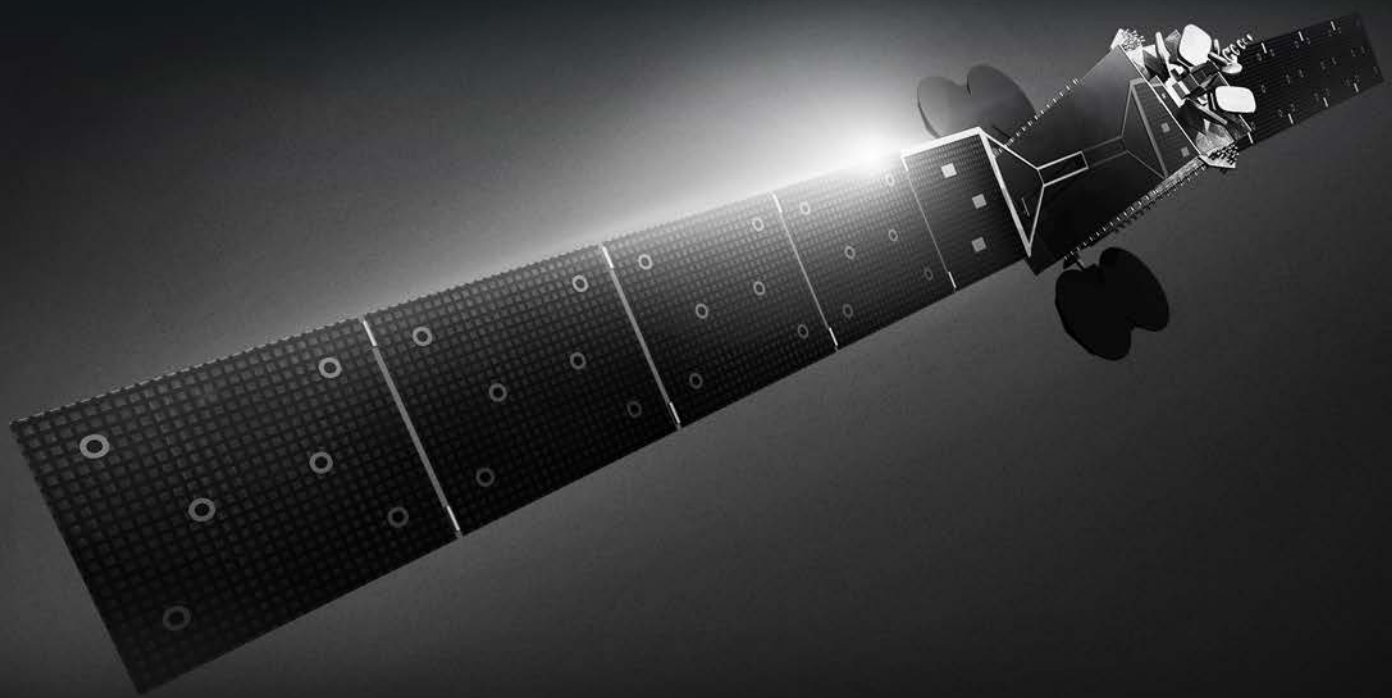
For communications professionals in southern Africa

SOUTHERN AFRICAN WIRELESS COMMUNICATIONS

JANUARY/FEBRUARY 2018 Volume 22 Number 5

- What next for VAS after mobile money?
- Building better infrastructure for CSPs
- How to avoid a 'dim' network and boost QoE



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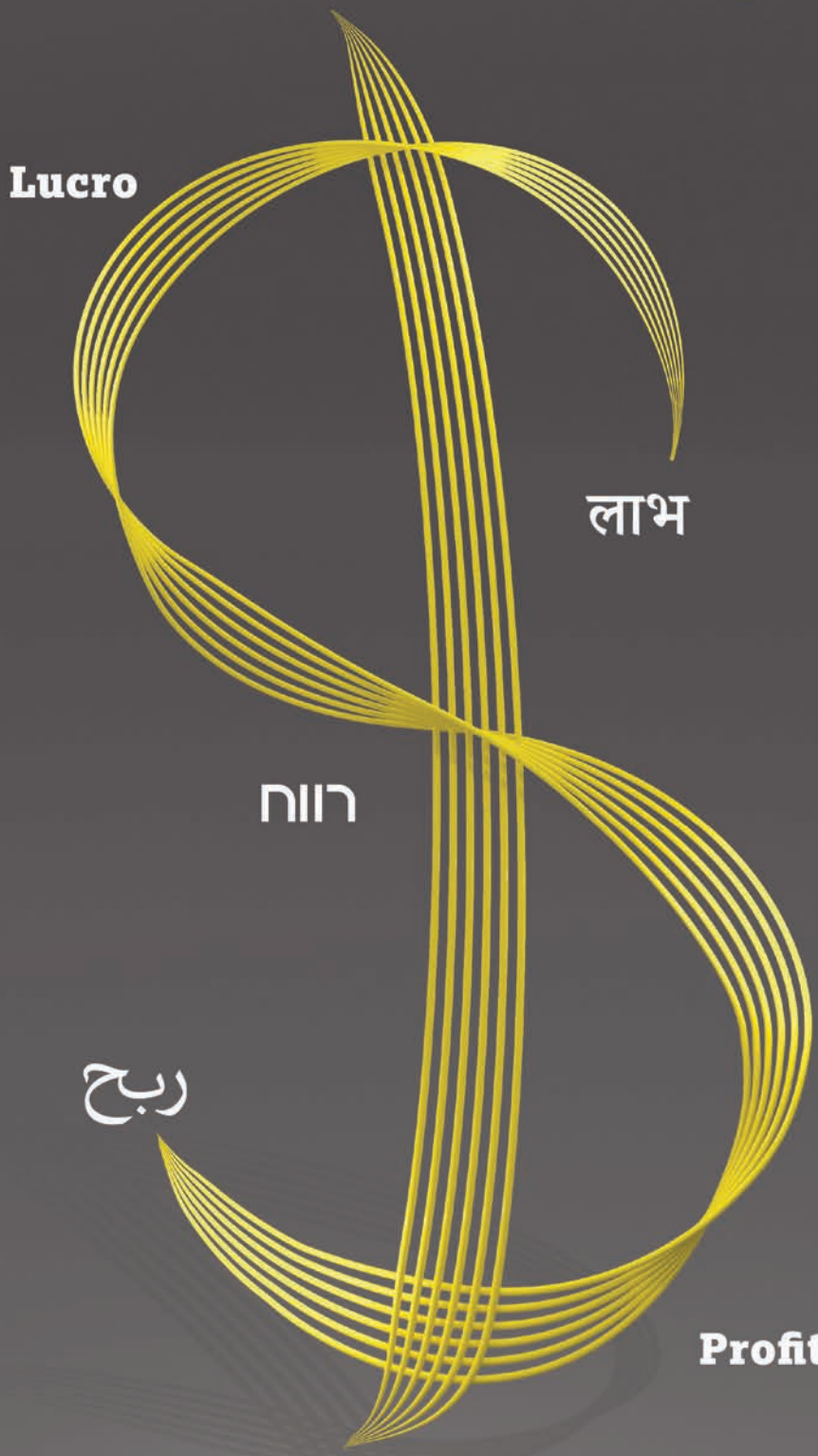

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To find out more about Avanti Communications, turn to page 24

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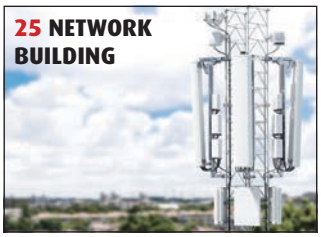

SUBSCRIPTIONS:
Southern African Wireless Communications is a controlled circulation bi-monthly magazine. Register now for your free subscription at www.kadiumpublishing.com
Readers who do not qualify under the terms of control can purchase an annual subscription at the cost of £110. For more information and general enquiries please contact Suzanne Thomas at suzannet@kadiumpublishing.com or call +44 (0) 1932 886 537.

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Printed in England by The Magazine Printing Company

MTN and Ericsson trial 5G in Africa

MTN and Ericsson are claiming a first in Africa with the trial of 5G technology and applications.

The demonstration took place at MTN's headquarters in Johannesburg in January 2018 following an MoU signed between the two companies at *AfricaCom* last November.

The trial was based on 5G prototype radios and commercially available baseband hardware, with 5G mobility supported. According to Ericsson, it saw throughput rates of more than 20Gbps with less than 5ms latency which is claimed to be the highest achieved on an African mobile network.

The vendor adds that MTN has been assessing a range of 5G use cases and applications in its test lab proof of concept which is expected to lead to commercial deployment in the "near future". The two companies are also continuing to collaborate on identifying further use cases and applications for the digital transformation of industries such as mining, transportation, agriculture, manufacturing and utilities.

MTN SA CTIO Giovanni Chiarelli says 5G offers a whole new world of potential for South Africa and the continent. He says: "With 5G, remote healthcare through connected robots could offer world-class surgery in the most remote parts of the continent and the world. Self-driving cars could change the face of road safety, along with smart agriculture, smart mining, and smart cities."

Chiarelli adds that while the technology will offer higher speeds and lower latencies, greater capacity is needed to achieve this. He says: "Thus, once again we call on the government to urgently release the much-needed spectrum that is required in South Africa, to lower the cost of data and drive growth and development for all South Africans."

Nokia and Vodacom collaborate to shape the future of 5G in South Africa – News, p11

'Least developed countries' on track to achieve universal internet connectivity

The ITU says that the nations classed by the UN as "Least Developed Countries" (LDCs) are now on track to meet the sustainable development goal on universal and affordable internet access by 2020.

According to the ITU, the LDCs comprise 47 developing countries around the world that suffer from severe structural impediments to sustainable development. Twenty-eight of these nations are identified as African although if Mauritania, Somalia and Sudan – which the ITU classes as "Arab States" – are also included, the figure is 31. (*Also see News, Jul-Aug 2016.*)

In a report released towards the end of January 2018, the union said LDCs are recording "impressive" progress toward achieving the UN's sustainable development goal (SDG) 9.c on increasing access to ICTs. It notes that all 47 LDCs have launched 3G services and more than 60 per cent of their populations are covered by such networks. It adds that these countries are also on track to reach on average 97 per cent mobile broadband coverage and to make internet prices relatively affordable by 2020.

By the end of 2017, the report says that the number of mobile subscriptions in LDCs had increased to about 700 million with a penetration rate of 70 per cent. At the same time, more than 80 per cent of the population in these countries live within range of a mobile network.

The report also identifies key barriers to ICT and internet use in LDCs, including the lack of digital skills. It offers a number of key recommendations to help address these challenges.

For example, the report says stakeholders should address market concentration and foster competition in all building blocks of internet connectivity. It also advises them to build core internet infrastructure through control over a locally managed country code top level domain, IXPs, and the ability to host a root server to create more affordable and local content.

SAS and Paratus trial nanosats with POS devices

The Paratus Group is trialling the use of nanosatellites with point-of-sale (POS) devices in Africa. It has signed an agreement with Sky and Space Global (SAS) to support innovative payment solutions to help connect the unconnected in key markets on the continent.

The companies will conduct a field trial where the POS devices will be connected to a banking partner via SAS's IP network. It is the first step for SAS and Paratus in using new technology to replace what they say is the current "limited and unreliable" means of communications with POS devices in remote areas.

According to SAS, the deployment of POS devices is growing in Africa, and at a rate of 450 devices per 100,000 people in some countries.

SAS' CEO Meir Moalem says partners such as Paratus will be able to use nanosatellites to help drive global socio-economic development.

This latest agreement comes after the announcement of a commercial contract between SAS and Sat-Space Africa in August 2017. The latter is a wholly owned subsidiary of Paratus Group Holdings, and the parties are planning to cooperate for further narrowband telecoms services in other market segments.

SAS successfully launched its first three nanosatellites, the *3 Diamonds*, in June 2017 and is preparing to orbit a constellation of 200 more by 2020. The company says its vision is to provide affordable communication coverage and services to anyone, anywhere, anytime with relatively low maintenance costs.

Meir Moalem, SAS' MD and CEO, says Paratus is well-established in Africa and believes its customer-base reflects the communication needs of the continent's people and businesses. He adds: "Our solution will widen the connectivity coverage and reliability of our partners and will enable them to connect the unconnected and drive global socio-economic development."

South African RF spilling into Mozambique

Regulators have discovered radio frequency signals from South African mobile operators spilling into Mozambique. In December 2017, the Independent Communications Authority of South Africa (ICASA) and the Instituto Nacional das Comunicações de Moçambique (INCM) jointly conducted an RF measurements exercise.

In their findings released in January, they said that no RF spillage had been detected on either sides of the border alongside Kosi bay and Lebombo Border Posts. However, two South African operators were found to have RF spillage in the eastern Mozambique coastal town of Ponta Malongane which is around 30km north of the border.

The operators were not named, and neither regulator has since revealed any remedial plan of action.

ICASA used its GEW monitoring system while INCM deployed its TCI platform. The regulators say that their results were compared and that there was no significant difference between them.

The spectrum monitoring exercises were carried out as part of a technical agreement between ICASA and INCM in April 2017 (*see News, Mar-Apr 2017*). This is aimed at cooperation and coordination in respect of spectrum management for telecoms and broadcasting services.

The deal also led to the establishment of a joint technical committee to address matters of common RF interest between the regulators.

New African PoPs from Orange plus e-learning partnership

Orange believes that of all the digital revolutions, higher education and vocational training are among the most strategic for Africa.

Orange has opened what it is says are two "very large"capacity PoPs in South Africa. The new facilities, in Cape Town and Johannesburg, add to the operator's existing regional IP and IPX PoPs in Amman and Abidjan.

Orange says the latest African PoPs will provide a number of advantages to the region's wholesale customers. For example, it says the high capacity and high availability PoPS offer resilience with three routes that are protected by a backbone network that includes access to the *SAT3* and *EASSY/SMW5* submarine cables, with *ACE* to be added soon.

The operator also reckons the facilities will enable users to improve QoS by providing delivery content closer to customers, as well as offer local processing, thereby improving roaming and avoiding the need for traffic to go back and forth to Europe.

The company goes on to claim that it is the first operator capable of offering reliable, high quality, secure connections for the wholesale market around the continent. It says that it already holds a strategic position in this field in Africa and the Middle East thanks to its existing IP and IPX PoPs in Amman and Abidjan.

In a separate development, the National Distance Learning Centre (CNED) has teamed up with Orange to facilitate smartphone access to educational content on the continent.

CNED says more than 29,000 people globally are registered to use its distance learning service. It says it has database of content covering primary, secondary and higher education, as well as vocational training.

The organisation will distribute its content in Africa using Orange's network footprint that covers 19 countries on the continent. The partnership is already active in the DRC and is currently being introduced to Orange's other African mobile network subsidiaries. The content will be distributed in French in ebook format through the *MondoCNED* app that can be downloaded onto smartphones and can even be available offline. Other partners will also be able to offer their content to Orange customers.

MTC steps up tower expansions in Namibia

Namibian cellco MTC says it has appointed more than 40 contracting partners as part of a project to construct over 500 new towers, mainly in rural parts of the country.

As part of its NAD1.2bn *081Every1* project launched in July 2017, MTC is aiming to expand its network to cover 100 per cent of the population, and bridge the digital divide between urban and rural Namibia (*see News, Jul-Aug 2017*).

Following a tendering process completed late last year, 17 different firms have now been appointed for the supply, delivery and installation of the BST infrastructure needed to complete construction of 524 new towers across the country.

Tim Ekandjo, MTC's chief human capital and corporate affairs officer, says: "We have opted for 17 companies as opposed to one to speed up the implementation of the project so construction of towers commences simultaneously in all regions."

MTC has also contracted six companies that will be responsible for the tower loading analysis services, along with a further 19 that will be responsible for the supply of solar, grid and lithium type batteries.

Ekandjo points out that all the contractors are local which is in line with MTC's procurement policy that "seeks to empower Namibians".

New device management system for Vodacom Lesotho

Vodacom Lesotho has replaced its legacy device management platform with a combined solution from Sicap. The operator will use the Swiss company's cloud-based *Device Management Centre* (*DMC*) with *TargetMe*, a context-aware customer insight and engagement automation system.

Sicap says Vodacom Lesotho was unable to use the valuable data and real-time events collected during the device detection process with its previous system. The vendor says its combined *DMC* and *TargetMe* utilises the device detection and characteristics data and provides operators with detailed real-time analytics and customer segmentation.

As a result, it's claimed the provider can now take advantage of improved customer engagement functionality enabling it to deliver personalised and targeted engagement messages to individual subscribers.

Sicap says message delivery is triggered when a subscriber belonging to any target segment is detected. It adds that *TargetMe* can automatically issue system notifications to activate new services, price plans or pre-paid top-ups based on event triggers.

According to Sicap, Vodacom Lesotho can now fully automate device settings for its 1.3 million customers, thereby saving costs by reducing troubleshooting calls to its care centres.

Sigfox and Eutelsat network helps protect endangered rhinos

The Sigfox Foundation along with Lowveld Rhino Trust are tracking wild rhinoceroses in Africa by implanting GPS trackers into their horns.

PHOTO: SIGFOX

Eutelsat and Sigfox have joined forces in the fight against rhinoceros poaching in Africa.

As part of the *Now Rhinos Speak* project, the Sigfox Foundation along with the Lowveld Rhino Trust have begun tracking wild rhinos. IoT network specialist Sigfox has designed and implemented a remote tracking solution that uses GPS sensors fitted in the horn of each animal. These send positioning data to a secure online platform via Eutelsat satellites, and enable the rhinos to be tracked with minimum human interference.

Three times a day, wardens, vets and specialists in game parks can access readouts of the movements of the animals. It's claimed they will be able to use this precise data to improve protection against poaching and gain a better understanding of the endangered species.

With the help of Eutelsat's satellite resources, the Sigfox Foundation aims to fit 3,000 rhinos over a three-year period to track movements. Working with the Lowveld Rhino Trust, the ultimate goal is to track all 29,000 rhinos left in the world.

The two companies have already been working together since November 2016 on an initial operation in southern Africa connecting approximately ten animals. Three base stations in Sigfox's low-speed IoT network have been connected to the secure platform using Eutelsat's *smartLNB* satellite service that is designed to extend terrestrial IoT networks anywhere. The collaboration improved the identification of areas of surveillance and refined allocation of resources for protection on the ground.

Chafic Traboulsi, Head of Networks for Ericsson Middle East and Africa tells the story of 5G

■ With the first 5G NR standard in place, what can we look forward to in terms of 5G development in the coming months?

● The pace at which business use cases are being visualized, conceptualized, and constructed today is quite phenomenal. 5G use cases will include faster and more robust high-speed mobile broadband and video everywhere, a proliferation of connected sensors to support IoT implementation, and everything from driverless buses to remote surgery to immersive augmented reality.

● We can all agree that 5G is the future. It is estimated that by 2023, there will be more than 9.1 billion mobile subscriptions and 1.5 billion cellular IoT devices relying on mobile networks worldwide. In order to support this immense demand and the necessary speed of services, operators will continuously strive to improve capacity, quality and functionality of their networks at one end while looking at ubiquitous digital transformation initiatives to deliver innovative services and customer experience on the other end.

● In line with this pressing agenda, Ericsson is tirelessly working with partners and operators to address impending market realities. In a bid to augment the business potential of 5G, Ericsson has introduced the world's first 5G NR Radio – featuring 64 transmit and 64 receiving antennas enabling 5G plug-ins for both Massive MIMO and Multi-User MIMO. We've also added Gigabit LTE and Cloud RAN - new LTE software and hardware solutions that leverage key 5G technology concepts operators can deploy in today's network to improve both performance and efficiency while preparing for largescale 5G adoption.

● In the coming months, we will see more operators begin trials that will bring essential 5G technology concepts to existing cellular data networks.

■ In your opinion, which use cases of 5G would be most popular in the MEA market?

● Cellular IoT connections in the Middle East and Africa are expected to grow from 35 million in 2017 to 159 million in 2023 – a CAGR of around 30 percent. As the world becomes more connected, industries are experiencing an ICT-driven transformation, creating new revenue opportunities for ICT players. Cumulative revenue in the Middle East and Africa is predicted to reach USD 242billion through 2026.

● 5G will be an important technology in growing industrial digitalization, particularly for use cases dependent on ultra-low latency and high reliability. This presents an opportunity for service providers that are ready to explore revenue streams addressing B2B2X industry players.
❍ Cumulative 5G enabled industry digitalization revenues for IoT in the Middle East and Africa in % Energy & Utilities: 19%
❍ Manufacturing: 19%
❍ Health Care: 13%
❍ Public Safety: 12%
❍ Public Transport: 9%
❍ Media & Entertainment: 9%
❍ Automotive: 8%
❍ Financial Services : 6%
❍ Retail: 4%
❍ Agriculture: 1%

Even though IoT is still in its infancy throughout many parts of Middle East and Africa, there are still examples of how it has helped improve livelihood of communities and industries in the region. For instance:

● In Turkey, smart agriculture initiatives have been ongoing since 2011, and similar initiatives are now ongoing in parts of Africa.

● The Saudi Arabian market has been exploring remote monitoring of oil wells and making temporary networks available in cases of disasters.

● In South Africa, Narrowband IoT (NB-IoT) technology will serve the region's diverse needs, opening up new revenue streams as a result of industrial digitalization and improving standards of living in relevant countries.

■ What's your 5G agenda for the year 2018?

● Our primary focus is to put our customers at the centre of everything we do. Today, their priorities are as follows:
(a) Relentless Efficiency: Our priority is to work with our operator customers to accelerate 5G use cases, assist in the smooth transition to 5G, and work along with them to manage capacity growth.
(b) Digital Experience: We will deliver for our partners' automated and cost-

effective operations with programmable networks for faster time-to-market and optimize network performance to radically enhance customer experiences.
(c) New Revenue Streams: We will work with operators to innovate and optimize on emerging business opportunities, connectivity services, and platforms to support growth of IoT.

■ How long would the wait be for the commercialisation of 5G? The big question- when is 5G coming for real?

We don't speculate on this and to be honest, it would difficult to provide a concrete timeframe, as 5G commercialization will entirely depend on market dynamics and maturities of the ecosystem in general. However, what is heartening to note is the fact we are not too far off from this reality. According to Ericsson's 5G Readiness Survey published in October 2017, 78% of respondents were involved in 5G trials in 2017 as compared to 32% in 2016. Furthermore, 28% of respondents expect to deploy 5G in 2018. The survey also revealed that operators have further developed their business strategies for 5G services, looking beyond the consumer segment to foresee opportunities in the enterprise and industrial segments as well.

The top three industry sectors that were highlighted by survey respondents were media and entertainment, automotive, and public transport; but many also ranked healthcare as well as energy and utilities among the most attractive sectors for 5G applications. A clear majority of respondents believe that Internet of Things will play an important role and that third-party collaboration will be essential in this context.

The Die Rooi Granant coffee shop and deli in Loxton which became a hub of online activity.

Connecting the world's "toughest" mountain bike race

Riders and organisers of the Munga MTB mountain bike race as well as local communities along the competition route were able to stay connected thanks to satellite-enabled Wi-Fi.

The Munga MTB is said to be the world's toughest mountain bike race. It took place in searing summer temperatures from 29 November to 2 December 2017, and saw 81 competitors race non-stop over 1,000km across the middle of South Africa, from Bloemfontein to Wellington in the Western Cape.

Connectivity Africa and Ruckus Wireless provided connectivity at five sites along the routes which ranged from van Stadens guesthouse at site 1 to Pine Forest Holiday Resort at Ceres, site 5. The connectivity enabled event organisers to provide updates to the cyclists, and it also allowed them to keep records of all participants who entered and left the stopover sites.

Meanwhile, racers were able to stay connected with their families, and post updates on social media for their followers to experience the race in real-time and keep track of their progress.

The communities along the trail also benefitted from continuous free Wi-Fi connectivity since the first Munga MTB race in November 2016. For instance, it's claimed Die Rooi Granant, a coffee shop and deli in Loxton, has become a hub of activity where young people and small business owners can take advantage of the broadband connectivity that is available.

The Wi-Fi network uses satellite links provided by SES.

AMOS-17 completes critical design review

Spacecom announced early last November that its *AMOS-17* communication satellite has successfully completed its critical design review and entered full production.

The news will be of particular significance and relief to Spacecom given the losses of two of its satellites in recent years.

Specifically designed for Africa and scheduled for launch in early 2019, *AMOS-17* will operate from 17°E to expand and strengthen the company's coverage not only across the continent but also in the Middle East and Europe. Spacecom says the high throughput satellite will offer extensive Ka-, Ku- and C-band services, combining broad regional beams and high throughput spot beams to maximise capacity and spectral efficiency. Its in-orbit life is expected to be 19 years. Boeing Satellite Systems International is building the spacecraft which will be sent into orbit on a SpaceX *Falcon 9* vehicle.

"*AMOS-17*, equipped with the latest generation digital payload, represents the most advanced satellite over Africa and further delivers on our long-term commitment to the African market," says Spacecom president and CEO David Pollack. "This satellite will bring multi-band high-throughput technologies to deliver unique service capabilities not possible on traditional satellites."

Spacecom CEO David Pollack claims AMOS-17 will be Africa's "most advanced" satellite.

SatADSL claims first with multi-hub cloud-based satellite delivery platform

SatADSL has launched what it claims to be the industry's first multi-hub *Cloud-based Satellite Delivery Platform* (*C-SDP*).

With C-, Ku- and Ka-band capability, the Belgium-based provider of professional VSAT services says *C-SDP* offers a complete OSS/BSS, carrier-grade, fully redundant platform. According to SatADSL, it enables telcos and service providers to offer, for the first time, satellite services over any frequency band via the cloud.

The company says its platform includes a network management system which allows IP traffic to be shaped and routed from and to different hubs. There's also a built-in tool for customer management, a hotspot management system for platform users to configure and monitor their remote hotspot networks, and billing system that enables online payments and automatic charging.

SatADSL founder and COO Caroline De Vos says: "While it is predominantly aimed at service providers, we also plan to allow other operators to access the *C-SDP*, giving them the ability to control multiple technologies on different satellites, all from one single management tool. We also plan to evolve the platform further as the satellite landscape continues to change and develop."

Among the latest technologies that C-SDP can connect to is Newtec's HTS-optimised *Dialog* multiservice platform. SatADSL says this will enable it to launch new Ka-band services in South Africa and Zimbabwe during the first quarter of 2018. It says these will complement its current Ku- and C-band services, and plans to extend them to the rest of the continent in the middle of the year.

GovSat-1 is designed for the exclusive use of governments and institutions. PHOTO: ORBITAL ATK

Successful launch for GovSat-1

GovSat has successfully launched its first satellite. *GovSat-1* went into space on board a SpaceX *Falcon 9* rocket from Cape Canaveral Air Force Station on 1 February. GovSat is a joint venture between SES and the government of Luxembourg.

The multi-mission spacecraft was built by Orbital ATK and is based on the *GEOStar-3* platform. Its aim is to provide secure, reliable and accessible governmental satellite communication services to address the demand resulting from defence and institutional security applications.

The government of Luxembourg has pre-committed an important amount of capacity on the satellite in support of its NATO commitments. The remaining capacity will be made available to governmental and institutional users on commercial business terms.

GovSat-1 features X-band and military Ka-band frequencies on high-power, and fully steerable mission beams to support multiple operations. It will be located at 21.5°E to serve Europe, the Middle East and Africa, including what's described as "substantial" maritime coverage over the Mediterranean and Baltic seas, as well as the Atlantic and Indian Oceans.

GovSat CEO Patrick Biewer says: "*GovSat-1*, with its highly flexible payload featuring advanced encryption and anti-jamming capabilities, will further secure the connectivity for our users' applications."

Yahsat backs Wi-Fi and cloud services as new satellite goes into wrong orbit

Yahsat will work with Danish ISP Bluetown to connect the unconnected by providing high performance Ka-band satellite internet services in the most remote parts of Africa.

Bluetown's last mile solutions vary from single village installations and refugee camps to deployments that feature up to 200 Wi-Fi hotspots in a 15km radius. They are all completely powered by solar energy with rechargeable batteries as a backup to provide constant internet access. The hotspots will be backhauled by Yahsat's high-performance satellite broadband service, *YahClick*.

In addition to its core solution, Bluetown has also developed a *Local Cloud* intranet platform to provide fast and easy access to services for e-learning, e-health, e-government, etc.

In a separate agreement announced at the start of 2018, cloud management software specialist Tanaza will provide Yahsat with a web platform to manage multiple users accessing Wi-Fi and social hotspots across its footprint.

Since forming in 2010, Italy-based Tanaza is now said to have more than 800 partners with millions of Wi-Fi users in over 130 countries. Yahsat says it will take advantage of the company's cloud-based software to allow Wi-Fi connections across geographies, with "easy management and effortless user access".

"We have been looking for a partner that could tap into the elasticity of the cloud to help to make accessing our network leaner," says Yahsat CCO Farhad Khan. "Tanaza will provide us with the technology needed to further enhance our offering and fully align with the needs and preferences of our end-users across the Middle East, Africa, Central and South West Asia."

Both agreements were signed just weeks before Yahsat launched its third satellite. *Al Yah 3* left Earth on 25 January 2018 but the company says the mission experienced some "challenges" during the launch stages which resulted in the satellite being inserted into an orbit that differed from the flight plan.

Yahsat CCO Farhad Khan (left) at the deal signing with Bluetown's global sales VP Henrik Mølgaard. Khan says Yahsat had been looking for a partner that could tap into the elasticity of the cloud.

Al Yah 3 was launched by Arianespace from French Guiana and was manufactured by Orbital ATK. Frank Culbertson, president of Orbital ATK's Space Systems Group, says: "Based on data from initial communications, I can report that *Al Yah 3* is in orbit, healthy and responding to commands from our mission operations team."

Yahsat says a revised flight plan will be executed in order to achieve the operational orbit and fulfil the original mission.

The news means delays for Eutelsat's Konnect Africa programme which plans to use capacity on *Al Yah 3* to deliver affordable broadband connectivity across sub-Sahara Africa (*see News, May-Jun 2017*). At the time of writing, a Konnect Africa spokesperson told SAWC that the programme could now go live either in April or May instead of January as previously expected, but this has yet to be confirmed.

Liquid and Huawei partner on 100G links

Liquid Telecom and Huawei claim a new partnership deal signed in South Africa towards the end of last year will have pan-continental ramifications.

Under the agreement, Huawei will deploy its DWDM technology to Liquid's fibre network in South Africa, enabling it to support 100G wavelengths.

The first phase of the project will see Liquid use the vendor's *OptiX* OSN solution along 1,200km of its long-haul network connecting Johannesburg and Cape Town. Liquid says the 100G link will support growing demand for cloud-based services and provide customers with high-speed access to its data centres in Johannesburg and Cape Town which are currently undergoing major expansions to meet the needs of global cloud players and enterprise customers.

In the second and third phase of the project, the DWDM core network will be extended to the north west then north east regions of the country.

In addition, the network upgrades will support Liquid's new *CloudConnect for Microsoft Azure ExpressRoute* service. The company claims this enables customers to create private, predictable, high-performance, SLA-based connections between *Azure* data centres and infrastructure on their premises or in a colo environment.

According to the company, the agreement will open up opportunities not only for South Africa, but across the continent as well. Liquid says it will provide cloud services for a "simplified and secure" environment, leveraging its pan-African fibre network which stretches over 50,000km and claims to connect more African countries on a single network than any other fibre network.

"Higher networks speeds and bandwidth will play an integral role in supporting the rise of the African cloud," says Nic Rudnick, group CEO, Liquid Telecom. "Through our partnership with Huawei, Liquid is ensuring that its network is ready to meet the increasing demand from businesses for cloud-based services."

CETel expands VSAT services with Malaysian help

CETel (Central European Telecom Services) is providing pan-African C-band VSAT services with the help of Malaysian satellite operator MEASAT.

The Germany-based provider of satellite, fibre and wireless enabled communications solutions runs a global teleport near Cologne. It will use the *Africasat-1a* satellite to further expand its service portfolio on the continent. MEASAT says its satellite's "high-power and excellent look angles" combined with customised solutions were defining factors in CETel's selection.

Africasat-1a is also known as *AzerSat-1* and was developed as a joint venture between MEASAT and Azerbaijani state-owned operator Azercosmos. It was launched to the orbital slot of 46°E in 2013 and features 24 C-band transponders.

CETel's German teleport near Cologne and Bonn. The company says its antennas for standard C-band, extended C-band and Ku-band directly support geo-stationary and inclined satellites between 68°W and 75°E.

In a separate deal, CETel announced that it will provide managed end-to-end connectivity for a "major" European telco in Africa. It says the satellite-based network will enable the operator to bring connectivity to new areas across North and West Africa, and enable contingency services during fibre outages. While CETel has not named its customer, both France-based Orange and UK-based Vodafone operate networks in these parts of Africa.

CETel will use C-band capacity on SES' *NSS-7* for what it describes as a new "highly-reliable and resilient" satellite network which consists of several sites located in African countries. These are connected to the customer's European backbone infrastructure via CETel's teleport and managed MPLS network.

Swazi Mobile offers "one-stop" roaming

Swazi Mobile, Swaziland's recently launched second mobile operator, is providing a complete range of voice and data roaming services to its subscribers with the help of BICS.

The Belgium-based specialist provider of global mobile connectivity and interoperability services says it's enabling the cellco's end-users to benefit from international voice and data services, SMS, signalling, IPX and data clearing services.

BICS says there are around 250,000 inbound roamers in Swaziland, with around 98 per cent travelling from neighbouring South Africa and Mozambique. The firm adds that both incoming visitors to and outgoing roamers can now take advantage of its wide portfolio of worldwide partnerships across a 4G network.

Swazi Mobile CEO Wandile Mtshali says: "The immediate access to over 800 of BICS' partners will give our customers the ability to roam like never before, and BICS' PoP in Johannesburg will provide us with a competitive differentiator through service quality."

BICS says its South African PoP means regional traffic will be managed and switched locally, thereby providing "outstanding quality" by reducing latency which is critical for 4G. It adds that mobile users in the region will now be able to benefit from its "one-stop-shop" roaming solution.

PLDT cable system to link three continents

Africa should now have a new cable connection to the Philippines. Late last year, PLDT (formerly the Philippine Long Distance Telephone Company) announced that it was set to open another international submarine cable link to connect the Philippines to three continents before the end of 2017.

The telecoms and digital services provider is investing an initial PHP500m (around USD10m) through a partner in the consortium that owns the new 25,000km *Asia-Africa-Europe 1* (*AAE-1*) submarine cable system that went live last year (*see News, Jul-Aug 2017*).

In tandem with the other international cable systems that land in the Philippines, *AAE-1* will connect the country to 19 destinations: Hong Kong, Vietnam, Cambodia, Thailand, Singapore, Malaysia, Myanmar, India, Pakistan, UAE, Oman, Qatar, Saudi Arabia, Djibouti, Yemen, Egypt, Greece, Italy and France.

AAE-1 covers Asia via diverse terrestrial routes across Thailand connecting Vietnam, Cambodia and Hong Kong, where it was landed in July (pictured).

PLDT says the investment will enable it to serve more customers, not only at home but also across Asia, Africa and Europe. The company also claims *AAE-1* will further bolster the resiliency of its overseas links, as well as expand the capacity and enhance the quality of its data and internet connections.

PLDT international network VP Gene Sanchez adds: "With *AAE-1*, the PLDT Group's total international capacity will be over 4Tbps, significantly greater than that of the competition."

ALU and GE aim to establish "industrial powerhouse"

GE and the African Leadership University (ALU) are working together to help give the continent's professionals valuable digital skills.

The partners reckon their collaboration will lead to a "paradigm shift in industrial thinking" as African companies will be able to leapfrog competition and establish the continent as an industrial powerhouse.

US-based GE (formerly General Electric) describes itself as a digital industrial specialist. It says vast amounts of data are being created in an increasingly connected industrial ecosystem. But to leverage this, the company points out that what's required is a new generation of talent with a strong technical foundation in Big Data analytics, machine learning and web application development,

Students will attend "intensive" 3-5 day sessions at GE's ZAR500m Innovation Centre in Johannesburg.

as well as the business acumen to translate technological improvements into business results.

GE will combine its claimed expertise with ALU's unique learning model for the *Africa Industrial Internet Programme* (*AIIP*). This 12-month professional training scheme, which began in January 2018, is designed to merge the essential business and technical skills necessary for professionals to succeed in a digital industrial environment.

The *AIIP* uses a blended learning model with a mix of online learning and offline sessions to be held at the GE Africa Innovation Centre in Johannesburg. It involves machine learning with what's said to be ALU's "unique" entrepreneurial leadership programme to prepare professionals for leadership roles in entrepreneurial and technology-driven work environments.

GE says participants will work with best-in-class technology including its *Predix* platform for the industrial internet to build applications that can solve complex problems.

Vodacom puts the spotlight on 5G in SA

Vodacom will trial 5G technology as part of its efforts to drive digitalisation in South Africa.

Under an MoU signed late last year, the operator will conduct a series of workshops and evaluations using Nokia's 5G products to test how they can be used to meet ever-changing demand in the country.

Initially, the partners will focus on the delivery of UHD and VR video services, leveraging the enhanced mobile broadband and ultra-low latency capabilities of 5G. They will also collaborate to understand how 5G can drive continued economic growth in vertical industries

Vodacom Group CTO Andries Delport: "Africa is in the middle of a mobile connectivity boom."

important to South Africa, such as manufacturing, mining, healthcare, media, energy and transportation.

Nokia will supply its massive MIMO adaptive antennas, RAN, cloud-native core and edge computing platforms, as well as its end-to-end mobile transport networks. The vendor says it will leverage expertise from its Bell Labs consulting arm to work with Vodacom and identify where, when and how to evolve its network to 5G.

"It is my firm belief that the adoption of 5G will help us to deliver against some of the digital technologies in areas such as big data analytics, artificial intelligence, virtual and augmented reality, autonomous vehicles and the IoT," says Vodacom Group CTO Andries Delport. "Crucially, Africa is in the middle of a mobile connectivity boom and as such, 5G will help us to deliver faster internet speeds to our almost 70 million customers across the group."

Arabsat's "new age" of affordable broadband

Arabsat Broadband Services has launched a new satellite broadband service and claims it unveils a "new age" of affordable satellite broadband for businesses and consumers across Africa, the Middle East and Europe.

The company's *Arabsat Expand* features Forsway's hybrid router, *ODIN*, at a total kit cost of around USD100 per station. It's claimed this will enable the satellite operator to launch affordable new broadband internet services for as little as USD5 per month, helping bridge the digital divide to new customers in remote rural communities, as well as providing new, more reliable, and lower-tariff services to urban users.

This is the first service offered by Arabsat's newly created business unit for broadband services. It will deliver *Arabsat Expand* through previously unused bandwidth on its satellites.

According to Forsway, a complete kit with its *ODIN* router can be installed by anyone who can point a satellite TV dish, with no interaction from a NOC. It adds that because there's no satellite transmitter, there's no need for a VSAT transmit license.

ODIN allows any type of narrowband return channel to be linked to the high-throughput Ku/Ka bandwidth on Arabsat's *BADR-7* satellite in remote locations across almost the entire MEA region. Up to 10Gb of internet connectivity will then be routed through the satellite to support the new services from these locations.

New PoP for Angola Cables

Angola Cables is planning to launch a new point of presence in Cape Town. It was originally aiming to go live at the end of 2017, but at the time of writing this in early February 2018, a spokesperson told SAWC that the company was still in the final stages of bringing the facility online and was unable to confirm a specific date for this. Angola Cables already has a South African PoP at Teraco's data centre in Johannesburg. It says this latest expansion will give it the ability to meet local internet and content demands.

Conference calling

FreeConferenceCall.com has launched its free conference calling services in Malawi. It's claimed the country now has "instant and limitless access to the best possible high-definition audio, video and screen sharing experience". Malawi joins Tanzania, Kenya, Nigeria and South Africa on a growing list of countries in sub-Sahara Africa with free international conferencing. US-based FreeConferenceCall.com says it delivers a cloud-based technology that focuses on simplifying collaboration between users and without any fees. The firm says its revenue-sharing model boosts traffic and rapidly builds minute volume.

Huawei plans app store

Huawei is planning to launch a pre-installed localised app store on its devices. The firm points out that it is not aiming to compete with the likes of Google, and will instead supplement existing *Android* apps. Huawei has been working with partners in Africa to offer locally developed content. It is also planning to launch African themes and cloud storage. "We want to partner with innovation incubators to support local developers and bring their content onto our platform," says Cobe Li, Huawei's cooperation and alliance director of consumer cloud service, southern Africa.

MTN and Cisco Jasper partner to enable Internet of Things in Africa

MTN has teamed up with Cisco Jasper to enable their business customers throughout South Africa to deliver IoT services worldwide.

While the companies will initially roll out their services in South Africa, plans are in place to expand connectivity by leveraging MTN's data centres across its 22 POPs across the continent.

MTN will be the first mobile operator in the country to deploy *Control Center*, Cisco Jasper's automated IoT connectivity management platform. The partnership also represents the vendor's initial expansion into South Africa.

The operator says its business customers in nearly every industry are looking to innovate and transform their businesses by offering connected services. It reckons there is significant demand for the *Control Center* platform across all markets, and particularly for telematics and vehicle diagnostics, vehicle tracking, building security and automation, and logistics.

"Over the past three years, we have invested substantially in our network and have forged strategic partnerships with leading global players in the IoT space," says Mariana Kruger, GM for ICT solutions at MTN Business. "These interventions have put us in a better position to provide our customers with a distinct customer experience."

Kruger goes on to claim that the partnership with Cisco Jasper has several synergies. She reckons both companies have the "capacity and expertise" to provide NB-IoT services to enterprise customers. "In addition, the technologies that we have invested in give MTN the ability to provide cutting-edge and tailored propositions to our clients, while delivering a secure and fool-proof connection," concludes Kruger.

Intelsat and Coca-Cola partner to promote digital access in Africa

Intelsat and The Coca-Cola Company are working together to bring satellite-enabled Wi-Fi services to remote communities across Africa. The partners say their collaboration will support both their individual future business plans as well as their mutual efforts to promote sustainable development, especially in underserved communities.

Under their partnership, the two companies plan to establish Wi-Fi access at certain retail facilities in rural areas, enabling personal and commercial connectivity for citizens.

Coca-Cola's global director Eric Welsh says: "We're partnering with public and private sector organisations to address social issues, bringing basic necessities to millions of people through our sustainability-related programmes.

"The internet is a tremendous, undisputed force for economic growth and social change, and with the reach of Intelsat's satellite broadband services, we plan to deliver the benefits of connectivity to even more communities across Africa.

Coca-Cola says it is already working in developing communities around the world to foster sustainable development activity like supporting clean water and sanitation services as well as economic empowerment for women.

For example in 2013, it worked with ICT specialists such as Qualcomm Technologies and IBM to deliver the *EKOCENTER* kiosk to 150 communities in Africa, Asia, Latin America and North America (*see News, Nov-Dec 2013*).

Intelsat believes satellite connectivity is the easiest way to deliver internet services to the most people in the shortest possible timeframe in infrastructure-poor rural and remote areas. "The work Coca-Cola is doing in local communities around the world fits perfectly with our vision to remove the digital divide often found in remote areas, says Jean-Philippe Gillet, Intelsat's VP and GM of Broadband.

"With the inherent advantages that satellite provides in terms of reach and scalability, we provide a solution in delivering the benefits of internet access to hundreds of communities around the world in a quick, cost-efficient manner."

The partners have yet to announce further details about what they actually plan to do or which countries they intend to target first.

Coca-Cola says it has been working on sustainable development activity projects in developing communities for several years now.

Ericsson off-loads most of Media Solutions business

Ericsson has partnered with One Equity Partners to further develop its Media Solutions business.

At the end of January, Ericsson concluded the review of strategic opportunities for the business which it began in March 2017. The company evaluated different opportunities for the units, including partnerships, divestments and a continued in-house development, based on what generates the best long-term value.

One Equity Partners (OEP) is a private equity firm said to have a "deep expertise" in media and telecom investments. OEP and Ericsson will form an independent company with the latter retaining a 49 per cent shareholding. The Swedish company says this structure will establish Media Solutions as a "leading independent video technology company with strong and committed financial support driving continued investment in innovation and growth". The terms of the transaction remain confidential.

Media Solutions employees and contractors, as well as specified assets and liabilities, will transfer to the new company upon closing which is expected in Q318, subject to customary closing conditions and approvals.

Over the last several years, Ericsson says it has transformed its Media Solutions' products with what it says is a cloud-enabled, standards-based, integrated end-to-end roadmap. The overall mission has been to advance video service delivery with state-of-the-art infrastructure and software.

Angel Ruiz will continue to lead Media Solutions as CEO.

Hytera sues Motorola Solutions for alleged anti-competitive practices

The ongoing legal dispute between Hytera Communications and Motorola Solutions is continuing with the Chinese company filing a new lawsuit against its Chicago-based rival.

In a complaint submitted to a US federal district court in New Jersey on 4 December 2017, Hytera alleged that Motorola Solutions is preventing it from competing in the US marketplace with its critical communications products. Hytera said: "Motorola Solutions is engaging in anti-competitive practices that are unlawful under the Sherman and Clayton Acts by deliberately and actively foreclosing competition in LMR communications systems, in order to reap billions of dollars on sales at inflated prices to US customers."

The Chinese company, together with its subsidiaries that include US-based PowerTrunk and UK firm Sepura, allege that by "foreclosing" competition from Hytera's DMR and TETRA solutions, Motorola Solutions is able to maintain "inflated" pricing in the US on its products that use P25, the standard for public safety communications that is widely used in the country. According to Hytera,

TETRA offers similar functionality and features to P25 equipment, and can be "significantly less expensive". It claims this makes TETRA a "compelling option" for commercial users in the US.

Hytera further claims that Motorola Solutions is leveraging its dominance of the US public safety market to "impede adoption of newer, less expensive technologies", and forcing LMR dealers to drop its products.

"Motorola Solutions is forcing US customers to pay artificially high prices for critical communications," says Tom Wineland, director of sales for Hytera Communications America (West). "It can do this because of its long-standing monopoly.

"Customers want a choice, as reflected by the demand by public safety customers and other US customers for DMR, a robust LMR alternative at a fraction of the cost of P25."

Hytera goes on to accuse Motorola Solutions of engaging in a series of "sham" litigation and regulatory actions. It says this includes suing Hytera for patent infringement on a set of standard essential technologies that industry users have agreed to license on fair, reasonable, and non-discriminatory terms, and for which Hytera has already been paying Motorola Solutions to license.

In response to this latest action, Motorola Solutions has issued the following statement: "We believe Hytera's complaint is without merit and a clear attempt to shift attention away from the heart of the dispute – Hytera's brazen theft of our trade secrets and wilful infringement of our patents. We will continue to vigorously pursue our ongoing global efforts to stop Hytera's egregious behaviour and protect our intellectual property."

WorldRemit raises USD40m to target 10 million customers

Digital money transfer service WorldRemit has raised USD40m to support its plan to serve 10 million customers connected to emerging markets by 2020. The Series C funding round brings the total amount raised to USD220m.

WorldRemit says it is currently sending remittances from more than 50 countries to 148 destinations, and claims to handle a growing share of the USD600bn migrant money transfer market.

The company says this latest funding will be used to expand its service into new markets, deliver innovative products and services, and scale the technology that underpins its mobile-first, digital model.

The Series C round was led by LeapFrog Investments with significant participation from existing investors Accel and TCV.

LeapFrog is said to be the largest dedicated equity investor in financial services and healthcare for emerging market consumers. It aims to support fast-growth firms that deliver social impact alongside commercial returns by empowering low-income customers.

Company partner Stewart Langdon says: "This investment is an opportunity to bring a global leader in digital remittances into the LeapFrog portfolio. WorldRemit's model is uniquely suited to scale and offers a best in class service that is vital to the livelihood of millions of consumers in LeapFrog's core markets.

The company also has a huge potential to expand globally – a combination that puts it at the heart of our profit with purpose philosophy."

Convergence acquires stake in ESET Southern Africa

Convergence Partners and 4Di Group says they have acquired a "significant" minority stake in the ESET's Southern African distributor. However, the two companies have not disclosed the size of the share or how much they have invested.

ESET is a global provider of internet and endpoint security software vendor. Cape Town-headquartered 4Di has represented and operated the brand in the region for 15 years as ESET Southern Africa, and among its other interests, it has distributed ESET's range security software in South Africa and Namibia.

Andile Ngcaba, founder and chairman of pan-African ICT-focused private equity firm Convergence Partners, says: "In the emerging native cloud environment, coupled with edge computing, data is becoming more vulnerable. Cyber security solutions like that offered by ESET are a critical line of defence."

Convergence Partners has also acquired a stake in ESRO Ltd. It is ESET's official brand operator and distributor in the sub-Sahara Africa and broader East African region, covering 17 countries including Kenya with an operational office in Nairobi.

Chronosat signs for more capacity with RSCC

Germany satellite services provider Chronosat is hoping to expand its presence in Africa and the Middle East with the help of the RSCC (Russian Satellite Communications Company).

Under a strategic agreement worth more than USD14m over the next five years, Chronosat will increase its use of capacity on RSCC's *Express-AM7* satellite which was launched in 2015.

Konstantin Ryabtsev, the German company's general director, says: "Our immediate-term plans envisage the use of the RSCC satellite fleet for boosting our business in the Middle East, Africa and other regions of the world." He adds that RSCC's technical expertise will enable Chronosat to implement "many joint projects in the future".

The two companies originally started working together in 2017 when Chronosat began using the capacity of the heavy-lift *Express-AM7* to provide services in the Middle East.

RSCC general director Yuri Prokhorov says: "We hope that our cooperation with Chronosat and the agreements reached will strengthen the positions of the RSCC, including on the African continent."

Volaris Group acquires Sicap

The Canadian Volaris Group has bought all the shares of Sicap, including its international branch entities. The value of the transaction has not been disclosed. Sicap will continue to operate its own brand and serve its international customers from its current offices in Europe and India.

Volaris is an operating unit of parent holding company Constellation Software which is listed on the Toronto Stock Exchange. The company believes Sicap offers a "great opportunity" for it to expand its presence in the communications vertical, reinforce a strong position in the mobile market globally, and to acquire competency and experience in secure and scalable mobile applications.

David Nyland, portfolio leader and president, media and communications vertical at Volaris, says: "The acquisition of Sicap enables us to capture the full market opportunity of future high-growth market trends including e-SIM, IoT, and 5G networks, which require many more devices and increase the complexity for our operator customers to support these devices."

For Sicap – which originally began as a subsidiary of Swisscom – the acquisition will mean a creation of growth opportunities in innovation areas such as AI and the IoT, as well as an easier access to investment capital.

The company's current CEO, Markus Doetsch, will retain his position, and all of Sicap's employees have been taken over.

Doetsch says: "With Volaris, we have found a partner that not only has a deep understanding of our industry, but also shows a continuous track record in constantly growing companies they had acquired through best practice sharing and targeted investments into their growth areas."

In future, Sicap will become a part of the Volaris Communications Vertical business portfolio which includes technology brands such as Incognito Software, Netadmin Systems, Active Broadband OSS, Tarantula Global Holdings, Telepin Software and WDS Mobile. (*Vodacom Lesotho deploys Sicap device management platform – News p6.*)

New distributors for Rajant and Cambium

In separate deals, Rajant and Cambium Networks have appointed new distributors for their products across the region.

In January, Minerva announced an agreement to bring Rajant's *Kinetic Mesh* wireless networks to companies in Africa and the Middle East. The companies will target shared industry sectors, such as: government and public safety; military; oil and gas; and transportation. Minerva also promises to create new exposure for Rajant in other verticals, such as hospitality.

From its head office and logistics centre in Dubai, Minerva serves growing markets in the Middle East, GCC, sub-Saharan Africa, North Africa, Pakistan and Afghanistan. The company has resellers and deployments in a number of countries, including UAE, Saudi Arabia, Morocco, Oman, Pakistan, amongst others.

"Minerva will help Rajant penetrate key markets across their areas of operation, as well as introduce us to new sectors that have yet to benefit from our advanced networking capabilities," says Chris Mason, Rajant's director of sales for EMEA.

Minerva CEO Alexander Allen adds that Rajant's InstaMesh networking software and Kinetic Mesh technology means his company can now offer a mission-critical solution that brings mobility to the table. He believes this will help Minerva's African and Middle Eastern customers address many of the industrial wireless communications challenges that standard fixed networks and Wi-Fi mesh are "unable to overcome".

NEW APPOINTMENTS

Date	Name	New employer	New position	Previous employer	Previous position
24/10/17	Wael El-Kabbany	Microsoft	MD commercial enterprise MEA	BT	VP MENA
24/10/17	Mark Chaban	Microsoft	GM, CTO specialist technical unit MEA	Microsoft	Senior director of education MEA
1/11/17	Ihab Foudeh	Microsoft	GM public Sector MEA	Microsoft	Head of services MEA
2/11/17	Steve Mills	Newtec	Global VP sales	Head of global sales & marketing for secure communications	Airbus Space & Defence
14/11/17	Ammar Alkassar	NA	NA	Rohde & Schwarz Cybersecurity	Stepping down as MD & CEO
14/11/17	Reik Hesselbarth	Rohde & Schwarz Cybersecurity	Acting CEO	Rohde & Schwarz Cybersecurity	CFO & second executive director
27/11/17	Toby Robinson	Avanti Communications	CCO	Eaton Towers	CCO
4/12/17	Nils Katla	–	–	VEON	Supervisory board member. Stepped down following Telenor's decision not to have a board representative.
20/12/17	Samer Halawi	Intelsat	CCO	OneWeb	CCO
21/12/17	Jim Simpson	ABS	CEO	Aerojet Rocketdyne	SVP for strategy & business development
23/1/18	Derek Hosty	Openet	Head of actionable data solutions business unit	Telenor Group	Director of technology strategy, data & analytics
31/1/18	Åsa Tamsons	Ericsson	SVP & head of business area emerging business	McKinsey & Company	Partner, Stockholm office
1/2/18	Jan Karlsson	Ericsson	Acting head of business area digital services	Ericsson	Head of solution area BSS

Meanwhile, Cambium is hoping to further extend its reach in Africa as well as in Europe with networks and security specialist distributor, BeIP. The France-based firm will offer the vendor's entire product range to customers in France and Francophone Africa.

BeIP marketing manager Houssine Tahtah says: "The richness of Cambium Networks' portfolio means we can cover all communication infrastructure requirements, from connecting a camera installed in a car park to providing internet coverage in an unserved area or constructing a secure broadband link."

DragonWave saved by Transform-X

DragonWave has been acquired by Transform-X for an undisclosed sum. The firm will operate under the name DragonWave-X with Hans B. Amell as its new CEO and Marcus Andersson as executive vice president of marketing and sales.

US-based Transform-X is a privately held company and claims to own "advanced" waveform, software and hardware technologies for high-capacity microwave radio, satellite radio, broadcast and other RF communications.

Its acquisition of DragonWave follows months of uncertainty *(see Wireless Business, Sep-Oct 2017 issue)*. Earlier in 2017, the Canadian microwave backhaul specialist de-listed from the Toronto Stock Exchange (TSX) and NASDAQ, and saw a number of board resignations. The Ontario Superior Court of Justice appointed a receiver and approved an expedited sale process for the firm's business and assets.

Transform-X announced its takeover in early October 2017 and finalised the deal by mid-month, thereby concluding the receivership process.

DragonWave CFO Patrick Houston pointed out that the company continued to operate "business as usual" during the sales process, and expected all current orders and new orders to be delivered as usual.

According to reports earlier last year, DragonWave had been struggling to repay debts of CAD17.2m, and had been trying to pursue alternative financing.

INVESTMENTS, MERGERS, ACQUISITIONS

Date	Buyer	Seller	Item	Price	Notes
31/10/17	BICS	TeleSign	Company	USD230m	BICS claims the completion of its acquisition of the US provider of authentication & mobile identity services to digital service providers creates the world's first end-to-end CPaaS provider.
23/11/17	Marlink	OmniAccess	Majority stake	Not available	Marlink's investment is backed by Apax Partners but financial details have been withheld. Marlink says OmniAccess' existing management team will remain unchanged & continue to keep a "significant shareholding". It adds that the new combined maritime VSAT services company generates almost USD500m in revenues, employs about 1,000 people, & operates global infrastructure supporting an install base of more than 4,000 VSAT vessels.
1/12/17	ARRIS International	Broadcom Limited	Ruckus Wireless & *ICX* switch business	USD800m + extra cost of unvested employee stock awards	Originally announced in March 2017, ARRIS has now completed its acquisition of both Ruckus Wireless & the *ICX* switch business from Broadcom. Dan Rabinovitsj – previously COO of Ruckus – will lead a new ARRIS Enterprise Networks business segment.
13/12/17	Flexenclosure	European Investment Bank*	Loan	EUR10m	*Backed by the European Fund for Strategic Investments, EIB's investment loan will support Flexenclosure's growth strategy as well as R&D activities in its *eCentre* & *eSite* products.
12/1/18	Thales	Gemalto	Proposed acquisition	EUR51 per share/dividend	In a joint statement issued online, the companies said they're making "good progress" in respect of the intended all-cash offer by Thales for all the issued & outstanding ordinary shares in Gemalto's capital. The transaction is expected to close shortly after Thales has secured all customary regulatory approvals and clearances, which is anticipated in the second half of 2018.
17/1/18	Baylin Technologies	Advantech Wireless	RF, microwave divisions & terrestrial antenna divisions	USD49m	Canada-based Baylin Technologies is the corporate head office of specialist antenna maker Galtronics. The company's purchase price for Advantech Wireless includes USD48m & $1m in Baylin common shares at USD3.24 per share.
23/1/18	Digi International	Accelerated Concepts	Company	USD17m	Accelerated Concepts specialises in secure, enterprise-grade, LTE networking equipment for primary & backup connectivity applications. Digi says the upfront cash transaction expands its market reach & range of industrial, M2M cellular routers & network server product lines.

LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
24/10/17	Millicom	Luxembourg	3Q17	USD	1,509	556	NA	1.6% earnings increase from 3Q16. In Africa, the company says it saw "significant improvement" in revenue, buoyed by Tanzania, which reported its strongest rate of growth in more than a year. Completed transaction with Airtel to combine operations in Ghana. The Ghana business has been accounted for as a discontinued operation at 30 September 2017 and will be accounted for as a joint venture from 12 October 2017.
26/10/17	Eutelsat	France	1Q17-18	EUR	349.1	NA	NA	Reported income for quarter down 9.3% & 6.7% like-for-like but in line with expectations. Delayed availability of contracted capacity on *Al Yah 3*, Yahsat's third satellite, impacting Eutelsat's Konnect Africa broadband programme.
27/10/17	SES	Luxembourg	3Q17	EUR	478.5	307.5	NA	Earnings for the period down 8.6 per cent compared to 3Q16 which saw EUR533.3m. Underlying growth impacted by *AMC-9* "health issues" & lower wholesale capacity revenue for fixed data.
14/11/17	Gilat Satellite Networks	Israel	3Q17	USD	69.9	7.1	NA	Income for the period increased compared to USD66.2m in 2Q17, but fell compared to USD78.6m in 3Q16.
18/1/18	Bharti Airtel	India	3Q17	INR	20,319 (crore)	7,587 (crore)	NA	Consolidated total revenues at INR20,319cr., down 8.4% YoY on an underlying basis. Africa revenues up 5.3% YoY (constant currency). Africa EBITDA margin at 35.5%, up 10.8% YoY.
31/1/18	Ericsson	Sweden	FY17	SEK	201.3 (bn)	NA	-10.61	Reported sales decreased by -12%. Sales adjusted for comparable units & currency declined by -7% YoY, partly due to lower LTE sales in mainland China & earlier completion of larger mobile broadband projects in South East Asia, India, Middle East & Africa. As previously stated, write-down of assets was made in 4Q17, with a final impact on the result of -SEK14.5bn.
1/2/18	Nokia	Finland	4Q17	EUR	6,668	NA	0.19	On a constant currency basis, non-IFRS net sales increased 5% & reported net sales increased 6%, with 2% growth in Networks business & 80% growth in Technologies.

Cambium offers the capacity to connect more subscribers

With up to 1.36G throughput capacity, Cambium Networks says its *PTP 550* (*pictured right*) point-to-point backhaul radio enables operators to connect more subscribers and reach new market opportunities.

With spectrum being a precious commodity, the company says the *PTP 550*'s non-adjacent asymmetric channel aggregation capabilities "efficiently" consolidates limited blocks of bandwidth to deliver the capacity demanded by advanced network service providers.

The radio can be set up using Cambium's *LINKPlanner* software. The firm says this provides free network planning tailored to the exact source and destination points on a *Google Earth* map.

It adds that onboard dynamic spectrum optimisation enables the link to monitor performance in real time and automatically make adjustments to maximise throughput.

Cambium has also unveiled the *ePMP Force 300* point-to-multipoint module. With a data rate of up to 500Mbps, the 802.11ac Wave2 device works in the unlicensed 5.1-5.9GHz band, and has a 25dBi reflector antenna for long-range connectivity.

The company adds that its ePMP platform can be used for cost effective high-speed connectivity for various point-to-point applications and eventually as a subscriber unit for a point-to-multipoint network.
www.cambiumnetworks.com

RAN optimisation service with pinpoint geolocation

Network and subscriber intelligence specialist Astellia has added new features for customer experience-based optimisation and increased operational efficiency to its *Nova RAN* platform.

The firm says *Nova RAN* produces round-the-clock network performance maps (i.e. RF coverage, traffic, quality, etc.), from nationwide coverage down to a 50 x 50m precision. To facilitate investigation, the platform generates radio health scores which provide an aggregated view of RF weaknesses per area.

According to Astellia, *Nova RAN*'s classification algorithms distinguish indoor/outdoor and static/mobility calls. The firm claims it precisely locates capacity hotspots, coverage holes, pilot pollution and VIP areas.

This is said to enable mobile operators to get a clear picture of the customer experience and hence target and prioritise network operations such as new site or feature introductions, small cell planning and tuning of parameters.

Astellia also says that with the enhanced version of the platform, radio engineers will benefit from faster investigations thanks to the automation of massive and recurring tasks like the detection of missing neighbour relations, cell overshooting or crossed-sectors.

It adds that *Nova RAN* also offers the possibility to export geolocation data into the operators' Big Data pool to implement additional use cases on top of the existing ones proposed by the solution.
www.astellia.com

OneAccess routers offer fibre speed performance

OneAccess (now part of EKINOPS) says its new *ONE* series of routers enable operators to deliver up to 300Mbps symmetric services "without the cost, disruption and delay of introducing fibre".

The devices integrate Broadcom's latest *BCM63138SE* chipset, and also feature especially designed software from OneAccess to support the latest evolutions of VDSL2 technology.

For instance, VDSL2+ (Profile 35b) offers downstream rates up to 300Mbps over distances less than 250m and upstream rates up to 100Mbs over a single copper wire pair. Meanwhile, bonded VDSL combines two or more classical VDSL2 line pairs and, over a given distance, multiplies the available bandwidth by the number of bonded pairs.

The product range also includes options to deliver fibre connectivity to support fibre with copper backup deployments, as well as deliver high-speed FTTP at up to 1Gbps.

The new line-up includes the *ONE521* and *ONE531*, the first OneAccess products to run on *OneOS6*, the company's recently launched NETCONF-ready operating system.
www.oneaccess-net.com

Rohde & Schwarz "pioneers" NB-IoT field measurements

Rohde & Schwarz (R&S) says it has come up with the world's first accurate LTE/NB-IoT coverage measurement solution.

The company says the new solution is based on its "field proven" *ROMES* drive test software for measuring network quality with scanners and test mobiles in all mobile technologies. It can be used in combination with the vendor's *TSMW*, *TSMA* and *TSME* scanners.

In tests, R&S says it was able to demonstrate the verification of device/network interworking by connecting NB-IoT user equipment to *ROMES*. Apart from RF tests, it says this setup provided further metrics such as downlink and uplink latency and throughput, and protocol behaviour.

According to the firm, using a scanner is the only viable solution for accurate and comprehensive measurement results. Unlike testing with NB-IoT user equipment, it claims scanner-based testing is passive and captures the measurement data directly from the RF air interface, including receive power levels and CINR (carrier-to-interference-and-noise-ratio).

Another difference between NB-IoT and LTE user equipment concerns cell reselection. R&S says NB-IoT user equipment supports this mechanism only in idle mode, and this affects the abilities of the equipment to perform continuous and accurate RF coverage measurements.
www.rohde-schwarz.com

Metacom claims Africa's most advanced enterprise router

Metacom claims it has come up with one of the most advanced enterprise routers currently available.

According to the South Africa-based commercial and industrial communications provider, the *MC6000* was developed using its 15 years of experience in the retail industry. It says the result is a device capable of managing multiple services on a single hardware platform, across both remote and regional retail sites.

The company says its router can handle multiple fibre connections as well as ADSL, GSM and Wi-Fi for "seamless, speedy throughput". It also has HDMI connectivity so it can directly drive video.

Users can start with the basic router functionality and then add in services such as low-internet video or radio as they progress. The *MC6000* includes expansion slots for internet video and radio, along with digital inputs and outputs.

Additional features include two SFP slots, support for 100BASE-LX,100BASE-SX and 1.25G SFP modules, two USB ports, a 1GHz ARM *iMX6S Cortex A9* processor, and a Wi-Fi module with support for multiple SSIDs and diversity antenna.

The *MC6000* also has dual power supplies for rural areas where reliable power is a challenge.

www.metacom.co.za

Motorola promises uninterrupted radio coverage to keep teams connected

Motorola Solutions claims its *SLR 1000* repeater enables service providers to easily extend their network through dead zones and across remote locations so that everyone is within reach.

Unlike traditional repeaters, the firm says its new radio can be deployed outdoors or indoors and offers the flexibility to be used in places such as parking garages, subway tunnels, and other potentially damp and wet locations. It is IP65 rated for dust and water protection, and its "compact" dimensions of 279.4 x 228.6 x 101.6mm are said to add to the ease of installation. Operating temperature is specified at -30° to 60°C.

Wherever the device is deployed, Motorola reckons users can put their "maintenance and repair worries aside", as a fanless design means less noise, less particulate intrusion, fewer components and all while delivering more coverage.

The *SLR 1000* has been designed to work with both conventional and trunking systems that support voice and data, and has a frequency range of 400-527MHz.

The vendor says additional functionality is possible using optionally available accessories, such as a small mountable antenna, duplexer, or antenna switch for Extended Range Direct Mode. The latter also enables the use of the repeater in conventional systems.

www.motorolasolutions.com

PCCW launches Restoration On Demand

PCCW Global has launched a new service that enables users to rapidly re-route their connections to an alternate network path in the event of an undersea cable failure.

Restoration On Demand leverages PCCW's SDN capabilities and "extensive" fibre network to enhance resilience and service performance in order to meet the needs of enterprises worldwide.

The service is charged for on a daily-usage basis and can be accessed via an online portal. Once activated, PCCW says the backup capability allows capacity to be provisioned automatically by its systems in near real-time and with no human intervention required. Link setup, traffic restoration and billing are automatically activated.

Once the primary circuit has been repaired, customers can revert to their original cable service whenever they choose.

PCCW Global adds that *Restoration On Demand* complements its existing always-on protected *International Private Lease Circuit* service by offering customers a quick-to-deploy and cost-effective business continuity service alternative.

www.pccwglobal.com

Also look out for...

Lasers used to alter optical properties

Scientists say they are one step closer to technology that could result in electrons being replaced with photons, solving the looming 'speed limit' for electronic gadgets.

According to researchers at Heriot-Watt University in Scotland, electronics have had such long-term success mainly due to how much smaller devices have become and how robust they are, even when made from a very limited number of fundamental materials. These last two features have traditionally been seen as weaknesses in photonics.

But for the first time, nanophotonics researchers have now shown how aluminium zinc oxide (AZO) reacts to light when simultaneously shined with ultra-fast laser pulses of different colours. Since AZO is a compound used in touchscreen technology, the discovery could have an immediate impact for the fabrication of novel photonic components.

The team used one laser beam to explore the optical properties of thin films of AZO, while two different trains of ultra-fast light pulsed at two distinct frequencies (or 'colours') were shone on the material. The experiments were conducted first by using one colour at a time, and afterwards with the combined use of the two laser sources.

It's claimed the recorded effects – which last for a 10,000th of a billionth of a second – revealed that it was possible to "drastically" and reversibly alter the optical properties of the material by using laser light with different colours.

"Each colour can induce strong and ultra-fast alteration on both the transparency of the material and the speed at which light propagates into it," says assistant professor Dr. Marcello Ferrera. "Electronics have almost reached their capacity and potential; our findings represent a remarkable step towards the full miniaturisation of photonic components."

It's claimed this could have "striking" consequences for the design and fabrication of optical computing and telecom devices.

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Building Africa's digital future

Value-added services: follow the money?

When it comes to VAS, RAHIEL NASIR wonders if there's life beyond mobile money for MNOs struggling with flatlining ARPUs.

Mobile operators need to offer their customers more than just basic voice and text services if they want to boost average revenues per user. And here, there can be little doubt that the continent leads the way in one particular aspect – mobile financial services.

MFS, especially mobile money, has long been hailed as an African success story, and the one operator whose name consistently comes up here is Safaricom. In March 2017, the cellco marked 10 years of *M-PESA* in Kenya with the publication of a study that revealed that when the platform was first introduced in March 2007, it attracted 20,000 customers. By March 2016, that had grown to more than 16 million users, while the value of transactions had risen from KES10.3m (USD101,764) to KES5.2 trillion (USD5.1bn) over the same period.

Rwanda is perhaps hoping to emulate that success as it seeks to move from a cash-based economy to a digital one. According to Ecobank, the number of digital transactions in the country increased by 11 per cent from 1.37 million in the first half of 2016 to 1.53 million in 1H17.

Speaking at the *Africa Tech* summit that took place in Kigali in February 2017, Nshuti Lucy Mbabazi, assistant VP of push payments at the Ecobank Group, said Rwanda has witnessed a 26 per cent increase in the volume of digital transactions, from 8.6 million in 2016 to 119 million in 2017. She said this represents a 33 per cent rise in value from RWF469bn (USD552m) to RWF622bn (USD732m).

Ecobank said millions more people on the continent now have access to financial systems thanks to cashless systems using digital technology, and more are seeing the benefits of mobile banking.

"Going digital provides not just better services and connectivity, but enables banks and businesses to unlock productivity and play a role in development," said Mbabazi. "Africa is now at the forefront of financial technology with 57.6 per cent of the world's 174 million active registered mobile money accounts (100.1 million) in sub-Saharan Africa. Fintech in Africa is predicted to grow from USD 200m to US3bn by 2020."

Anil Krishnan, head of Africa Region at India-based global VAS specialist Mahindra Comviva, believes mobile money's role in the socio-economic transformation of millions of people on the continent can no longer be ignored. "In Kenya, Tanzania, and Zimbabwe, mobile money is banking the unbanked, which is allowing them to pay their bills on time, access government services, send their children to school, secure micro-credit and loans, [etc.].

"Mobile money is also helping in the preservation of old customs and traditions. For example, it is helping to digitise traditional savings club in Zimbabwe known as *Maround* or *Mukondo*.

Cashing in

Thomas Chalumeau, MEA strategy director at Orange, says Africa still has a low banking rate, and that mobile-based services are heavily relied upon given the lack of physical infrastructure compared to the huge appetite for services.

But he also points out that although providing mobile financial services has been the most prominent and pervasive of diversified services in Africa, it is certainly not the only one, and nor is it the only one that's rapidly growing.

Vaibhav Mehta, SVP of new business at Sterlite Tech – Software, agrees that mobile money and mobile financial services are the fastest-growing segments of the industry, adding that this not just in Africa but across the world. "It is truly said that

fortune lies in the bottom of the pyramid, and so banking the unbanked is good for African MNOs.

Tola Mobile is a UK-headquartered mobile payment service provider with offices in Ghana, Kenya, Tanzania and Uganda. The company lists Airtel, MTN, Mcel and Vodacom as some of its mobile customers in Africa, and last October it announced that 15 million monthly transactions are now processed across the continent via its *Tola Wallet* platform.

Simon Pepper, Tola Mobile's head of product, reckons VAS has long been associated with 'premium services' from European MNOs who wanted to build out their product portfolios and grow ARPUs through additional services on top of just minutes and texts. He believes they tried to introduce services with high price points, such as MMS and LBS, only to find that OTT services have relegated them to just bit pipe providers.

But in Africa, Pepper says MNOs in Africa have a different opportunity. "The customer's handset is so important because it holds their funds through mobile money wallets. It is also fully inclusive in that financial services and a payment method/instrument can be provided to anyone in ownership of a phone, as opposed to them holding a bank account, credit cards, etc."

According to Pepper, mobile subscribers in sub-Sahara Africa are not as available to OTT service providers as smartphone penetration is not so high. "The use of the Nokia 'candy bar' is still how many people make and receive calls and texts, and access their mobile money wallets. Plus, data packages are expensive and limiting."

Few would dispute that 'banking the unbanked' is a worthy quest. But is there life beyond mobile money for African MNOs who want to cash in on other kinds of value-added services? Of course, MFS and VAS are not mutually exclusive and one can lead to the other.

Pepper says that unlike developed markets, Africa does not have the widespread availability of desktop PCs, laptops or tablets that can offer a platform for mass advertising and commerce, so there remains a huge opportunity to address the MNO's customer base with digital marketing and services.

Mahindra Comviva says it is beginning to see its operator customers move away from 'traditional' VAS to mobile commerce. "It is mainly because mobile money and mobile financial services are solving real problems on the ground that have a bearing on the day to day life of the ordinary people," says Krishnan.

As an example, he says when Tanzania was going through a 'small change' problem, a leading telecom operator stepped in with an innovative solution using contactless payments technology. Krishnan adds that the growing popularity of micro-lending is following a similar pattern in many African countries. "There was a gap in service (in this case, credit) which was filled by mobile money where the subscriber's airtime usage helped in qualifying a credit limit."

"The era of voice and SMS as the main growth areas for operators is slowly diminishing."

Meanwhile, Orange's Chalumeau believes providing VAS across the continent is more important than ever before because it is a land of continuing growth. "If you look at the population, it is younger than other regions in the world (average age is less than 30), and they are driving a huge demand for digital services. Furthermore, the middle class is developing and represents a third of the population, and more families are online."

PHOTO: WORLDPAY

Mobile money and mobile financial services are the fastest-growing segments of the industry.

Orange says providing VAS across the continent is more important than ever before because it is a land of continuing growth.

Chalumeau says Orange is developing new services and usages in areas as diverse as B2B, e-commerce, energy, e-health, agriculture, cyber security and digital services for education and teaching, just to name a few. He also cites energy as an example: "In Africa, very few companies have, until now, thought of deploying an electricity grid in rural areas. But today, for USD50 to USD200, you can buy a kit including solar panels and a battery."

Lumos Mobile Electricity Service is doing something similar in Nigeria's energy market after launching its service in partnership with MTN last year. The Abuja-based firm recently announced that it has now deployed its 60,000th *Y'ello Box* device that enables users to pay for solar electricity in their homes via their mobiles. As a result, Lumos claims more than 300,000 people across Nigeria are now benefitting from affordable, reliable, clean electricity.

The *Y'ello Box* system comprises an 80W solar panel and cable, an eight-socket power unit, USB mobile phone adapter and two LED lights. Once an MTN subscriber joins the service, they pay their monthly subscription fee for power from their mobile airtime account by texting a simple code. Lumos points out that there's no need for mobile money, bank accounts or expensive machines.

Chalumeau continues by saying that mobile operators also have a role to play in the energy market in regions that are already electrified. Here, he says cellcos such as Orange can support smart meters to help energy providers combat the big issue of electricity theft and fraud. Such meters are also designed to help customers manage their energy spend. "For example, it is possible for a bar owner to purchase two hours of electricity to enable them to broadcast a football game, which can be paid for by mobile payment," says Chalumeau.

Away from energy, he goes on to say that around 400,000 farmers in Mali currently rely on mobile applications to check weather forecasts or track market prices for selling their crop or purchasing fertiliser.

There is no doubt that the rise in data traffic will result in the continued development and launch of innovative VAS. In fact, there is a widely regarded view that operators will actually have no choice but to do this. As is all too familiar in mobile markets the world over, stiff competition and declining revenues from SMS and voice have led to collapsing ARPUs. Therefore, in order to stay relevant and profitable, MNOs are left with no other option but to offer VAS to monetise their network investment.

"According to Persistence Market Research, the global mobile VAS market is set to reach USD698,900m by 2022," said Sterlite's Mehta. "In the past, developing economies have followed the trend laid by the developed economies, and that holds true for Africa as well. And so the region's MNOs have to invest in upgrading their network, systems, and processes to offer VAS in their region."

Cashing out?

Earlier, Tola Mobile's Pepper spoke about the "huge opportunity" MNOs have to address their customer base with digital marketing and services. However, he also warns that the subscriber will quickly become "desensitised and overcome", so careful targeted advertising, based on personal profiling, behaviour, location and preference is certainly the way forward.

"The use of the Nokia 'candy bar' is still how many people make and receive calls and texts, and access their mobile money wallets."

Mahindra Comviva's Krishnan agrees: "The era of voice and SMS as the main growth areas for operators is slowly diminishing. They need to focus more on non-voice revenues through locally relevant value-added services to grow their incomes."

Here, more needs to be done in Africa in order to create the ecosystem that is needed to develop locally relevant VAS, and Krishnan calls for more collaboration between the various stakeholders to create long-term benefits.

"For example, silos in mobile money services are affecting its reach and scope. In this regard, greater account-to-account interoperability can help the users of different mobile money services to move funds between all mobile money and bank accounts."

Pepper also highlights the importance of interoperability, particularly when it comes to running VAS on any type of phone. "The ecosystem needs to be established so that everyone can avail of the service, and that it can operate on every type of mobile device handset, in good and poor coverage situations," he says.

That requires a solid mobile device management (MDM) according to Sicap which specialises in this area. Magnus Moller Petersen, its EVP of sales and marketing, says operators are not knowledgeable about what is needed here and that MDM is not a focus area for them. "If you buy this kind of solution to have in-house, you need to have dedicated people working with it. Otherwise, it will be a black box and operators will lack the knowledge to maintain and manage that solution.

"It is very old school to do these things with this kind of solution. It needs to go into the hands of the vendors or those who can deliver a managed service. You minimise your operational costs and have a reliable partner that you can engage with and get help and training. The operator can also have discussions with the vendor about how to maximise data penetration and create strategies. That is the way forward."

Orange believes that encouraging, supporting and nurturing local, entrepreneurial innovation is essential. Chalumeau says that's why the company created new R&D centres and

development teams, including *Orange Fab*, its accelerator programme that offers selected startups three months of support to allow them to develop their products and services. In Africa, Orange has opened incubators in Senegal, Mauritius, Niger, Mali and Guinea. In June 2017, the operator also launched a new investment initiative of EUR50m devoted to startups in Africa (*see News, May-June 2017*).

"Orange's investment in Africa is around EUR1bn each year, making us one of the largest private investors on the continent," says Chalumeau. "We also invest heavily through research and development because we know that by boosting growth in Africa, we can create new income not just for Orange but for the countries. We help to create jobs, support locally grown talent, help skills development and create new opportunities and usages for Africans.

Tola Mobile says it works extensively with MNOs in Kenya, Tanzania, Uganda, Ghana, Mozambique, Rwanda and South Africa to integrate its platform with their networks. "Our developers have already integrated and deployed additional services in each of these countries, processing many millions of financial transactions and SMS messages, as part of service delivery offerings to the subscriber base in these countries," says Pepper.

As well as MNO, the company's platform is also used by other digital service providers. For example in Tanzania, online sports betting company Mkakabet is said to be using *Tola Wallet* to streamline mobile payments, fuel expansion and simplify admin.

Tola claims its services enable companies looking to receive payments from mobile money. It says a single API connection allows organisations to receive and make real-time payments at the same rates as bank or credit card transactions. The company adds that it can also reconcile transactions that would previously have been delayed or even potentially lost when mobile network outages and downtime occur.

The future

On the subject of network infrastructure, without greater access to mobile broadband and more affordable smartphones, does Africa's VAS future look bleak?

Sterlite's Mehta says high-speed internet and the affordability of smartphones are the basic infrastructure requirements to launch innovative VAS services anywhere in the world. Chalumeau agrees when he says that smartphone penetration and access to very high-speed broadband networks are key for a better customer experience. But he also points out that operators can and have already deployed VAS through USSD and SMS and call centres to bring value to users. "These are equally important as they enable us to keep providing valuable services to customers while we continually improve network bandwidth, coverage and access to smartphones for our African customers."

Mahindra Comviva's Krishnan supports this view when he says that USSD is a key growth driver in VAS, adding: "USSD-based services are allowing Africa's VAS providers to offer products to both feature phone as well as smartphone users."

Pepper is also in no doubt that Africa does not necessarily need mobile broadband and sophisticated phones to capitalise on VAS. "We support communication methods that operate on all handset regardless of being smartphones or not. In fact, for many subscribers, their package doesn't include a data provision thereby rendering a smartphone and its focus on internet-based communication null and void. ■

WHERE THERE'S COMMUNICATION, THERE'S GROWTH

Avanti Communications' newest High Throughput Satellite, HYLAS 4, is a key milestone for the company as it endeavours to expand its broadband connectivity across EMEA, especially Sub-Saharan Africa.

David Bestwick, Chief Technical Officer, discusses HYLAS 4 and how it is bringing the highest quality Ka-band satellite capacity to Africa.

What regions will HYLAS 4 cover?

HYLAS 4 will join our existing HYLAS fleet and will double our capacity. It will cover over 35 countries across Africa using 64 spot beams and 4 steerable beams that can be pointed to existing regions, providing additional capacity or steered to new regions, opening up new markets.

What services will HYLAS 4 offer?

HYLAS 4 will provide reliable and cost-effective satellite capacity for a broad range of businesses. It will set a new standard for affordability and flexibility for Internet Service Providers who require broadband for homes and SMEs, as well as complex connectivity solutions for large enterprises, facilitating applications such as IP trunking, MPLS and Business Internet Continuity.

For Mobile Network Operators, HYLAS 4 will enable them to extend and improve their 2G, 3G and 4G networks, through our smart and proven Satellite Backhaul services.

We work closely with local governments and organisations to deliver high speed satellite broadband to schools and local communities, enabling access to e-learning and digital opportunities. Our network also satisfies the requirements of the security and defence sector by providing ultra-reliable and secure communications. Lastly, HYLAS 4, along with our existing coverage, enables us to provide capacity infill for other satellite operators, who may have gaps in their coverage.

What makes HYLAS 4 technology unique?

HYLAS 4 uses the latest Ka-band technology for higher throughput and greater efficiencies.

Ka-band satellites have been designed to deliver high speed data services while offering significant advantages over Ku-band and C-band capacity. The new satellite will provide low cost broadband capacity due to the efficiencies resulting from the use of small spot beams which concentrate power and re-use spectrum. This also means that end-user terminals are smaller, cheaper and easier to install. And with higher capacity than regular Ku-band satellites, HYLAS 4 is a future-proof solution that can satisfy any growth in demand. Moreover, HYLAS 4, as part of Avanti's extensive network, will provide a sophisticated offering allowing our customers to purchase an entire end-to-end, managed service from a single source.

Tell us more about Avanti

Avanti connects people wherever they are. We are experts in delivering world-leading Ka-band communications to our customers across EMEA, even in some of the most remote and challenging places.

It's also important to point out that not only do we own and operate a fleet of Ka-band satellites but we have also invested on the ground. Avanti has built diverse Gateway Earth Stations (GES) in countries such as UK, Germany, Cyprus, Turkey, Nigeria and South Africa, with further GES planned for Senegal and Kenya. This enables us to not only meet the needs of having data traffic land in-country, but also creates local employment opportunities in ICT, engineering and communications, as we work closely with local partners.

By increasing broadband access by 10%, it can enable GDP to grow by 1.4%*; HYLAS 4 covers 665 million people who could get access to the latest digital opportunities, which is why communication is so important for growth.

** ITU Report – Impact of broadband on the economy*

For more information, email **contact@avantiplc.com**, visit **www.avantiplc.com/HYLAS4** or call **+44 (0) 207 749 1600**.

avanti HYLAS AFRICA 4

Something in the air

Smile used Ericsson's services and hardware, including its integrated AIR (Antenna Integrated Radio) antennas, for an LTE network in Nigeria. It's claimed the rollout in Lagos was completed in record time of just one month.

How technology specialists and expert vendors are helping operators and service providers to build and enhance their wireless communications networks across the continent.

Founded in 2005 and headquartered in Mauritius, Smile Telecoms provides mobile broadband services in Nigeria, Uganda and Tanzania. The company is also currently in the process of installing network equipment in the DRC and is aiming to launch commercial services there later this year.

Smile claims it was the first operator to launch a commercial LTE network in West Africa when it introduced 4G in Nigeria in March 2014. After previously gaining a license to use the 800MHz spectrum band, Smile began a three-year LTE network deployment project in partnership with Ericsson.

The vendor's packet core solution was deployed in more than 1,100 LTE sites nationwide. The first phase of the rollout was completed in Ibadan in February 2013, making Smile the first operator to deploy LTE technology in the region. Commercial services were launched in Lagos a year later, followed by sites in Port Harcourt, Abuja, and across the country.

Ericsson was responsible for network design, installation, implementation and integration. For the first time in West Africa, the company says it deployed its compact and fully integrated *AIR* (*Antenna Integrated Radio*) antennas which, it claims, offer a fast rollout time as well as better coverage and throughput. A project team of around 15 implemented the full core network, 75 LTE radio sites, and around 80 microwave transmission links. Ericsson says the rollout in Lagos was completed in record time with a deployment period of just one month.

Prior to introducing LTE in Nigeria, Smile claimed it had already become the first operator in Africa to launch a commercial LTE network when its deployment in Tanzania went live in May 2013. By the end of 2015, the company claimed it had the biggest 4G mobile broadband network on the continent, and it then turned to rolling out voice and messaging using VoLTE technology.

This time, it worked with UK-based telecoms signalling interconnect specialist Squire Technologies. At the heart of the VoLTE solution was the vendor's *SVI-SBC* session border controller which was rapidly deployed to support LTE pre-conditions, enabling optimal bandwidth allocation and rollout of VoLTE handsets. According to Squire, its session border controller provides a uniform network interface with comprehensive security features in next-generation and VoLTE IMS networks.

With high volume transcoding and support for multi-device, the company says single number services allowed Smile to offer off-net voice and messaging. At the back end, Squire deployed its media and messaging gateways to ensure what it describes as a "seamless" interconnect between the VoLTE network and legacy 2G/3G/PSTN.

By the end of 2015, Smile claimed it was running the continent's biggest 4G mobile broadband network. It then turned its attention to VoLTE.

Wireless network withstands disastrous blaze

Lasernet was established in 2003 to provide South Africa's media industry with high-speed connectivity and facilitate large-scale data transfers between media agents and broadcasters.

At that time, the only cost-effective options available were very limited. For instance, Telkom's Diginet lines were said to be very expensive to install and meant that only large companies could justify the expense.

Lasernet therefore saw a gap in the market for providing reliable and high capacity connectivity at an affordable price. The company set about creating an entirely wireless-based infrastructure in three major central business districts: Cape Town, Johannesburg and Durban.

Over the following years, Lasernet deployed a nationwide platform consisting of a combination of free space optics links from Canada-based SONA, and additional radio equipment. While the lasers operated at 100Mbps they were susceptible to adverse weather conditions such as fog and required continuous backup from a radio unit that only delivered 20Mbps.

As the project moved on and technology improved, Lasernet gradually replaced the infrastructure, and after only a few weeks of successful testing in the field, it decided to standardise its core infrastructure on InfinNet Wireless' solutions.

In 2014, Lasernet was awarded a coveted project to lay new fibre infrastructure for the entire municipal district of Knysna in South Africa. Running concurrent with the fibre rollout, the company was able to further extend its wireless infrastructure using InfiNet's solutions to provide coverage into Knysna. The area had only had ADSL connectivity for many years, and so the promise of fast, reliable and affordable wireless connectivity was eagerly welcomed.

Lasernet's coverage currently spans backhaul links ranging from 5km to 27km. The new platform has made use of multiple high sites, including tall buildings, masts and water towers in the coverage area. InfiNet says some 70 per cent of the town has been reached using high capacity base station sectors, and there are currently more than 120 end users operating across this broad base of the Lasernet network based on the vendor's equipment.

In June 2017, Knysna was devastated by a runaway fire that burnt for weeks. Most of, if not all, the copper and fibre infrastructure in the area was destroyed, including the telephone and internet exchanges. During the height of the disaster, an emergency command centre was set up to deal with the firefighting and relief activities.

Given that the operation of the legacy fixed telecoms network was severely hampered due to the damage inflicted by the fires, Lasernet's wireless infrastructure was used to coordinate the activities of all the organisations working in the area, and provided them with a reliable network for voice communications, data transfers and video transmission.

In 2017, Knysna in South Africa was devastated by a fire that raged for weeks. Virtually all of the copper and fibre infrastructure was destroyed, but the wireless links that had been installed at high sites remained operational throughout the disaster.

Despite the intense heat and smoke from the fire, InfiNet says its wireless-based infrastructure remained unaffected during the disaster, and that there was no effect on stability or throughput. The vendor adds that "seamless and uninterrupted" wireless connectivity enabled the municipality to provide its relief efforts which included communicating vital emergency information via social media and website updates to residents and visitors.

Alan Otto of Lasernet says: "Clients in South Africa are normally wary of using wireless connectivity for mission critical applications because of their past experience when using other brands, especially in adverse weather conditions and natural disasters. However, InfiNet Wireless changed all that."

Critical comms with Hytera

Hytera has been making progress in Africa's critical communications market over recent years, with two separate deployments being particularly noteworthy.

The first is in Nigeria where Briscoe Technologies is the owner and operator of a 100 per cent IP-based TETRA network. It is the largest network of its type in the country and mainly covers Lagos, Abuja and Port Harcourt.

Within these areas, the system is constantly growing to provide instant communications service to Briscoe's more than 10,000 subscribers. These come from multiple industries, including sectors such as oil and gas, public safety, and transportation. With increasing user demands for higher security and stability, as well as broader coverage in areas like Port Harcourt and Rivers State, Briscoe needed a new exclusive communication system based on a customised design.

In 2015, Briscoe contracted Hytera to provide professional services including network topology design, site selection, commissioning, training and local technical support.

Hytera says its TETRA system adopts a modular design for easy installation and maintenance. The vendor claims to offer the "highest" standards and product specifications to ensure its hardware can withstand hot, humid and other extreme environments.

The complete TETRA solution delivered to Briscoe included 30 base stations and 2,500 terminals with system control, dispatch and PABX service. During the first phase, 15 base stations were used to replace the existing network and extend Briscoe's coverage to parts of the Niger Delta region where the oil and gas industry is located. During phase two, the network was extended to cover most of the remaining parts of the Niger Delta region as well as Abuja Federal Capital Territory. By mid-2015, all sites had been implemented and were operational.

Meanwhile in a separate deployment, Altech Fleetcall worked with Hytera to migrate its radio trunking network from analogue to digital.

Altech Fleetcall is a division of Altech Radio Holdings (ARH) and part of the Altron TMT Group which is said to be the largest privately owned converged solution provider in Africa.

Altech Fleetcall is said to be the only company in South Africa with a national radio trunking communication network. The company has been in operation since 1994, and since then it has continually expanded and maintained its MPT1327 network with in-house expertise. It currently operates over 170 sites nationally, providing coverage to more than 80 per cent of the country's economically viable areas.

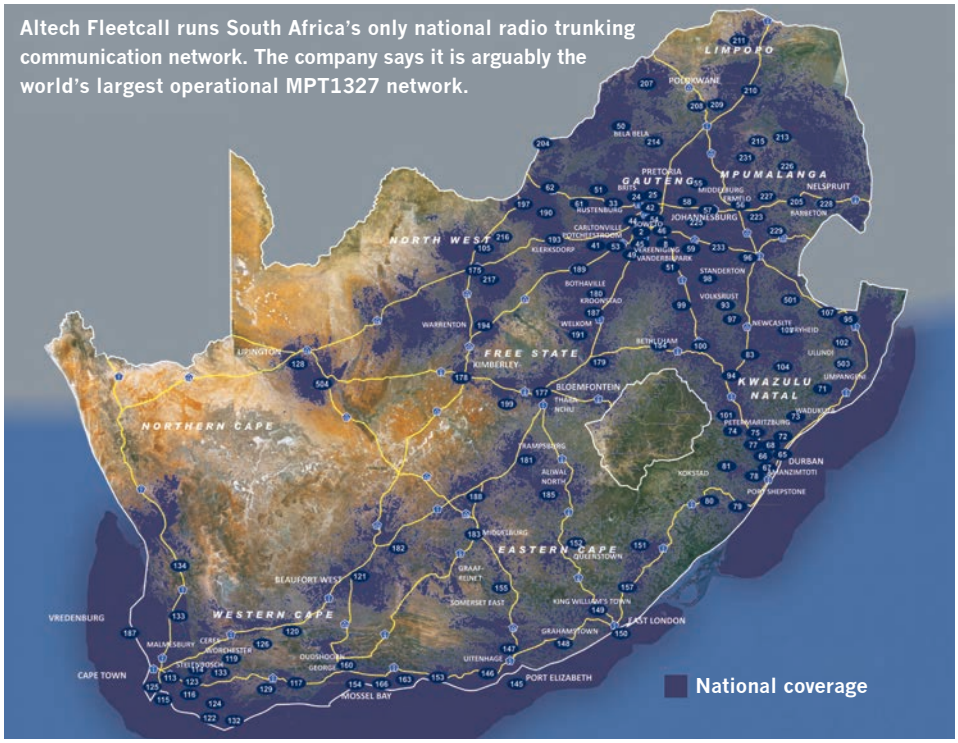
The firm aims to be the connectivity provider of choice for its customers, which is why it chose to switch to a digital system, as ARH MD Brett Nash explains: "The time had come for us to invest in an upgrade of our network. We explored a number of options to upgrade the predominantly analogue network to a digital one to provide our existing and potential customers with the tremendous benefits of digital radio technology."

Following a three-year planning and market investigation process, Altech Fleetcall chose Hytera's DMR (digital mobile radio) to replace its existing analogue trunking system. Hytera says its expertise ensured that the system and terminals could be customised according to Altech's specific frequency and feature requirements.

By early May 2015, the first phase of the DMR network rollout had been completed in Gauteng. This initial portion of the updated network provides coverage stretching from Sasolburg to Rustenburg and from Hammanskraal to Devon.

Speaking at the time, Nash said: "We began the modernisation of our analogue networks some six months ago in order to offer our customers both digital and analogue services and to further address all their communication requirements.

Lagos-based Briscoe Technologies owns and operates Nigeria's biggest TETRA network which has more than 10,000 users from multiple industries.



Altech Fleetcall runs South Africa's only national radio trunking communication network. The company says it is arguably the world's largest operational MPT1327 network.

"Altech Fleetcall took the strategic decision to deploy the latest Tier 3 digital radio network system using Hytera's infrastructure to provide an overlay on our existing analogue network."

The upgrade to digital has given Altech Fleetcall a number of unique advantages. These include more efficient use of spectrum, added network capacity, improved voice and data quality, and other features and functionality previously unavailable on the analogue network. Hytera adds that these features include higher data speed, GPS tracking, accelerometer applications, flexible dispatching and multi-level monitoring.

"This new technology provides Altech Fleetcall with numerous opportunities in a number of market sectors where it previously struggled to gain traction due to the limited number of features available on the legacy network," Nash concluded.

Overpowered by towers

Founded in 2010, WIRULink is a licensed WISP headquartered in Johannesburg. The company claims it has expanded rapidly with more than 100 per cent year-on-year growth since 2011 and a subscriber based that saw customers being added at a rate of 150 per month. As a result, WIRULink had to ensure that its infrastructure was able to support all this growth.

The rate at which new customers were joining the WISP's network meant that it had to build three new towers per month. With subscriber numbers expected to increase over the coming years, WIRULink found that trying to increase network capacity by adding new hardware was costly and time-intensive, and still lacked scalability. The company's existing equipment was fully functional but overloaded – customers experienced sluggish upload and download speeds, as well as high levels of interference on five of the towers deployed on its Gauteng network due to the limited 5GHz spectrum.

WIRULink therefore needed a solution that would reinvigorate network performance and improve scalability while supporting its existing previous generation subscriber radios.

The ideal solution would need to overcome hurdles to delivering last-mile service to end users. WIRULink's existing tower sites couldn't connect enough users, and with the hardware it already had, the company couldn't add more sectors on tower sites to increase user capacity without the system suffering from self interference.

After extensive testing of various products and brands, the WISP selected solutions from Cambium Networks for its last-mile network upgrade. Cambium says its software interoperates with other vendors' hardware for smooth integration. Without replacing any equipment, the company says it transformed WIRULink's networking capabilities by adding *ePMP* APs and installing *ePMP Elevate* software on existing subscriber module/CPE hardware.

Riaan Maree, CTO with WIRULink, says: "This saves us time and money, and we can invest our cash flow on expansion and gaining new customers to accelerate our growth."

By incorporating Cambium's ePMP system, WIRULink was able to begin network migration and continue expansion immediately. Furthermore, Cambium says the ease of installation allowed the upgrade to take place in the background, reducing customer downtime.

In April 2016, WIRULink upgraded 90 access points with *ePMP 2000* APs, and continues to switch its previous radios from another vendor with Cambium Force *ePMP 180* and *Force 200* equipment. This hardware is said to reduce opex because it enables higher subscription to fewer radios.

The upgrade involves replacing the equipment on the tower side and linking it to the existing customer radios via a software upgrade.

Maree adds that because *ePMP Elevate* assimilates other vendors' hardware rather than rendering it obsolete, WIRULink can focus its capex spending on core network infrastructure and towers, rather than CPE and radio equipment.

After the upgrade, the WISP's end users noticed increased speed and better signal reliability. "With *ePMP Elevate*, our previously installed radios from another vendor performed just as if they were *ePMP Force 200* radios," says Maree.

All the equipment was supplied to WIRULink by South Africa-based distributor Miro. It claims the *ePMP 2000* proved to be the ideal solution for the issues experienced by WISP for a number of reasons. Miro explains that the system uses *Hypure* technology that features intelligent filtering. This is said to automatically clean up the signals received by the APs and keeps all transmissions clean. *Hypure* also includes smart beamforming which creates narrow, targeted beams to each subscriber, thereby blocking out multiple sources of interference.

"With real GPS synchronisation, self-interference is minimised, enabling the establishment of higher quality customer links resulting in stable, high-throughput connectivity. Together, these features result in excellent network performance in areas with high levels of interference," states Miro.

Marco de Ru, the company's commercial manager, adds that the *ePMP 2000* is backwards compatible with Cambium's *ePMP 1000*, the system deployed by WIRULink earlier in 2016. He says the high-site installation teams were able to upgrade each tower to the new *ePMP 2000*s over a one to one-and-a-half day period.

"Since we run the new equipment in parallel with the previous systems until all clients have been upgraded, we are able to guarantee that customers experience zero downtime," says de Ru. "The switchover from *ePMP 1000* to *ePMP 2000* is seamless and customers are able to immediately experience the improved throughput and more stable link provided by the new system."

After successfully completing the rollout of the first 40 *ePMP 2000* sectors at 10 towers, WIRULink started planning the next upgrade phase for another 60 existing and new towers to the newer hardware. ■

Cambium Networks' ePMP system helped WIRULINK overcome sluggish network speeds and the high levels of interference it was experiencing with some of its towers because of limited 5GHz spectrum.

Moving Wireless Forward

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

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

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

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

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

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

Asset Tracking & RFID

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

MobileMark
antenna solutions

We are now looking for distributors throughout Africa

Commercial Fleet Management

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

Public Transit & Bus Management

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

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

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

In 2017, a fleet of more than 1,500 buses will have Mobile Mark Antennas installed in one of INIT`s current major projects for National Express, West Midlands, UK."

Remote Monitoring & Surveillance

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

Mining & Exploration

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

Smart Cities & Smart Highway

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

Let us know how we can help

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

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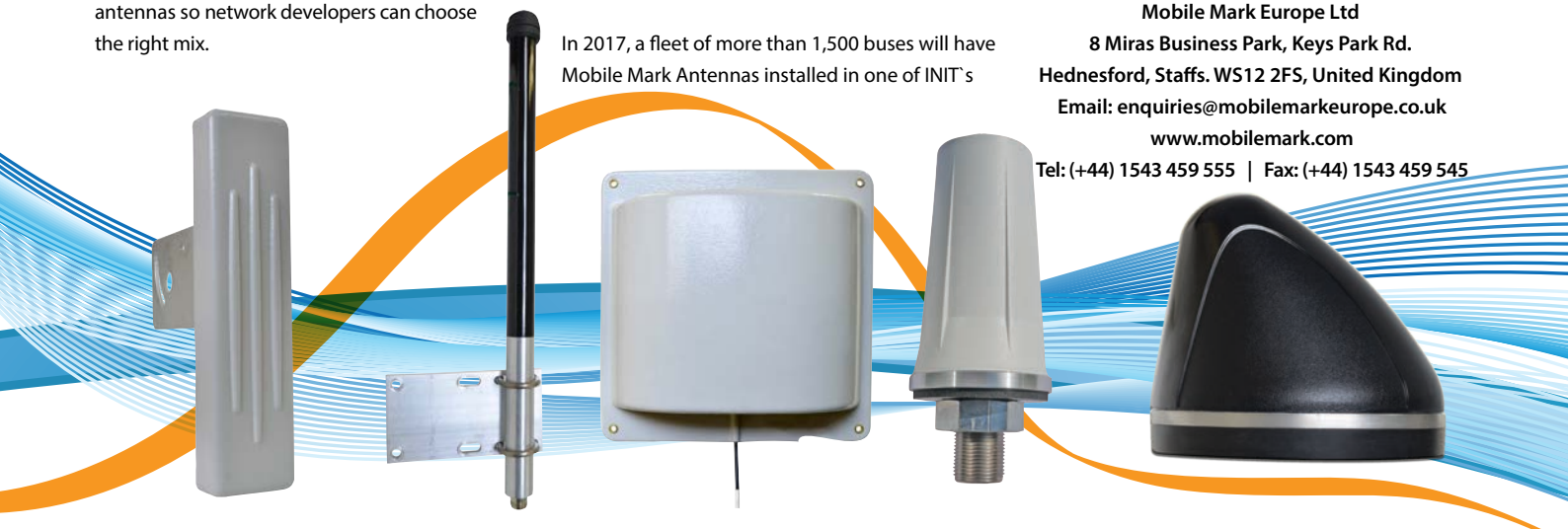

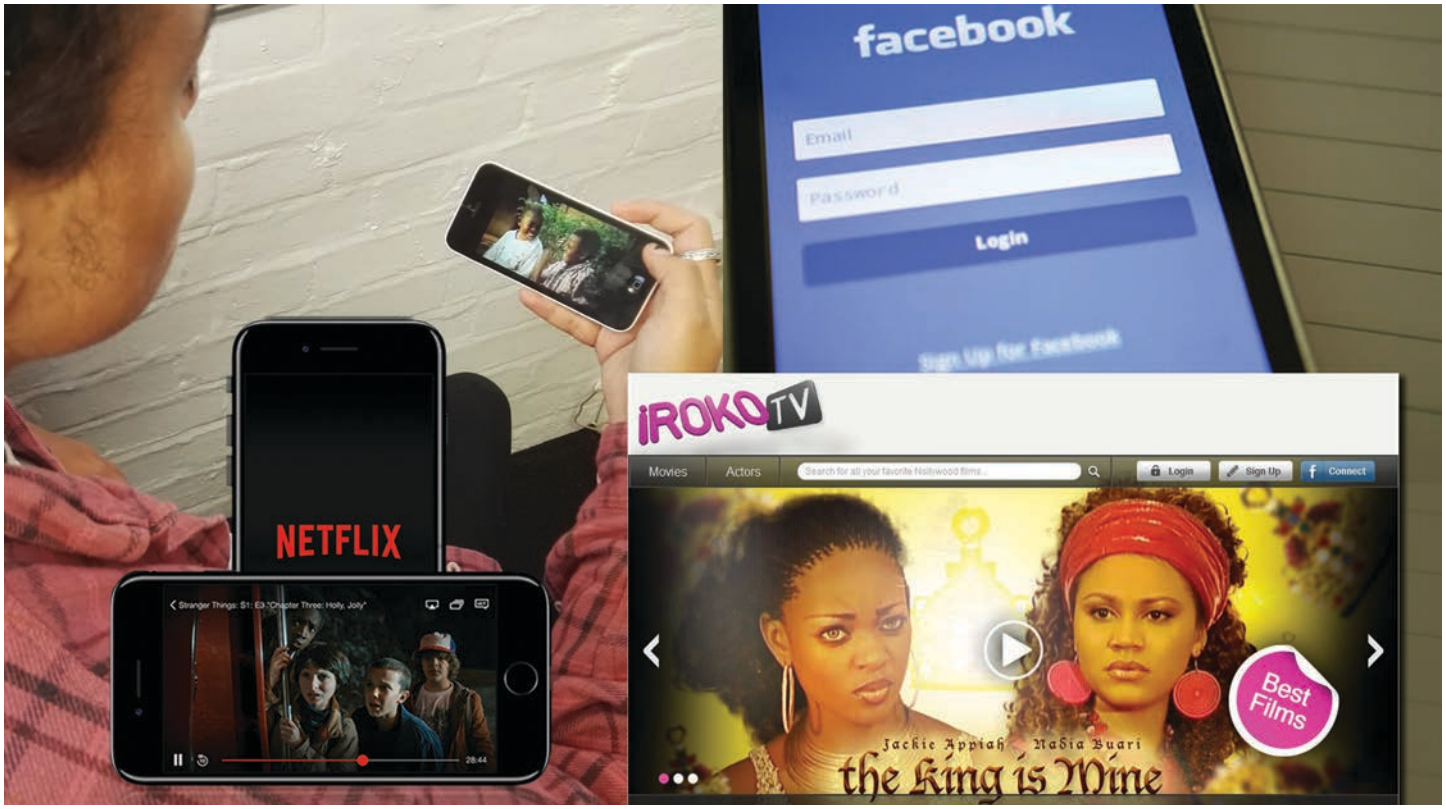

YouTube is said to be driving mobile video growth in Africa and is now considered to be the continent's top app. Other companies have also been helping to satisfy African appetites for mobile video content such as Netflix, Facebook and Nigeria's iROKO TV.

Quality *and* quantity

The challenge for MNOs to drive data revenues and manage subscriber Quality of Experience has never been greater. And yet MATT HALLIGAN says many operators are building out infrastructure based on an incomplete picture of the mobile data trends that are actually taking place.

As the old saying goes, 'You can't please all of the people all of the time...' Yet if you are a mobile operator, that is exactly what you need to do in order to prevent subscriber churn.

Of course, this task just keeps getting more difficult with mobile data traffic growing at a phenomenal rate. In fact, according to Cisco's latest *Visual Network Index* forecasts, mobile data is expected to rise at a CAGR of 65 per cent over the next five years in the Middle East and Africa. This is the strongest mobile data traffic growth of any region worldwide, and is followed by Asia Pacific at 49 per cent.

A key reason for this growth is the exploding popularity of mobile video. In 2017 alone, the number of new television serials being produced was roughly 500. What's more, it's estimated that 300,000 hours' worth of videos are uploaded online every minute. And all this video content is not being watched just on TVs or desktop PCs; increasingly, it is being streamed on smartphones and other mobile devices. It seems that mobile subscribers can't get enough *Netflix*, *Hulu* and *YouTube* content, not to mention Facebook videos.

This is compounded by the fact that, according to Openwave Mobility's Mobile Video Index, nearly 40 per cent of all mobile video traffic was HD last year requiring 3 to 4 times more bandwidth than standard video. This figure is likely to reach at least 50 per cent of total video traffic by the end of 2018, due to several factors:

- Greater dependence on smartphones as the primary device for viewing video
- A proliferation of new and more efficient codecs (i.e. VP9), and video hardware acceleration in mobile devices
- Bigger and higher quality displays and mobile camera
- Extensive social media sharing services

Of course, all this increased traffic load adds extra stress on today's already burdened mobile networks. Operators are struggling to cope as

some networks are stretched to the breaking point, resulting in subscribers experiencing buffering, stuttering and other video quality issues.

Unfortunately, customers don't have the patience for poor video performance. Our research shows they will only put up with six seconds of buffering, on average, before abandoning a video. This contributes to overall poor subscriber QoE, and the blame is typically placed squarely on the shoulders of mobile operators, not OTT content providers.

A world growing dim

In addition to an increasing volume of data traffic, mobile video content is also contributing to traffic management challenges related to poor network visibility. Operators are grappling with a sharp increase in the amount of traffic flowing through their networks that is encrypted. According to our index, as much as 75 per cent of all mobile traffic is now encrypted.

Much of this encrypted traffic growth is due to video content as OTT content providers strive to protect copyrighted material. In addition, Google's QUIC protocol has grown at a jaw-dropping rate of 284 per cent in just two years. (The search giant developed 'Quick UDP Internet Connections' as a transport layer that offered less latency compared to TCP.)

And with the need to secure customer e-commerce transactions, plus the new encryption protocol recently introduced by Facebook known as 'Zero Protocol' (0-RTT), the pace of encrypted traffic growth is not likely to slow down anytime soon. On the contrary.

What's more, there are additional factors that have not even impacted the mobile industry yet. For example, there's the continuing uptake of smart video-capable devices (even in developing markets), and the trend towards video as the default content type versus text and images (particularly for advertising). Based on these trends, our research indicates that the percentage of encrypted mobile traffic could reach 90 per cent by the end of this year.

The spread of all this encrypted content is effectively darkening the network, further complicating mobile operators' challenges to manage subscriber QoE. Operators cannot gain visibility into encrypted mobile traffic, which means they are unable to troubleshoot subscriber quality issues. According to our consumer surveys that were carried out independently towards the end of last year, subscribers find buffering and poor video quality to be even more frustrating than a dropped call. But if they cannot 'see' the traffic on their network, it is nearly impossible for operators to manage subscriber QoE, particularly with conventional mobile optimisation tools.

What's an operator to do?

Given the massive growth in mobile data (particularly encrypted OTT video content) and the network management difficulties that this has created, one might wonder if operators have any options at all. Can they take proactive steps to address this growing issue? Or are they destined to be just 'dump pipes' and suffer subscriber churn due to poor QoE?

In order to stay one step ahead of OTT players, cellcos need the capability to make informed decisions about their networks. Success will be defined by how well they manage their data, and whether or not they can monetise their networks. Forward looking operators have started to fight back to take control of their networks and their subscribers.

Operators require technology that delivers insight into the precise type of data travelling on the network, even when the traffic is encrypted. With accurate video streaming analytics an operator can determine key factors about video traffic, enabling more effective troubleshooting. For example, is a video from Netflix, Amazon or YouTube? Is it standard definition at 480p resolution or Ultra HD? Is the video being live streamed or downloaded?

Determining the codec being used to deliver the video is also important, as this has a bearing on the bitrate at which the content is being delivered. Furthermore, a fundamental factor involved in troubleshooting user QoE is knowing the type of device to which the video is being delivered.

Gathering all of this crucial analysis is not only complicated by encryption, but also by a dramatic shift to the cloud, with an increasing amount of network traffic being delivered via network functions virtualisation (NFV). In fact, experts predict that 92 per cent of network traffic will be delivered via the cloud by 2020. This is where traffic management tools uniquely designed for encrypted cloud-based data traffic can make a crucial difference.

Conventional, appliance-based DPI and traffic management technologies were never designed for encrypted video streaming, and nor are they capable of spanning physical and virtual infrastructures. Operators need pure software solutions that manage streaming video. They need to look for platforms that are evolved to be agile, with heuristics designed for encrypted video and virtualised so they can be easily deployed in the cloud.

Additionally, operators require the flexibility to not just manage the encryption protocols of today, but to anticipate and manage future data traffic as well. Mobile operators will soon begin deploying 5G networks, which will consist of edge computing capabilities, virtualised elements, slicing platforms and centralised orchestration. In most cases, 5G will be implemented alongside legacy network technologies, further compounding management challenges and the need for complete visibility into traffic.

Money to burn

The sad fact is that while mobile operators are faced with the challenges of managing OTT encrypted content, the OTT content providers are busy raking in profits. Therefore, in addition to getting a handle on encrypted traffic

management to optimise subscriber QoE, MNOs also need to find new ways to monetise data in order to grow revenues.

In saturated markets, the best and most likely path for revenue growth is by monetising mega-consumers of video. Once operators have solutions in place to better manage encrypted data traffic, they can implement a pricing plan that encourages these users to consume more video. In addition to these video mega-consumers, another likely target group are sports fans who are often the most dedicated video users. Thus, streaming of live events is another great opportunity for operators to generate new revenue.

Mobile video has already transformed viewing habits, with at least half of YouTube's 1.5 billion visitors accessing services on mobile. Netflix now has 100 million total subscribers across the world, many of which also watch content on mobile devices, while Amazon claims just over 76 million users for its *Prime Video* service. In Africa, companies such as Nigeria-based iROKO TV (which bills itself as "the Netflix of Africa"), as well as more established regional broadcasters such as MultiChoice, have already geared-up for the continent's growing appetite for video on the go.

It's not far-fetched to think that mobile video could soon overtake traditional television. Now is the time for mobile operators to find innovative ways to share in the revenue stream, rather than just being passive conduits for OTT content.

QoE is in the eye of the user

Ultimately, the subscriber will decide if the Quality of Experience with their current service provider is good enough, and poor QoE eventually leads to churn. Typically, the operator will not be aware that a subscriber is unhappy until it's too late. Measuring and tracking key user experience parameters for data services like mobile video is therefore critical.

Encrypted traffic flow is now the predominant form for data transfer. While some operators are still struggling with new encryption protocols that negate their ability to manage subscriber QoE, others are taking decisive action.

Furthermore, proactive next-generation planning requires agility and willingness to embrace change, both from an NFV perspective as well as with regard to value-added services. With appropriate network visibility and intelligence, today's mobile operators can take back control of their networks and their subscribers. If your customers are not 100 per cent satisfied with the QoE on your network, you shouldn't be either. ■

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Engineers and experts supported Bravo to monitor and operate the secure radio infrastructure and applications.
PHOTO © BRAVO CRITICAL COMMUNICATIONS

Bravo helps secure Hajj pilgrims with Airbus TETRA

Bravo and Airbus provided local and independent critical communication radio networks during last year's Hajj pilgrimage.

Public telecoms company Bravo is the only licensed operator in the Kingdom of Saudi Arabia providing the government, industrial and commercial sectors with services and solutions to address instant collective wireless communications.

As part of last year's Hajj, the operator supported a governmental client in the western part of Saudi Arabia from 30 August to 4 September. It supplied Airbus' TETRA infrastructure technology, such as its *DXT* switches, base stations and devices. Bravo's client and other governmental entities used the latest network from Airbus, while engineers and experts supported Bravo to monitor and operate the secure radio infrastructure and the applications successfully.

As well as working with Bravo, Airbus says it also successfully contributed to the smooth running of this year's pilgrimage to Mecca with resilient radio communications technology.

The Hajj is one of the largest gatherings in the world, and its organisation entails growing logistical challenges as the number of pilgrims has increased in recent years. This has led the Saudi government to arrange new security measures to protect the faithful. This year, more than two million Muslims gathered in Mecca.

SE Asia's first commercial NB-IoT network goes live

Singapore's M1 says it has launched Southeast Asia's first commercial nationwide NarrowBand-IoT network.

M1 now joins a select group of operators globally who have commercially launched NB-IoT networks. According to an update from the GSA (Global mobile Supplier's Association) issued in July, they include Telus Canada, T-Mobile, Telia Norway, Vodafone Spain, Deutsche Telekom and Vodacom South Africa.

In Singapore, M1 says solution providers and businesses can now develop and deploy new IoT-enabled solutions such as smart energy management for buildings, environmental monitoring, asset tracking and fleet management, to name but a few.

The company cites local utility firm Keppel Electric as an example. As part of a collaboration, Keppel is piloting the NB-IoT *Energy Management Meter* which is expected to enable it to deploy power and water meters to its customers' premises faster and more cost-effectively.

Keppel Electric GM Janice Bong says: "With the full liberalisation of the electricity market expected in 2018, the launch of M1's NB-IoT network is a timely development for us and our customers, who will get to enjoy easy access to useful real-time consumption data at a lower cost. We also see the potential of such implementations helping consumers to manage their electricity use more prudently."

According to M1, traditional network technologies are too expensive, inaccessible and unable to support the billions of devices that can be connected to the IoT. It says the advantages of the NB-IoT standard include low-bandwidth, robust indoor penetration and highly efficient power usage. The firm adds that these are complemented by the benefits of utilising licensed spectrum, such as data integrity, user confidentiality and security.

Atech to use ND SatCom control system

The Atech corporation is deploying a new command and control system from its Arkhe subsidiary using ND SatCom's *SKYWAN* satellite routers.

Known as a Brazilian "system house", Atech develops various systems for command and control, air traffic control, cyber security, amongst others, and is also certified as a Strategic Defense Company by the Brazilian government. The company is a subsidiary of the Embraer group which is headquartered in Brazil with local presences in several countries.

Arkhe's *C4I* command and control system is being deployed in an unspecified country. The platform comprises a central hub, remote sites with fixed and transportable antennas. Phase one of the project installation is now under way, with the complete network expected to go live in early 2018.

ND Satcom says its *SKYWAN 5G* technology was selected because it was the "most competitive" offering.

Atech says the project gives it new opportunities for expanding its Arkhe solutions whenever satellite interconnection is needed. ND Satcom says its *SKYWAN 5G* technology was selected because it was the "most competitive" offering, and that the *SKYWAN 7000/1070* product family has a link encryption feature which was also a mandatory requirement.

"With *SKYWAN* and the secured transmission, we get a powerful technology to implement this sensitive network," says Jorge Peter dos Santos, engineering coordinator, Atech. "ND SatCom has installed VSAT technology extensively in other governmental networks that perfectly fits to new Arkhe command and control solutions."

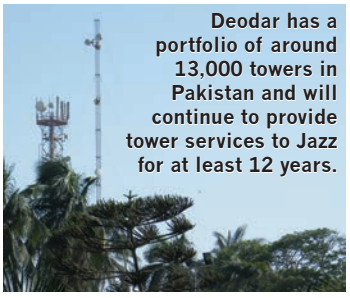
Jazz offloads tower business in Pakistan

Pakistan's market-leading cellco Jazz (formerly Mobilink) has signed an agreement for the sale of its wholly owned towerco, Deodar, for PKR98,700m (around USD940m) subject to adjustments.

Deodar has a portfolio of approximately 13,000 towers. It is being sold to Tanzanite Tower which is owned by the Islamabad-based Dawood Hercules Corporation and Malaysia's Edotco Group. The latter is a wholly owned subsidiary of the Axiata Group which last year raised a record USD600m as part of a financing deal for Edotco.

Upon successful completion of the transaction – which was expected before the end of 2017 – Deodar will enter into a master services agreement with Jazz, whereby it will continue to provide tower services. The initial term of this agreement is twelve years and is renewable at Jazz's discretion for three consecutive periods of five years each.

The sale will be on a cash and debt-free basis. Its proceeds will be used for Jazz's general corporate purposes, the funding of LTE spectrum awarded earlier this year, and repayment of a proportion of its outstanding debt.



Deodar has a portfolio of around 13,000 towers in Pakistan and will continue to provide tower services to Jazz for at least 12 years.

PKR69,930m (around USD666m) of the PKR79,800m (USD760m) cash consideration is expected to be received at closing, while the remainder will be paid within 12 months thereafter.

IIC and oneM2M partner on Industrial IoT

The Industrial Internet Consortium (IIC) and IoT standards body oneM2M have agreed to work together to contribute to the creation and development of the "Industrial Internet".

The two organisations say they will promote the digital economy by harmonising various aspects and "preventing fragmentation" in the IIoT.

Their joint activities will include: collaboration, review and two-way feedback pertaining to IoT use cases, requirements and reference architectures; feedback to oneM2M standards from IIC testbeds and interoperability events; feedback from oneM2M to IIC reference architecture; and joint workshops, showcases and interoperability events.

"The Industrial IoT brings a whole new set of specific requirements in comparison to consumer IoT," says oneM2M's technical plenary chair Dr. Omar Elloumi. "Deriving those specific requirements from market-driven use cases as well as lessons learnt from operational driven testbeds, such as those developed by IIC, is the only viable option to develop the set of standards needed for IIoT."

IIC's agreement with oneM2M is one of a number made by its Liaison Working Group. The consortium says this group is its gateway for formal relationships with standards and open-source organisations, alliances, certification and testing bodies and government entities/agencies.

Group chair Wael William Diab says: "Horizontal technologies that enable scalability across a variety of industrial verticals are essential to the widespread adoption of IIoT."

oneM2M's Dr. Omar Elloumi says the Industrial IoT brings an entirely new set of specific requirements compared to consumer IoT.

'Roam Like At Home' not paying-off for EU cellcos

More than three quarters of European mobile operators do not believe there are enough revenues to make up for traffic increases since mobile roaming charges were abolished throughout the European Union earlier this year.

EU Regulation IV came into effect on 15 June 2017 and enables member state citizens to 'Roam Like At Home' (RLAH) when using their mobiles across the union.

After receiving 46 responses from an undisclosed number of operators across the EU, telecoms analytics specialist Mobileum found that 87 per cent reported a 'strong' or 'very strong' increase in data traffic, while 71 per cent highlighted an increase in voice traffic. Responses on SMS usage were split, with half of respondents saying there was no change.

According to Mobileum, the significant increase in data traffic aligns with how several plans are now being sold in EU countries.

But it adds that some operators have called for a potential increase in rates to compensate for the increased costs. Its research reveals that 76 per cent of those surveyed do not believe there is enough additional income to compensate for the extra traffic now being carried.

"The EU commission stated that domestic retail rates shouldn't rise to make up for this additional cost, but there are reports of this happening in some EU countries," says Mobileum's SVP of product and offering, Tim Moran. "The temptation for operators is to add the increased costs to their plans once EU Regulation IV has had further time to bed in."

He adds that it will be interesting to see if these costs have been moved to retail plans when the EU Commission publishes its interim report on the effects of the new roaming in December 2018.

Meeting the growing demand for IoT-SMS

Sparkle has teamed-up with Telarix to expand IoT-related SMS services with the launch of a new SMS management solution. The company, which is the international services arm of Italy's TIM Group, says Telarix's solution will reduce overhead and manage SMS-specific network complexities.

As an international voice carrier, Sparkle offers SMS as a retail service in addition to its wholesale business. Stefano Olivieri, the company's EVP voice and mobile business, says: "The new solution allows us to consolidate our entire SMS business onto one comprehensive platform that provides buying, selling, billing, auditing, alerting and reporting functions, plus the translation and application of routing commands to the SMSC or the SMS hub."

Telarix adds that there are some "inherent complexities" in SMS handling that its new solution addresses, and that it simplifies the end-to-end SMS management and automation.

Citing figures from the Mobile Ecosystem Forum, Sparkle says messaging traffic is expected to increase by more than 350 per cent over the next five years. It says A2P messaging is leading the growth and is set to become a fundamental delivery mechanism for IoT devices.

Telarix specialises in solutions that simplify, automate and optimise the way carriers do business together. The US-headquartered company claims it hosts the only industry-wide B2B portal offering carriers a secure and collaborative environment in which to conduct business.

Teltronic to provide TETRA for Philippines' metro line

Teltronic has been selected to provide a complete TETRA communications system for a metro rail line in Manila.

The Metro Rail Transit line 7 (MRT-7) project in the Philippines' capital is being developed by SMC Mass Rail Transit 7.

Connecting 14 stations, the 22.8km line will run northeast from an interchange with MRT-3 at North Avenue, serving Quezon City, Caloocan City and San Jose del Monte in Bulacan province. MRT-7 is set to serve around 350,000 passengers a day when operations begin in August 2019, potentially increasing to 800,000 per day upon completion of a series of planned upgrades.

Teltronic – which is now a part of Hytera Communications – was awarded the contract by rolling stock manufacturer and E&M turnkey provider Hyundai Rotem.

Under the agreement, Teltronic will provide its *NEBULA* TETRA infrastructure, *RTP-603* on-board equipment, *STP9000* hand-portable and *SRG3900* fixed radios, and a *CeCo-TRANS* control centre. The onboard equipment will be fully integrated with both the train control and management system, allowing remote vehicle monitoring from the control centre. It will also be integrated with the public address and intercom systems, providing communication between passengers and control in emergency situations.

The new metro line could serve around 800,000 passengers a day after it begins operations in 2019.

Boosting 5G in Singapore

Singtel and Ericsson will jointly establish a Centre of Excellence (CoE) to facilitate 5G development and deployment in Singapore. Starting with an investment of SGD2m, the two partners say the centre will be based on four pillars: upskilling, demos, live field trials, and collaborations with tertiary institutions. It will also be open to Singtel's regional associates across Asia and Africa, as well as its Australian subsidiary Optus. Activities will begin with Ericsson providing its 5G expertise to equip Singtel engineers with critical competencies.

Ice connects the Arctic

Ice Wireless has worked with Parallel Wireless to expand broadband services to Canada's most remote Arctic communities. It has deployed a multi-technology macro solution based on Parallel's all IP virtualised RAN. The vendor claims its system makes implementing cellular networks "as easy and as cost-effective as Wi-Fi". Parallel says the self-configuring and self-optimising technology combines its *HetNet Gateway* with its *Converged Wireless System* base stations. The platform features SDR which has enabled Ice to incorporate both 3G and LTE into an integrated solution.

High flyaway antenna

C-COM's *iNetVu FLY-981* mobile antenna has been installed in the Andes mountains of southern Peru at an elevation of 14,900ft. The firm reckons this may be the highest altitude flyaway antenna unit currently in operation. The *FLY-981* is packaged in three transportable cases each weighing less than 28kg, and according to C-COM the antenna can be assembled in less than 10 minutes without any tools. It adds that the system automatically finds a satellite in under two minutes with just the press of a button.

HPE supercomputer sent to International Space Station

On 14 August 2017, SpaceX successfully launched its *Dragon* spacecraft to deliver critical cargo to and from the International Space Station (ISS) for NASA. Part of the *Dragon*'s payload was a supercomputer from Hewlett Packard Enterprise (HPE).

The *Spaceborne Computer* will be used to support a year-long experiment conducted by HPE and NASA to run a high performance commercial off-the-shelf computer system in space. This has never been done before, and the aim is for the system to operate seamlessly in the harsh conditions of space for one year – roughly the amount of time it will take to travel to Mars.

SpaceX's *Dragon* spacecraft is used to deliver cargo to the International Space Station for NASA.

HPE says many of the calculations needed for space research projects are still done on Earth due to the limited computing systems available on board orbiting vessels. As well as creating a challenge when transceiving data, this approach only works when astronauts are in near real-time communication with Earth. Therefore, once they travel farther out and closer to Mars, they will experience longer latencies.

The *Spaceborne Computer* includes HPE's *Apollo 40* class systems with a high-speed HPC interconnect running an open-source Linux OS. Although there are no hardware modifications to these components, HPE says it created a "unique" water-cooled enclosure and developed purpose-built 'ruggedised' software to address the reliability requirements in space.

Worldwide ocean observation programme

Orange Marine is now providing technical resources to launch free-drifting oceanographic data collection floats along routes taken by its fleet of six cable ships. The firm, Orange's submarine telecoms division, has signed a partnership with Euro-Argo, the European branch of the Argo consortium.

Founded in 2000 by UNESCO and the World Meteorological Organisation, the Argo programme involves more than 30 countries. It is the first global network *in situ* for studying the state of the world's oceans and better understand their influence on climate change. The network is gradually expanding and currently includes nearly 4,000 active floats, with an average of 1,000 deployed each year worldwide.

Argo's floats have an average lifespan of four years and gather data on ocean temperature and salinity from the surface down to a depth of 2,000m. These data are sent in real-time via satellite to a platform open to researchers from around the world.

The consortium aims to provide uniform network coverage across the globe. Euro-Argo plans to develop the capacity to maintain a quarter of the worldwide network, which means deploying around 250 floats per year. Navigation in European waters is also needed for pilot research programmes.

In September, Orange's cable ship *Pierre de Fermat* launched the first float North off Cape Finisterre (Spain) during a maintenance operation in September. A second float was launched 500 nautical miles away in the Azores region, and in early October, the company said a third was still on board awaiting deployment.

ProRail turns to Intracom Telecom for security network

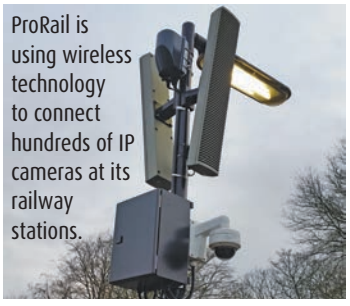
ProRail, the Dutch national railway infrastructure operator, is using Intracom Telecom's radios to backhaul its network of CCTV and security/surveillance systems.

Utrecht-based ProRail manages around 7,000km of track, 404 stations, 15 tunnels, and more than a thousand viaducts and bridges.

It claims the Netherlands has Europe's busiest rail network, and says more than 3.3 million journeys were made using the nation's tracks in 2015.

As part of its commitment to provide secure transportation services while dealing with high passenger flows, ProRail has installed what's described as an "advanced" CCTV solution incorporating Intracom Telecom's *StreetNode* wireless transmission equipment at 26GHz. The solution includes point-to-point/multipoint SDRs which are claimed to offer quick installation, high reliability, and "massive" capacity for HD video surveillance.

The first phase of the project has seen the deployment of 21 hubs and 78 terminals. These have been installed at 16 railway stations throughout the Netherlands, from Groningen to Maastricht.



ProRail is using wireless technology to connect hundreds of IP cameras at its railway stations.

ProRail is using the technology as the transmission infrastructure in and on the station platforms and surrounding areas as a complement to fibre. The system is used to connect hundreds of IP cameras. The units relay all the collected video, data and alarm signals from the CCTV cameras to each of the station control rooms while preserving HD picture quality at all times.

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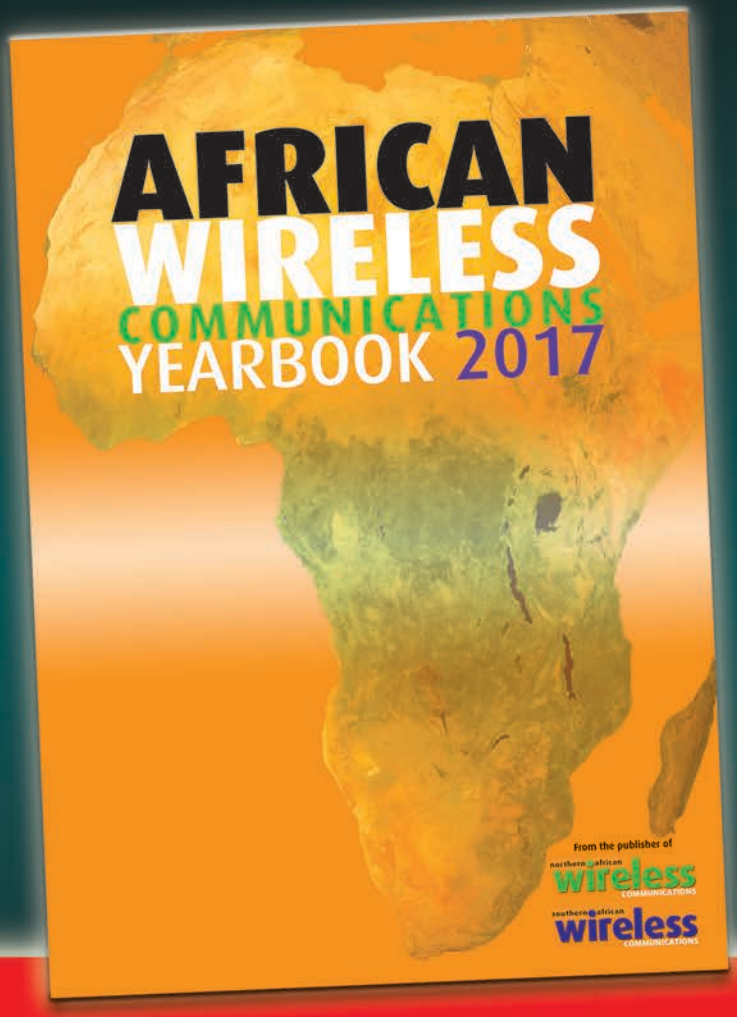

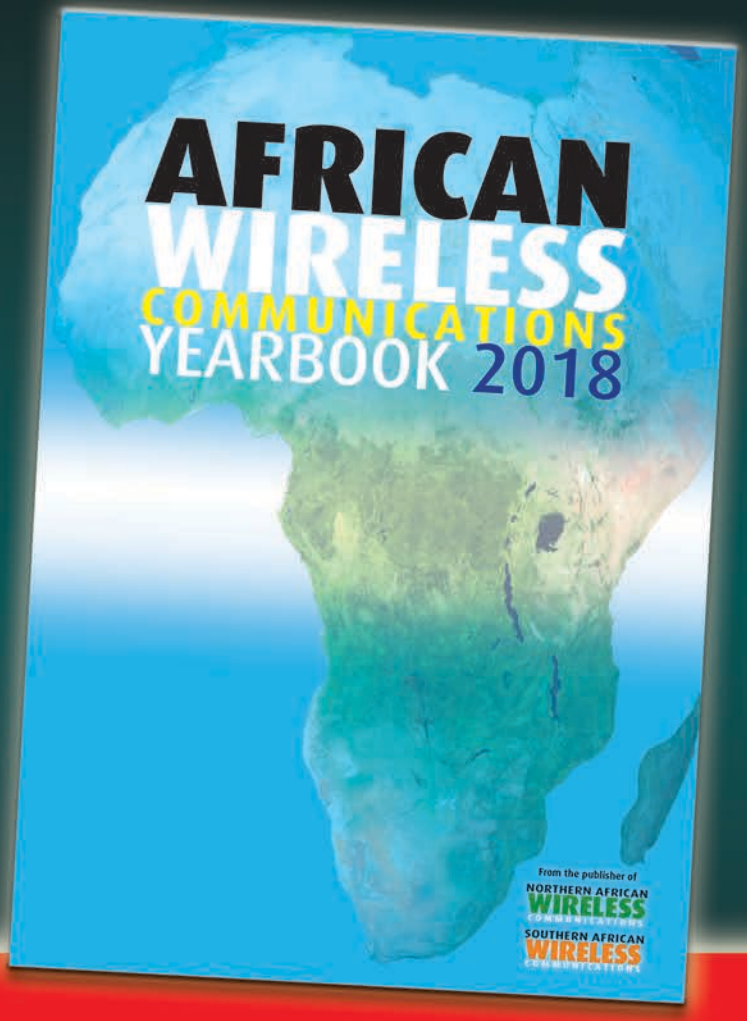

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