' via their mobiles.

Mobiles turn Visa cards 'on' or 'off' in Namibia

Technology from Tranwall has enabled customers of Old Mutual in Namibia to secure Visa card payments using their mobile phones.

Old Mutual's financial services include banking, insurance, savings and investments. Founded in 1845, it has expanded from its origins in South Africa and now claims to have more than 18 million customers in more than 30 countries, 15 of which are across Africa.

Tranwall is focused on creating technologies that address both existing and emerging threats in the global payment industry. It is headquartered in Hong Kong and says it also has a "highly skilled" development team based in South Africa.

Working with Mauritian payment processing company Payment Express, Old Mutual successfully deployed the *Tranwall Transaction Control (TTC)* system for its OMCARD Namibia project. This is a pre-paid Visa card specifically designed for the company's customers, providing them with a cash back rewards programme and the ability to link up to four additional cards for their family members.

At the time, the project was said to be unique to Namibia, with the card and self-service offering being almost completely cellphone-centric. *TTC* gives users the ability to secure their OMCARDs by using mobile phones to switch the cards 'on' or 'off' for specific transactions types, such as online shopping, in-store purchases, or cash withdrawals. Tranwall said its system enables two-way communication with cardholders using USSD, SMS or the *Tranwallet* smartphone application. It keeps users informed of transactions on their cards, and provides advanced real-time control of their security preferences. *TTC* also provides second-factor authentication to secure OMCARD internet banking.

Dealing with "out of order" subscribers

In an effort to maximise revenue and provide a strong base for future growth, Vodacom has partnered with Experian in South Africa to create and implement a credit management roadmap.

UK-based Experian provides data and analytical tools to help businesses globally manage credit risk, prevent fraud, target marketing offers, and automate decision making. It has offices in many countries around the world including South Africa.

Vodacom had been using various integrated Experian systems to manage subscriber acquisition and management. These also focused on collections management to reduce both bad debt write-offs and compulsory churn rate. According to Experian, the key to achieving these aims was the implementation of several segmentations, each with their own collection strategies for managing subscribers in arrears and improving customer service.

Previously, Vodacom managed collections using the appropriate module from its billing system. But it soon became clear to the company that investment in a best-practice specialist collections system would enable it to adopt the most effective techniques for managing all subscribers who were in arrears, in query, or had ID theft issues.

As part of the implementation of a credit roadmap, Vodacom selected Experian's *Tallyman* debt collection system to manage subscribers that were classed as "out of order". The system could be easily customised and integrated with the operator's existing internal platform, including Experian's *Probe SM* for customer management and *Strategy Management* for decisioning, to create an integrated credit risk and relationship management solution.

Experian said using *Tallyman* would enable Vodacom to become more proactive and effective in managing subscribers, regardless of the reason or the business area in which they require management. It said the system manages all subscribers who are in arrears through early and late collections, pre-legal and legal situations.

Tallyman uses various subscriber profiles derived from *Probe SM* and a variety of arrears categories to segment delinquent customers using rules developed specifically by Vodacom. These accurately assess the risk factor of each account and adopt a far more targeted and personalised approach to debt collection.

The system automates the collections process by consolidating all credit-related communications, including phone calls, emails, texts, letters and faxes, between the organisation and its subscribers into a single database. It automates many of the standard collections practices, such as the issue of texts and reminder letters, thereby freeing-up collections staff to focus on higher-value activities.

Tallyman has been integrated with Vodacom's main system for managing all post-paid accounts. It receives updates from the billing system on a near-real-time basis so the collections team always has an up-to-date view of the customer and their level of arrears. Using the system's *Management Information* capabilities, Vodacom has gained a complete overview of the current situation of the collections department, and can also drill down to investigate areas of concern if necessary.
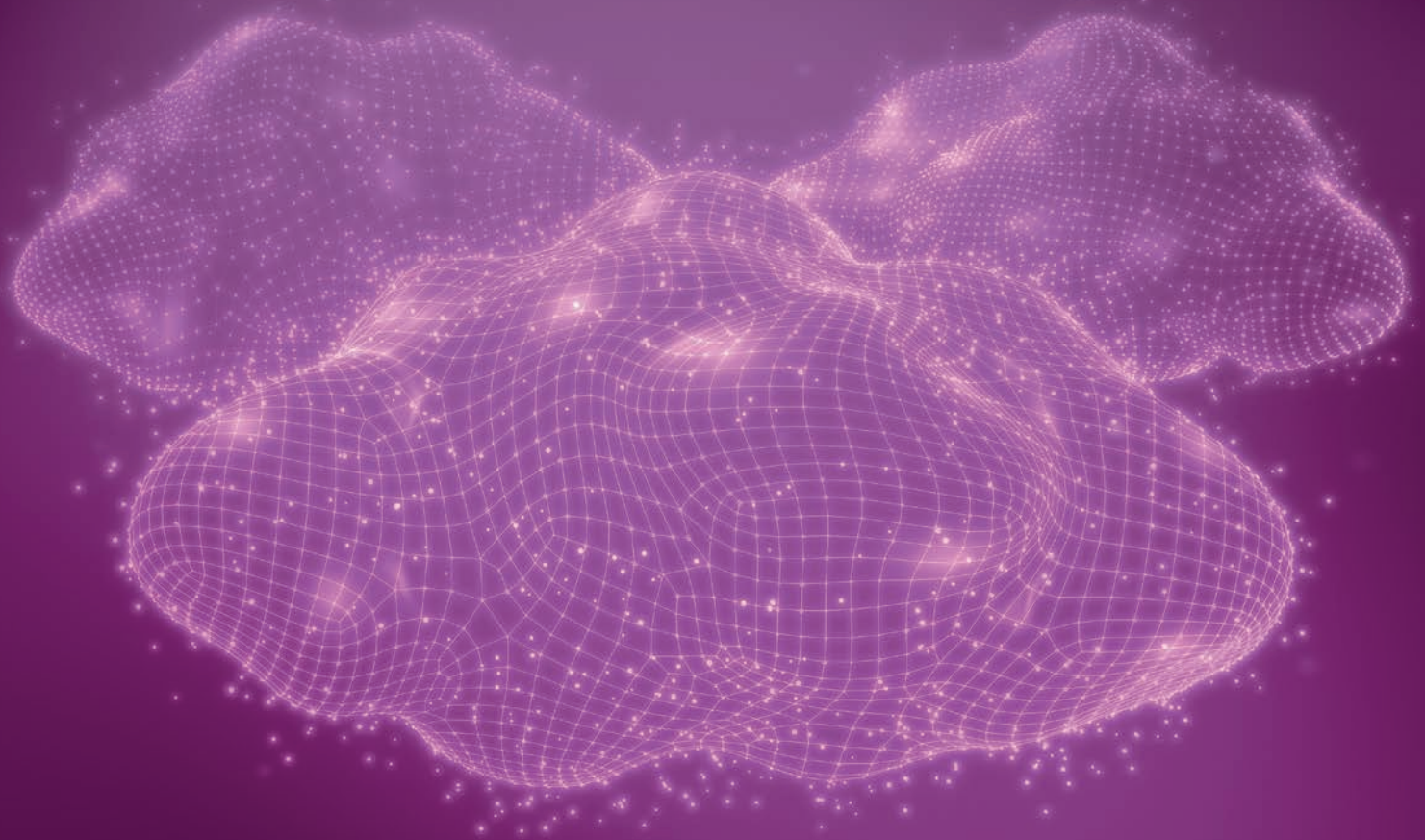
In addition, the performance of the collections team can be easily monitored against a range of KPIs that can also be used to identify where early management intervention may be required.

Integration with the telephone dialler used by the collections department enables all the information held about an account to automatically load onto the *Tallyman* screen of the collector who receives the incoming call.

All information from the system is fed into Vodacom's data warehouse which holds data from the billing system and the integrated Experian systems for subscriber acquisition and customer management. This ensures that subscribers in arrears will not be offered other products or services.

The use of *Tallyman* and the automation of manual processes is said to have cut Vodacom's opex by 38 per cent. Experian said the operator has been able to reduce write-offs by 53 per cent by increasing the number of debts recovered, and increased productivity by 180 per cent with collectors focused on high-value activities whilst automating a significant number of collection actions.

As a result, it's claimed Vodacom's future revenue is protected by improved customer service and its ability to rehabilitate more subscribers. Roll rates have been improved as the company is now able to take effective action early in the collections cycle, while the number of subscribers who churn has also declined. ∎

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The power to evolve

Carriers in Africa can use Network Function Virtualisation to give themselves a competitive advantage, says JONATHAN BELL.

Network Function Virtualisation is a development that promises significant benefits for carriers, and momentum has grown rapidly since the technology's inception three years ago. Today, NFV is not just a drawing board concept that has potential but an approach that is being used by operators in live networks.

Over the next few years we can expect NFV to move to the centre of African mobile carriers' network infrastructure architecture. The technology fundamentally changes the way networks are built and operated, allowing more agility and flexibility in the way they can be managed, and how new services can be developed.

The key concept of NFV is that it can be used to virtualise entire network functions and systems in a carrier's network. These functions have traditionally been deployed as 'network appliances' on dedicated hardware which is often proprietary, usually expensive, and always difficult if not impossible to change without the help of the hardware provider. With NFV, carrier network operators can now leverage the flexibility, price and performance of virtualised computing resources. They can deploy multiple network functions on the same, virtualised and standard hardware platform.

But the technology goes further than just using standard commodity hardware and building blocks of virtualised software. NFV also helps to break open the closed, rigid, 'hard-wired' nature of network functions. It holds the promise of delivering the network function flexibility, adaptability and agility that traditional 'dedicated box' approaches lack.

Centralised architecture drives efficiencies

Happening alongside NFV is the transition to IP multimedia subsystem (IMS) next-generation architectures. IMS offers a good opportunity for carriers to start virtualising their networks. It gives them the elasticity to scale as needed in order to deliver services more rapidly and efficiently. This means network functions do not need to be dimensioned for the annual peak but run at substantially below their maximum capacity for most of the time; capacity can be increased for peak periods and decreased as required.
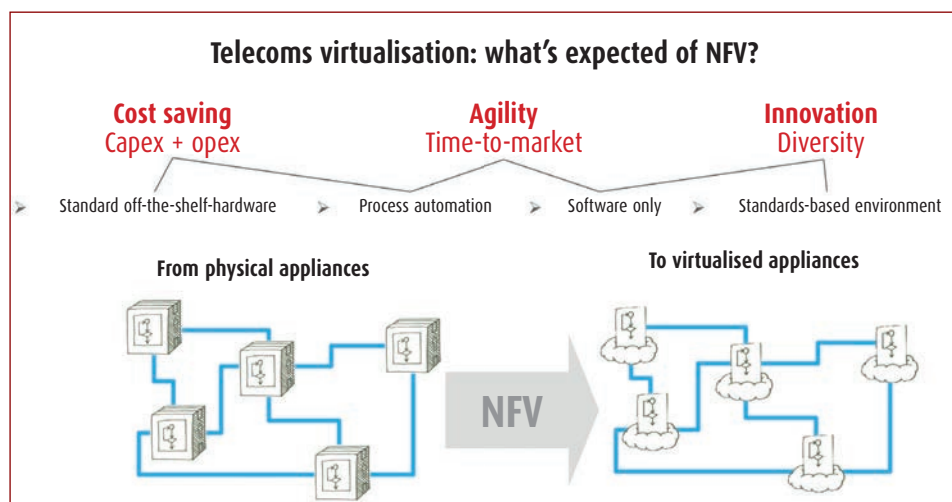
Diane Myers, research director for VoIP, UC and IMS at IHS, shares this sentiment: "One of the biggest drivers for NFV is the ability to scale services up and down quickly, and introduce new network services more efficiently and in a timely manner, which makes IMS a good early fit for NFV."

Some carriers in Africa are currently rolling out IMS networking infrastructures as they look to offer more than just basic voice and SMS services to subscribers. If a fully virtualised IMS network is deployed, carriers can scale its capacity as needed as their subscribers move from legacy networks to LTE and IMS services.

In Africa, ARPU is much lower than in other regions. Although this is offset to some degree as there are large numbers of prospective customers, it remains the case that the continent's carriers are in even greater need of reductions in capital and operational expenditure than many of their international counterparts. NFV and completely virtualised networks promise to deliver significant benefits in this regard.

This approach need not be limited to a carrier in a single country – there are tremendous economies of scale to be had from deploying a virtualised or cloud-based network once for use across a carrier group operating multinationally. For carriers with networks serving customers in multiple countries throughout the continent, such as MTN, Orange, Vodafone, *et al*, there are clear financial and efficiency benefits in having network functions that service multiple countries.

Furthermore, the pan-country, virtualised model can also be used to consolidate expertise in commercially attractive locations where the necessary skills are available, as well as to access markets in more troubled regions safely.

Telecoms virtualisation: what's expected of NFV?

Cost saving Capex + opex   **Agility** Time-to-market   **Innovation** Diversity

Standard off-the-shelf-hardware → Process automation → Software only → Standards-based environment

From physical appliances   **To virtualised appliances**

NFV

Using NFV to take control of service development

NFV can be used to empower operators to evolve their networks and services at their own pace, ahead of and in response to local competition.

In Africa, smartphone ownership is surpassing computer ownership and mobile subscribers are becoming more sophisticated in their use of applications and services. More than anywhere else in the world, the smartphone is much more than a mobile phone. It is used for banking, giving people cheaper access to their finances; for healthcare and medicine, reducing the need for doctors to travel long distances; and for commerce, central to the success of entrepreneurs and farmers. The use of mobile services is therefore vital to the region's people, even in the remotest rural areas. This makes it particularly important for carriers to be able to tailor their network functions and services to their local needs. Otherwise they could end up reflecting the functional needs (and the associated limitations) of countries with very different characteristics.

NFV makes it possible to develop substantial variations to pre-baked network services, and tap into the requirements of a specific customer base. African carriers can move to a web-style 'DevOps' model, where they provide specialised services to their customers and refine these regularly.

Jonathan Bell,
VP marketing,
OpenCloud

In addition, NFV assists the DevOps-style service development and testing model. Traditionally in telecoms, carriers have used a physical test network to validate their new services prior to deploying them in the live network. Access to the test network is typically the major bottleneck in the service development and deployment lifecycle. With an NFV-based network, multiple cloud-based replica test networks can be created rapidly, at a very low cost as and when they are needed. The test and validation bottleneck to service deployment is removed, and perhaps just as important, the virtualised test network provides an accessible and cost-effective experimental testbed for new innovation.

NFV therefore encourages innovation where development and operational deployment are closely linked. The evolution of services can come from internal developers or third parties who can create specific applications and customised solutions for different user segments. NFV also makes it easier for carriers to create bespoke services that are targeted at specific regional markets and can alter them for regulatory requirements. This can support the move towards network regionalisation as service variants can be easily developed and rolled out to various countries or regions from a single network location.

Furthermore, a focus on service development can become commercially feasible for carriers as virtualisation enables service scalability. The inherently flexible nature of virtualised software means that services can be scaled up or down, depending on the need for capacity at any given time. This 'grow on demand' facility mitigates risks when launching new services. As a result, consumers and businesses in Africa could see a range of new value-added services created specifically for their needs.

Telecommunications in Africa is undergoing rapid change with the emergence of smartphones and LTE networks. Investment in NFV can enable carriers to scale their networks and services in line with customer demand, rather than buying capacity upfront according to business model user projections. It offers a more economic and efficient model for converging and centralising their networks.

African carriers can also use NFV as an opportunity to differentiate their offerings and serve their subscribers better. Services that are designed to meet the specific needs of customers need to be conceived, created and refined locally by people who understand the specific market requirements. NFV can be a key enabler of service agility and flexibility across the continent's growing telecoms marketplace. ∎

VODAFONE EGYPT: A LESSON IN DEVOPS

Vodafone entered the Egyptian telecoms market as the second operator in 1998, and was formed by a consortium that originally also included Air Touch as well as local and international partners. In 1999, Vodafone Group acquired the Air Touch share, and three years later it purchased the seven per cent stake held by French telecoms giant Vivendi.

Over the years, Vodafone has become Egypt's leading mobile operator. According to the Ministry of Communications and IT's latest market indicators published in June 2016, there were 95.26 million mobile subscribers in the country as of March 2016. Vodafone currently has a market share of around 41 per cent.

The reputation and value of the company's brand are said to be built on Vodafone's global commitment to responsible and honest behaviour within the communities where it operates. Since its inception, corporate responsibility was an integral part of Vodafone's operation in Egypt, and alongside this it also has a commitment to innovation and the development of customer-centric services. This is the cornerstone of a DevOps mentality.
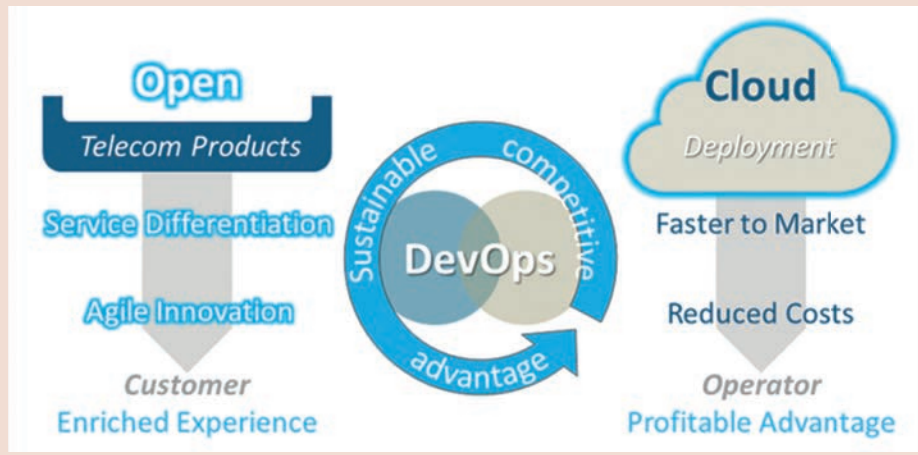
In 2014, Vodafone Egypt selected *OpenCloud Rhino* to deliver a range of core services and to enable innovation of future services. Full rollout of the service delivery platform (SDP) followed a successful proof-of-concept phase where a number of services were trialled.

The telco's main objective was to introduce a convergent and open SDP to consolidate existing GSM IN services on to one platform, and to enable the introduction of new services. As preparation for LTE and IMS, Vodafone Egypt wanted to develop services for use by both its GSM network and also IMS for LTE subscribers.

As an example of this, the first new service developed on the SDP was *Multi SIM*. This enables a subscriber to activate two additional SIM cards from their current mobile phone and for all the SIMs to share the master number. Users can then initiate and receive calls as well as SMS messages from any of the cards, and their main number will be presented to the other party.

An extremely important aspect of the OpenCloud proposition was the openness and high productivity of the platform, enabling local development companies to produce services instead of traditional vendors. This means Vodafone Egypt can commission services from local development partners and gain the efficiencies of local supply, alongside contributing to and helping grow the country's economy.

Following the successful 'go live' of *Multi SIM*, a range of other services have now been created by local development companies. The open SDP enables Vodafone Egypt to not only compete with superior, differentiated business and consumer services, but also with customer service as well as on price.

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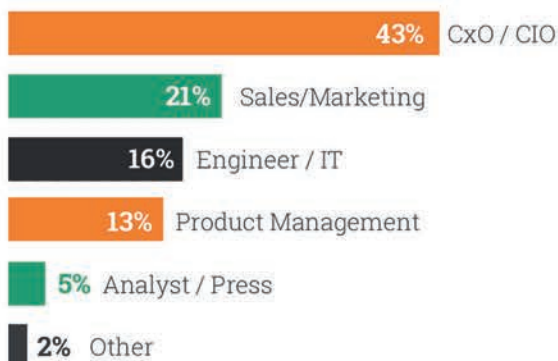
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Middle East	7%
Asia	5%
USA	2%

Mobile system provides remote communication

Researchers at Flinders University in South Australia say they have developed a highly secure mobile system to help emergency service units in remote areas that lack cellular networks or internet access.

The team behind the *Serval* project have come up with a mesh extender that runs on USB power and acts as a Wi-Fi hub or transmitter, and a free app for *Android* devices.

Project leader Dr. Paul Gardner-Stephen explains that a user's smartphone connects to the hub via Wi-Fi. The hub can can then link to others using Wi-Fi as well as long-range VHF radio that can go many kilometres under ideal conditions. "The combination of these things creates networks that can cover large areas and people without requiring any infrastructure at all," said Gardner-Stephen.

The aim of the project is to give the *Serval* mesh extenders to emergency relief teams in disaster situations so they can establish communication channels in remote areas. Those who did not have the app in times of crisis could download it with the help of the extender and have it ready for immediate use.

Serval was developed in conjunction with the New Zealand Red Cross with further support coming from the NICER project in Germany. It will undergo further

The *Serval* mesh extenders can be used by emergency relief teams in disaster situations so they can establish communication channels in remote areas.

pilot tests over the next 18 months ahead of its first large scale rollout in the region. The team is also working with Toyota and Saatchi & Saatchi to fit off road vehicles with emergency communications hotspots.

Orange Egypt chooses E-band from NEC

Orange Egypt (formerly Mobinil) will use an E-band microwave radio system from NEC for backhauling LTE traffic.

The operator has purchased *iPASOLINK EX*, NEC's outdoor, integrated, ultra-compact microwave radio system that has been deisgned to supports communications at 81-86GHz and 70-80GHz frequencies (E-band). Orange Egypt recently went live with the system with an initial group of 60 links.

"We will be able to provide a different experience for our users over the LTE network, with faster access and higher reliability," said Orange Egypt's CTO Hisham Siblini. "On top of that, our telecom network in coastal areas is regularly exposed to salt damage but we are confident that the specialist solution from NEC will resolve those issues."

The vendor claims *iPASOLINK EX* "heralds" a new era in LTE backhaul. It describes the platform as an advanced IP radio and says it acts an invaluable tool for 4G (LTE and WiMAX) deployments as well as LTE small cell aggregation. NEC adds that the radio is capable of delivering more than 3.2Gbps of traffic per link.

NEC claims its *iPASOLINK EX* radio ushers in a new era in LTE backhaul.

Experimental sub-1GHz licenses prove auctions are "misguided"

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

The government's decision has been welcomed by the Dynamic Spectrum Alliance (DSA). It said that in most parts of India, more than 100MHz of available spectrum in the 470-582MHz band is unused, even for analogue TV transmission by the country's single terrestrial broadcaster, Doordarshan. In ITU Region 3, which includes India, 470-582MHz spectrum can be used for fixed, mobile and

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

broadcasting services as competing 'primary services', and for other non-interfering uses on a 'secondary basis'.

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

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

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

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

Vodafonre connects street lights

Philips Lighting has appointed Vodafone as its global IoT managed connectivity partner. Under the deal, the two firms will enable city authorities worldwide to implement smart street lighting systems which will be connected wirelessly, saving energy and making maintenance easier and more efficient.

The Philips *CityTouch* street lighting management system will use Vodafone's machine-to-machine network to connect individual light points, and every connected street lamp will contain the operator's M2M SIM. Vodafone says city authorities can then monitor and manage lighting through a "user-friendly and highly flexible" system while engineers will be able to check performance, identify faults and control the lighting remotely.

According to the partners, their offering allows authorities to create an infrastructure that is easily scalable, and will be able to support other smart city applications in future.

Bill Bien, SVP, head of strategy and marketing at Philips Lighting, said: "We are at the start of a new era which will see highly energy efficient connected street lighting become the backbone of most smart cities. Robust, reliable wireless connectivity will help make this happen, linking streetlights with sensors, devices and management systems."

QoS Telecom to provide internet on Transdev buses

France-based Wi-Fi specialist QoS Telecom will deploy and operate internet services on board buses for Transdev. It will use LTE gateways from Sierra Wireless as well as the vendor's management system.

QoS Telecom says it currently manages hotspots that provide on-board Wi-Fi services to more than three million people in Europe.

The company claims its *WiFi On Board* solutions provide value-added services such as location-based services, real-time marketing, custom login pages and a pooling solution with business applications (such as traveler information, ticketing and video surveillance systems, for example).

According to Sierra Wireless, transit authorities such as Transdev are turning to the Internet of Things to connect buses and support new applications that improve the passenger experience.

The vendor claims its *AirLink* gateways can be deployed out-of-the-box with no programming requirements and are built with embedded intelligence to always stay connected. It adds that nearly two million of its gateways are deployed globally in transit, first responder vehicles and commercial fleets.

QoS Telecom will also use the secure, cloud-based Sierra Wireless *AirLink Management Service* to monitor the gateways in real-time and remotely manage the deployment.

Jason Krause, SVP and GM of enterprise solutions for Sierra Wireless, says: "Managing a fleet of mobile gateways can be a challenging task. You need to maintain multiple configurations, update software, and remotely diagnose reported issues. With our *AirLink Management Service*, customers can easily handle all of these tasks, while efficiently managing operating costs."

World's first satellite for banking is launched

Arianespace has launched the world's first satellite dedicated to banking services. Following a 10-day delay, *BRIsat,* which is owned and operated by Bank Rakyat Indonesia, successfully lifted-off on board flight VA230 from French Guiana on 18 June.

BRIsat is equipped with 36 x 36MHz C-band and 9 x 72MHz Ku-band transponders.

Once it begins operations from 150.5°E, *BRIsat* will serve as a dedicated relay platform for banking connection services across the Indonesian archipelago with a coverage area that includes Indonesia, South East and North East Asia.

The satellite will provide enhanced and secure banking communications for more than 10,600 branches, as well as to some 237,000 electronic channel outlets and nearly 53 million customers across covered by its footprint.

Bank Rakyat Indonesia (BRI), was established in 1895 and is Indonesia's oldest bank. It has more than 9,800 branches throughout the country but many of them cannot be economically reached by terrestrial infrastructure. As a result, satcoms serve as both the primary and backup means of communication for the bank.

BRI currently leases capacity from

PHOTO: ARIANESPACE

A *BRIsat* team member adds a personal touch to Ariane 5's payload fairing. The satellite was finally launched together with US orbiter *Echostar XVIII* on 18 June.

nine satellite service providers. It first announced plans for its own satellite three years ago in order to expand into more remote and rural areas.

Brasilia Metro opts for Teltronic TETRA

Sepura Group subsidiary Teltronic has been selected to provide a complete communications solution for Brasilia Metro.

The deployment is part of an ambitious project by Metrô-DF to modernise and expand the Brazilian capital's transport network. It will feature Teltronic's *Nebula* TETRA infrastructure, a CeCo-TRANS control centre, *RTP-300* on-board equipment, *STP9000* hand-portable radios, and *SRG3900* mobiles.

The solution replaces the metro's
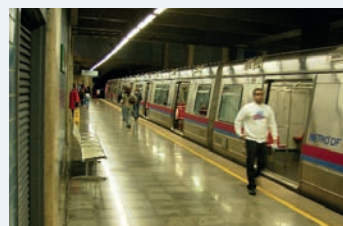
Teltronic's TETRA infrastructure will replace the ageing analgue sysem on the Brailia Metro system.

ageing analogue system and aims to improve coverage as well as enhance

communications between drivers, station staff, the control centre and passengers. It will cover Line 1 which currently carries 160,000 passengers per day but that figure is set to increase as a further five passenger stations are added under the expansion project.

"We are confident that this TETRA system will optimise critical communications within the network, augmenting the security of both our passengers and our employees," said Daniela Diniz, director of the technical board, Metrô-DF.

Satcoms safeguard desert cycle racers

The organisers of this year's Titan Desert, said to be the toughest mountain bike race in the world, used *SPOT Gen3* satellite trackers to enhance the safety of the 400 competitors.

The eleventh Titan Desert race took place in late April. It saw extreme cyclists ride more than 660km across Morocco's cold Middle Atlas mountains followed by vast expanses of searing hot desert. Mobile comms in this remote and harsh terrain are either limited or non-existent, making satellite the only reliable option.

Each competitor carried a small and robust *SPOT Gen3* tracker, enabling organisers, support teams, family, etc., to precisely track their location via the internet. Athletic gear and tracking

The 400 cyclists covered over 400km of remote and harsh terrain where mobile communications are either limited or non-existent, making satellite the only reliable option.

specialist WAA Tracking provided the customised online solution.

Around 100 race marshals and operations personnel were also equipped with the *SPOT Gen3*. In the event of an emergency, participants could press the

SOS button on the device to request help. Also, if a competitor strayed from the route, WAA's geo-fencing software could alert race officials instantly. Nearby 4x4s could then be sent to find and check on the rider.

Tower building in Sudan

Sudan's National Authority for Communications is partnering with Sudatel (Sudanese Telecommunications) to help build towers in the country. The agreement is part of a project to expand telecoms services in Sudan, and will eventually see the creation of more than thirty towers in remote areas with funding from the universal access fund. In a deal worth SDG18m (USD2.9m), Sudatel will work with local contractors to build nine towers in the Blue Nile and central areas of Darfurf, as well as in southern, western and northern Kordofan.

PCCW MEF certified

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

Congestion awareness

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

# Tier 1 telcos launch Bay of Bengal Gateway

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

The *BBG* is a three fibre pair cable based on 100G DWDM coherent technology with an overall design capacity of 10Tbps per fibre pair. It aims to enhance international connectivity into and out of six countries via landing points in the UAE (Fujairah), Oman (Barka), India (Mumbai and Chennai), Sri Lanka (Mt. Lavinia), Malaysia (Penang) and Singapore where POPs have been installed at Equinix and Global Switch.

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

The *BBG* is also said to offer "seamless and highly cost-effective" interconnection with existing systems
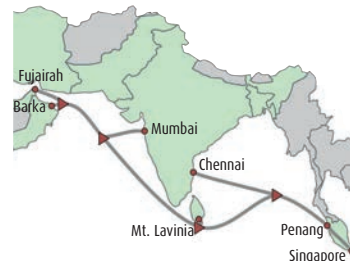
The 8,000km Bay of Bengal Gateway aims to enhance international connectivity into and out of six countries.

into Europe such as the *EIG* (*Europe India Gateway*), *IMEWE* (*India-Middle East-Western Europe*), and *EPEG* (*Europe-Persia Express Gateway*).

M1 launches Singapore VoWiFi trial

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

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

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

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

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

Earlier in April, M1 deployed

what's claimed to be the world's first NFV-enabled hetnet technology for use on-board buses. As part of its *WiFi-On-The-Go* service, the operator is using technology from Parallel Wireless.

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

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

Satellite e-health platform boost for Niger

The CURE Hospital for Children has deployed a satellite-based e-health platform to enhance healthcare in rural and remote parts of Niger.

The hospital specialises in the surgical treatment of children with disabilities. Patients suffer from a variety of different orthopaedic and congenital conditions, such as clubfoot, cleft lip and burn contractures.

By combining satellite connectivity and cloud computing, SATMED

will enable the CURE Hospital to establish communications with national and international doctors to receive professional medical advice. Patients can be remotely diagnosed by experts thousands of miles away, while clinicians will also able to improve their knowledge through online courses and resources.

Josh Korn, executive director at CURE Niger, said: "Our participation in the SATMED programme will help us better serve our patients, as

we seek to offer them healing and hope for a better future."

SATMED was conceived by SES' Techcom Services division and is funded by the Luxembourg Government and the Ministry for Cooperation and Humanitarian Action. The e-health system aims to improve public health in developing countries by enabling multiple medical applications and tools to operate collectively on a single platform.

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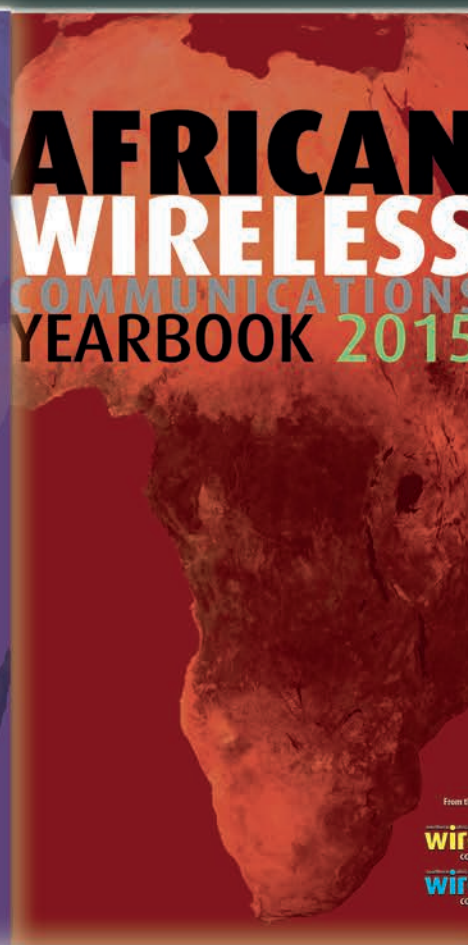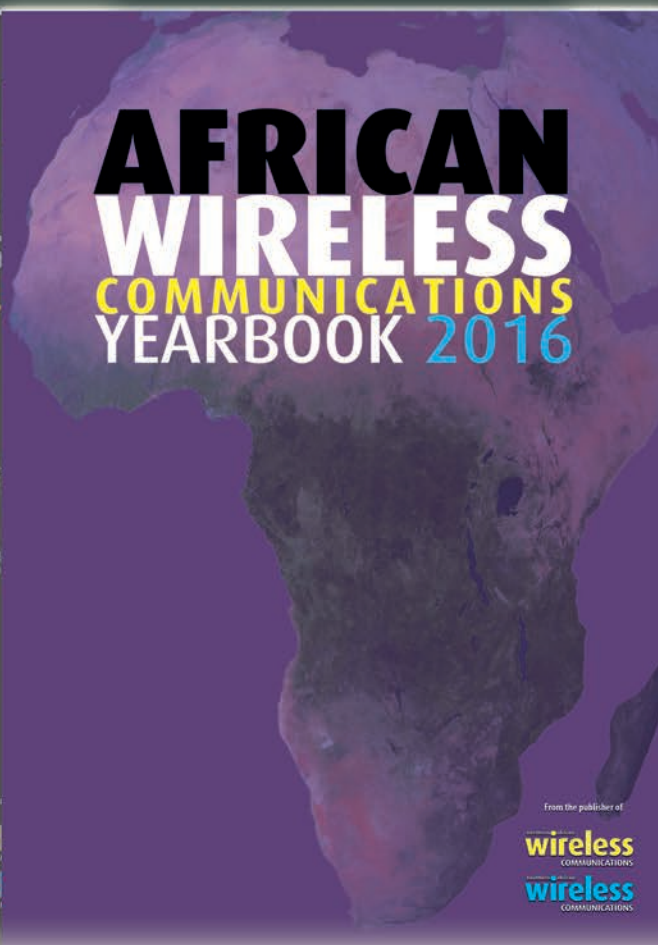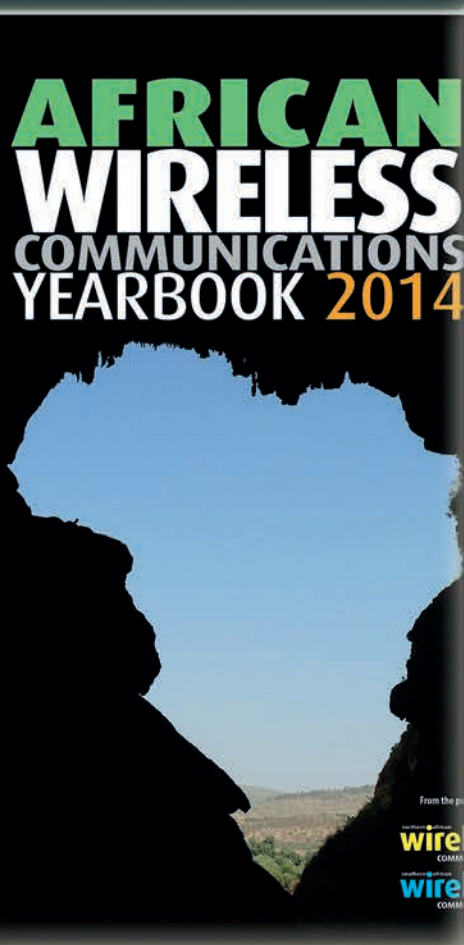
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