- **Ka-band: the best option for broadband via satellite?**
- **Building better infrastructure for CSPs**
- **A network on wheels – the ultimate in mobile deployments**

MobileMark
antenna solutions

Mobile Mark is a leading supplier of innovative, high-performance antennas to wireless companies across the globe. They have been in the wireless industry for over 30 years and have roots in the early Cellular trials.

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MobileMark
antenna solutions

KADIUM

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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

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.

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.

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, Jun-Jul 2017*). At the time of writing, a Konnect Africa spokesperson told NAWC 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.
Is Ka king when it comes to delivering satellite broadband in Africa? Feature, pp18-21.

Arabsat unveils "new age" of affordable satellite 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.

SAS and Paratus Group 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

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

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.

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."

Digital transformation in Ghana needs more public-private collaboration

Ghana's government is forging greater links with the mobile industry to support social and economic progress in the country.

At a high level roundtable meeting held in Accra last October, representatives from the Ghana Chamber of Telecommunications, the United Nations Development Programme (UNDP), the UK government, and the GSMA examined the transformative opportunities presented by mobile-enabled digital services in the country.

Participants signed a commitment to maximise opportunities for mobile to support the UN's SDGs (sustainable development goals)

in a range of areas including agriculture, gender equality, financial service access, innovation and entrepreneurship.

According to a subsequent report published by the GSMA in partnership with the UK's Department for International Development, Ghana is already proactively supporting the SDGs and has incorporated them into its national development agenda. It states that nearly half the population has mobile internet access, with penetration in the country now among the highest in West Africa at around 66 per cent *(according to the GSMA's Mobile Economy, West Africa 2017 study published last year).*

However, while Ghana's economy is growing fast and has made progress on many fronts, the report notes that "significant" challenges remain. For example, it says there is a gender gap in Ghana of around 16 per cent in mobile phone ownership and 17 per cent in the use of mobile money services. There is an even higher gap of 56 per cent when it comes to internet use, with 2.5 million fewer women online than men.

The roundtable emphasised the need for the public and private sectors to work in close cooperation, as well as across many different government agencies that may not typically consider

mobile as a tool that can be used to achieve development targets.

As a follow-on from the meeting, participants agreed to establish a technical working group focusing on implementation of collective actions that the group will undertake to make the 2030 agenda and digital transformation for Ghana a reality.

"Mobile offers the most widespread and inclusive means of accessing the internet and digital technologies, which are vital to the Ghanaian economy and its growth in an increasingly connected world," says Akinwale Goodluck, Head of Sub-Saharan Africa, GSMA.

Ericsson completes live BSS deployment for MTN

MTN's subsidiary in Côte d'Ivoire now has a real-time view of all its business support processes with a new BSS platform.

The operator worked with Ericsson which says it successfully completed a live deployment of its BSS platform. The system modernisation process also includes the replacement of MTN Côte d'Ivoire's legacy BSS platforms which had reportedly been supplied by Huawei.

As part of the complex transformation project, Ericsson says its solution was used to provide the cellco with a real-time view of all its business support processes. It

Ericsson says its support systems will help provide new voice and data offerings for MTN Côte d'Ivoire's pre-paid customers.

claims the new platform enables real-time convergent charging, policy control and fast service creation.

The vendor adds that its "flexible and highly scalable" solution allows

MTN to better control credit while providing users with simplified control over their costs through flexible packaging, bonuses and discounts.

The new platform includes the *Ericsson Charging System*. It's claimed this enables a host of new services such as catalogue orchestrated charging, flexible refill and community charging, and new voice and data offerings for the operator's pre-paid customers.

Other features include *Multi Mediation* for distributing data from the MTN network and making it available for a range of purposes such as charging and billing, service

assurance, fraud detection and statistics. There is also *Dynamic Activation* which is said to provide the cellco with fully automated real-time fulfilment capabilities.

"Ericsson's support systems portfolio provides a complete view and roadmap for MTN's goal of providing internet for all, underscored by a drive towards financial inclusion for our loyal subscriber base," says Freddy Tchala, CEO, MTN Côte D'Ivoire.

As well as the BSS rollout, Ericsson has also deployed its *Converged Wallet Mobile Money* platform for the operator.

Intersat and ABS team-up to offer software virtual network operator services

ABS MD Flavien Bachabi says the partnership with Intersat will mean resellers and clients won't have to invest in their own infrastructure.

Intersat has setup teleport facilities in Nairobi to launch broadband services in Africa using *ABS-3A*.

Working with ABS (Asia Broadcast Satellite), the UAE-based satellite solution provider has launched iDirect platforms on *ABS-3A*'s multiband beams. They say these will provide "quality" broadband internet to serve Francophone Africa, as well as sub-Saharan countries and South Africa.

Intersat will operate services from its new teleport in Nairobi using the satellite's C- and Ku-band beams which are claimed to offer "excellent elevation" over the continent.

The company says it can now offer software virtual network operator (SVNO) access to resellers in Africa. It says this will enable them to distribute and manage internet services at "affordable" pricing on both C- and Ku-band. According to

the company, resellers can control their VSAT network and manage services to their clients without the need for investing in hardware.

Flavien Bachabi, MD of Africa for ABS, says: "*ABS-3A* is a new choice for high profile broadband as well as broadcast distribution in Africa, MENA, Europe and the Americas.

"Our VNO services in cooperation with Intersat will provide a cost-effective way for resellers and clients to establish

a comprehensive communication network without the capital investment on a hub infrastructure."

ABS-3A was launched in 2015 and orbits at 3°W from where it provides coverage for Africa, the Middle East and the Americas using 24 Ku- and 24 C-band transponders.

Lumos says more than 300,000 people across Nigeria are now using its solar power system.

Mobile money powered solar system lights a spark in Nigeria

Abuja-based Lumos Mobile Electricity Service says it has now deployed its 60,000th *Y'ello* Box device that enables users to pay for solar electricity in their homes via their mobile phones.

The company says the milestone means that more than 300,000 people across Nigeria are now benefitting from affordable, reliable, clean electricity.

Lumos launched its service in partnership with MTN in 2017 (*see News, Jun-Jul 2017*). Once an MTN subscriber joins the service, they pay their monthly subscription fee for power from their mobile phones air account by texting a simple code. Lumos points out that there's no need for mobile money, bank accounts or expensive machines.

The firm's *Y'ello Box* system comprises an 80W solar panel and cable, an eight-socket power unit, USB mobile phone adapter and two LED lights.

John Stephen Akpan, a farmer from Lagos State, purchased the 60,000th system. He says: "The *Y'ello Box* is making a big difference. I was using a noisy, polluting generator, but now that Lumos has arrived, my farm has been transformed instantly."

Yuri Tsitrinbaum, CEO of Lumos Nigeria, believes that the country's economy will thrive if people are given the power they need to succeed. "We cannot wait, and we need to put power in everyone's own hands," says Tsitrinbaum. "The energy mix in Nigeria is a complex issue which we all need to work together to solve. We believe we have created something fantastic that is bringing power to people's homes and businesses like nothing else before."

Liquid and KETRACO to build East Africa fibre network

Liquid Telecom will operate the Kenya Electricity Transmission Company's (KETRACO) optical ground wire (OPGW) fibre cable and expand the internet network across East Africa.

KETRACO operates as a national long haulier of fibre that Liquid Telecom Kenya will now commercialise to meet the rising demand for high-bandwidth, video and internet services for businesses and individual consumers across the country and East African region.

In 2014, KETRACO was granted a Network Facility Provider Tier 2 license by the Communication Authority of Kenya. Since then, it has developed the specification and run a tender process for the management and development of the combined network, which has now resulted in a 10-year deal with Liquid Telecom Kenya.

KETRACO currently runs a 1,791.5km electricity transmission network within Kenya and by 2020, the company will have completed construction of more than 8,000km of high voltage transmission lines with concurrent fibre connectivity.

Liquid will begin by upgrading fibre connections to Kenyan areas already connected to the national grid with high voltage lines of 132kV and above. These include Garissa, Isiolo, Garsen, Lamu, Rabai, Namanga, Meru, Machakos,

Makueni, Wote, Sultan Hamud, Mwingi, Konza, Kitale, Eldoret, Kisii and Kisumu.

It will then extend fibre connections to remote parts of the country as well as neighbouring nations such as Ethiopia, South Sudan, Uganda, Tanzania, Rwanda, Eastern Congo and Burundi.

"With KETRACO and Liquid Telecom coming together, we are now taking fibre to where it has never been before whilst diversifying our company's revenue base," says KETRACO MD Fernandes Barasa.

According to Liquid, KETRACO's overhead fibre cable is a technology that is "far superior" to buried fibre or microwave connectivity. George Kuria, Liquid Telecom's infrastructure build and deployment GM (East Africa), says: "This new backbone fibre cable will

significantly expand our network and add resilience to our internet connectivity with a limitless capacity to carry any amounts of data bandwidth.

"We will invest in high-capacity equipment at the terminating points to ensure we achieve the largest data capacity possible and serve the region with the fastest and most stable internet ever achieved in East Africa."

KETRACO will continue to use two per cent of its optical fibre for its own communication. At the same time, Liquid will install connectivity equipment in all the power terminating points along KETRACO's network, complementing the ISP's own underground cable network running from Mombasa to Nairobi and across most major towns in Kenya.

KETRACO MD Fernandes Barasa (left) says the two partners will take fibre to ''where it has never been before''. Also pictured is Liquid Telecom Kenya CEO Adil Youssefi.

Internet connectivity boosted in Lagos

Tizeti and MainOne have completed a joint development project with Facebook to enable the expansion of internet services in Lagos.

Tizeti is described as a fast-growing WISP in the city, and claims to deliver high-speed, unlimited, internet access to residential and business customers in Nigeria using a Wi-Fi-based WAN.

The partnership will leverage Tizeti's recently installed towers, MainOne's fibre connectivity and POPs, and Facebook's *Express Wi-Fi* platform. As a result, the companies say internet services will be more accessible across the Lagos mainland, including Ajao

Estate, Surulere, Ikeja, Omole, Magodo, Gbagada, Oworonshoki, Bariga, Anthony Village, Ogudu, Ojota, Ketu and Alapere.

"Access to fast and reliable unlimited Wi-Fi connectivity has been a problem for most Nigerian residential customers and small businesses for too long," says Tizeti CEO Kendall Anany. "This partnership aims to demonstrate a sustainable and cost-effective solution to the under-served areas of Lagos State through our solar-powered, always-on Wi-Fi towers, and robust internet bandwidth from MainOne.

Tizeti will operate 20 new

solar-powered Wi-Fi towers across Lagos while MainOne will provide multiple Gbps internet bandwidth to the outdoor towers via a mix of fibre optic and microwave backhaul connections. The internet service will be delivered to end users via Wi-Fi and the *Express Wi-Fi* hotspots deployed by Tizeti in Lagos.

Ibrahima Ba, from Facebook connectivity programmes, says: "We are committed to working with partners across Africa and elsewhere to support connectivity initiatives and develop better internet infrastructure in communities that lack reliable and affordable access."

New BSS platform for Orange's African operations

Orange is transforming its backend systems in some of its African operations with the help of ZTE's software subsidiary, ZTEsoft.

The cellco has deployed *ZSmart Digital BSS* to support the strategic transformation of its IT ecosystems in Cameroon, the Central African Republic and DRC. The new software will consolidate Orange's legacy systems into a unified platform. ZTEsoft claims it will "fully improve" billing accuracy and automate business agility, as well as deliver innovative services and "superior" customer experience.

Through IT ecosystem transformation, Orange aims to create a single, omni-channel business enablement platform and deliver a high-value experience for all customers as part of its *Essential 2020* strategic plan.

ZSmart Digital BSS includes functions for convergent billing, customer care and service delivery, and also supports the management of orders, inventory, partners and product catalogue.

Featuring SOX architecture, a unified customer view and charging engine, ZTEsoft reckons its platform will enable Orange subsidiaries to deliver an "enhanced" customer experience across different touchpoints and unified customer care. The vendor says it will also help to reduce opex, and enable partner services to be managed more easily with TM Forum standard conformed APIs.

ZTEsoft and Orange have been partners for several years. Commenting about this latest extension to their collaboration, Steven Cao, VP of ZSmart BSS strategy and planning at ZTEsoft, says: "This project is of vital importance for us as it will prove our capabilities in leading the way for service providers to change from traditional IT transformation to a telco-platform approached digital transformation."

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.

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.

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.

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, Jun-Jul 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.

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: "This submarine infrastructure, with its state-of-the-art 100Gbps transmission technology and deployed with minimum design capacity of 40Tbps, will reinforce PLDT's international links to Europe and the Middle East via its PoP facilities in Hong Kong and Singapore. It will also provide new network diversity and resiliency in these regions.

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

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

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."

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

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.

Ooredoo partners with iPass to offer worldwide Wi-Fi access

Ooredoo Global Services, the wholesale division of Qatari telco Ooredoo, will provide global Wi-Fi services to its customers across North Africa, the Middle East and Southeast Asia using the *iPass SmartConnect* software development kit. The service is set to launch in the first quarter of this year.

Ooredoo is said to have 138 million subscribers across 10 countries which include Algeria and Tunisia, as well as operations and interests in the Middle East and Asia.

The company plans to offer its customers access to global Wi-Fi, either as a standalone service or as part of existing mobile roaming packages. Ooredoo says the new service will provide "simple, secure and unlimited" Wi-Fi access to millions of hotspots worldwide.

iPass provides always-on Wi-Fi access on any mobile device using a cloud-based SaaS platform. It claims the *SmartConnect* SDK makes it "incredibly easy" for network operators to integrate global Wi-Fi into their existing services.

By using patented technology, the company adds that its platform takes the "guesswork" out of Wi-Fi, automatically connecting customers to the best hotspot for their needs.

iPass also claims to run the world's largest Wi-Fi network with more than 62 million hotspots in more than 180 countries and territories.

Ooredoo Global Services COO Khalid Al Mansouri says: "With iPass, our customers will have unlimited Wi-Fi access to millions of hotspots around the world at affordable rates, which will definitely enhance their digital experience and allow them to enjoy the internet even more."

Direct carrier billing for MTN

Global mobile payments company Bango has partnered with MTN Ghana to launch operator payments in Google Play, the app store for *Android OS* mobile device users. Subscribers can select the 'Pay with Mobile Money' option in the store to charge the cost of apps, games, music, movies, etc., to their *MTN Mobile Money* wallet. Citing 2017 data from Stat Counter, Bango says *Android* has a more than 75 per cent market share of all mobile devices in Africa. It adds that credit card penetration in sub-Saharan Africa is estimated to be less than five per cent.

More eSite in Morocco

Flexenclosure has completed the deployment of a second set of its *eSite* hybrid power systems in Morocco. They have been installed at sites for an unnamed telco across Morocco where they are now fully operational. The deployment includes hybrid systems that are powered by diesel-battery as well as solar, as required by each base station location. Flexenclosure worked with Telcabo in-country, with Telcabo delivering all site-related services. "In hard-to-reach off grid areas, eSite enables us to simplify and streamline our ongoing operational responsibilities," says César Mesquita, CEO, Telcabo Maroc.

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.

Safaricom introduces dynamic voice biometrics

Safaricom has launched what it describes as a dynamic voice biometrics system that will enable customers to access services through a quicker and less intrusive vetting process.

Dubbed *Jitambulishe*, the system allows customers to use their voices for authentication before accessing assisted services such as resetting an *M-PESA* PIN or PUK requests. Safaricom says this significantly reduces the steps a customer goes through before being assisted.

To activate the service, a customer's voice patterns are captured and used to create a unique voiceprint. This is stored as a secure string of numbers and characters and help identify and verify callers when they call for customer care.

Safaricom adds that an encryption

The company claims it runs the biggest customer care operation in Eastern Africa. PHOTO © SAFARICOM

process will ensure no reverse engineering can be used to hack into the system, preventing fraudsters posing as another person. It also points out that voice recordings are not stored in order to comply with strict protection of customer data.

The firm claims it runs the biggest customer care operation in Eastern Africa, with its call centres receiving more than 300,000 calls a day.

Safaricom strategy director Joseph Ogutu says: "Our contact centre agents spend a greater portion of their call time verifying customers over phone. The introduction of this service will ensure that customers get faster and more accurate services. We anticipate that the number of fraud incidents shall also reduce as a result."

In addition to customer care services, the company will also offer its products and services through *Jitambulishe*. The first service to be made available is the recently launched *M-PESA* for the visually impaired solution. By dialling 100 or 234, customers can identify themselves by their voices before having their *M-PESA* balances read out to them.

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 (*also see this month's feature on pp18-20*).

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."

Sparkle and Aldea launch global media services

Sparkle, the international service arm of TIM Group, and Aldea Solutions have partnered to provide media companies in Africa, the Middle East and Europe access to a multitude of rich video content, including major global sporting events.

The joint solution leverages Sparkle's global fibre network and Aldea's wide portfolio of services for the transmission, distribution and management of video content. It will extend Aldea's global network into the EMEA region and allow media companies in the region to benefit from what's claimed to be Aldea's "extensive" coverage

Aldea says it operates the first pan-American fully automated fibre-based network for broadcast services.

throughout the Americas and Europe.

Aldea's services will be available at video hubs within strategically located data centres in Italy, Turkey and Bulgaria. Sparkle reckons the solution will make its Sicily Hub in Palermo a premier facility for the exchange of global media content in the region.

The partners say they will support all of the latest video formats and encoding standards, as well as streaming and distribution to multichannel integrated platforms such as DTT, DTH and OTT.

Sparkle's global fibre networks span 560,000km. The company claims its Sicily Hub offers an open ecosystem and "rich" marketplace to provide customers in Africa, the Mediterranean and the Middle East with the lowest latency compared to any other European peering point.

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

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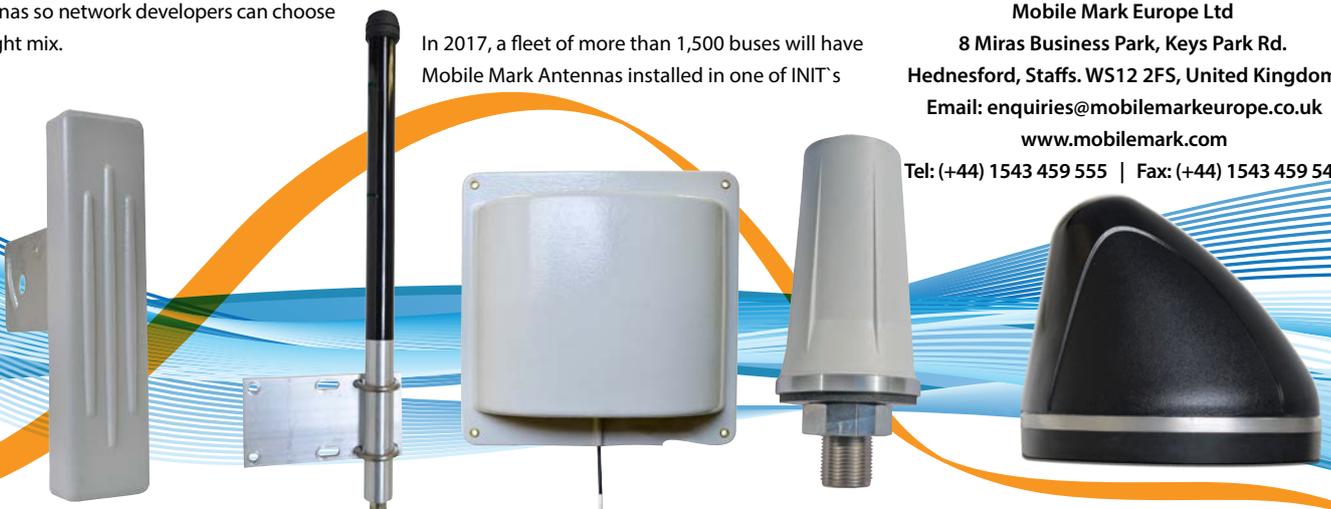
We understand the RF wireless world and are ready to help you evaluate your options. Contact us by email, phone or fax and let us know how we can help.

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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

Coca-Cola is already engaged in sustainable development activity working in developing communities, such as the EKOCENTER kiosk which was first trialled in Africa in 2013.

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. Housed in a shipping container, the kiosk primarily supplies safe drinking water to rural communities but can also be used to offer a locally tailored mix of products, services and resources such as wireless communications. Entrepreneurs

from local communities, particularly women, have been recruited to operate each EKOCENTER, creating new opportunities for employment.

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.

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 willful 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."

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."

Millicom to sell Rwanda business to Airtel

In December 2017, Millicom announced that it had signed an agreement for the sale of its Tigo branded operations in Rwanda to Airtel.

The total consideration of the transaction is approximately six times 2017 adjusted EBITDA, payable over two years, consisting of a mix of cash, vendor loan note and earn out. The transaction is subject to regulatory approvals.

Millicom CEO Mauricio Ramos says: "The sale of our business in Rwanda is in line with our strategy to focus on providing advanced fixed and mobile data services in Latin America.

"We are very grateful to the government of Rwanda for their support throughout the last eight years, which allowed us to extend digital inclusion to thousands of Rwandans."

Liquid and Huawei partner to deliver 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."

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.

■ In a separate development, Vodacom Lesotho is now using Sicap's device management platform. The firm says it will enable the cellco to add customer insights and engagement

automation functionalities for relevant mobile marketing and pro-active customer care with automated activation of end-user services.

Vodacom Lesotho has replaced its legacy system with Sicap's cloud-based *Device Management Centre* (*DMC*) and combined it with the context-aware customer insight and engagement automation solution *TargetMe*. It's claimed the operator can now fully automate the configuration of its 1.3 million customers' handset settings, which saves costs by reducing problem calls to its care centres.

New distributors for Cambium Networks and Rajant

In separate deals, Cambium Networks and Rajant have signed agreements with new distributors across the region.

In November, Cambium Networks announced that Config – which has developed a network made up of hundreds of value-added resellers (VARs) – will act as a distributor for the whole of its wireless networking portfolio across Tunisia, Algeria, Switzerland and French-speaking Africa. Config's initial target markets will include VARs in IT security, networking, IP systems, IT outsourcing and video surveillance.

"As a major player in the IT distribution market with more than 20 years of technological expertise, Config is an ideal partner for us as we expand across France and Africa,"

says Fabien Garcia, Cambium's regional sales director for France and Morocco. "Config has a team of 10 sales engineers and 10 pre-sales engineers who are highly tuned to the wireless market."

In another deal also announced in November, 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."

Meanwhile in January, Minerva announced a new distribution 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".

TM Forum certifies MTC in Libya

Makman Technology Consulting (MTC) has become the TM Forum's exclusive Certified Associate in Libya.

The TM Forum is an industry association of more than 850 member companies that support the digital transformation of the telecoms sector. The organisation claims it drives collaboration and collective problem-solving to maximise the business success of communication and digital service providers and their ecosystem of suppliers.

MTC's relationship with the TM Forum is now formally approved following a successful trial period that began in November 2016. The partnership will see the consultancy firm exclusively provide the forum's complete set of services to telecoms and technology companies to help drive digital transformation not only in Libya but across the region. Those services include *Frameworx* which the TM Forum describes as a "suite of best practices and standards that provide the blueprint for effective, efficient business operations".

MTC CEO Luqman Shantal says: "Partnership with TM Forum is the perfect fit to our strategy of leading digital transformation in MENA. Many others embark on this by focusing mainly on technology disruption, and a few are tackling process innovation. Our approach is to start with digital culture by humanising this imperative."

According to Shantal, the opportunities in Libya are "substantial" and he believes what needs to be overcome is not the country's current situation, but the need to address the cultural barrier as this is considered to be the primary threat to successful digital initiatives.

"Many countries exploited digital immediately post instability – take Estonia as an example," he says. "Our real challenge lies in tailoring this for culture and process maturity. We will prove to MENA that *Frameworx* does work, and we will share our success stories shortly."

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.
7/12/17	Wycliffe Selebwa	Hitachi Vantara	East Africa regional director	Oracle	Director of sales East Africa, cloud infrastructure
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

DragonWave acquired 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, Aug-Sep 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.

Vodafone ceases operations in Cameroon

Vodafone Cameroon has reportedly concluded its operations in Cameroon following an admission from its parent company Afrimax that it was no longer "commercially viable" to continue in the country.

In a statement released in early November 2017, Afrimax Cameroon said that the withdrawal of its license by local authorities meant that it had to cease operations immediately.

Afrimax and Vodafone entered a non-equity partnership agreement in Cameroon in 2016, but the Ministry of Posts and Telecommunications and the Telecoms Regulatory Board suspended their license as it said that this had been issued to Northwave which Afrimax had previously acquired.

In mid-September, the regulator ordered the suspension of Vodafone's services. APS reported that this was because, under the terms of licences in Cameroon, the rights cannot be transferred to another company.

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.
8/11/17	VEON Holdings	Global Telecom Holding	1,997,639,608 shares	EGP7.90 per share	VEON's mandatory tender offer represents around 42.31% of GTH's issued shares. The offer is currently being reviewed by the Egyptian Financial Supervisory Authority.
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.
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.

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

NITRO aims to cut costs and optimise performance

Working seamlessly across mobile, fibre, cable, cloud and enterprise networks, VIAVI Solutions reckons *NITRO* (*Network Integrated Test, Real-time analytics and Optimisation*) enables users to cost-effectively manage their migration from today's static network deployments to next-generation, policy-based, automated dynamic networks.

Built on a common development platform that accesses and analyses data throughout the network, VIAVI says the platform addresses the challenges of the increasingly complex service lifecycle across physical, virtualised and hybrid networks. The firm claims *NITRO* will help cut costs and deliver new revenue streams for service providers and enterprises while optimising performance.

It will feature four toolsets: *Mobile* for network intelligence, assurance and optimisation; *vNet* for virtual service activation and performance; *Enterprise* for business and cloud network performance; and *TechFlow* for automated technician workflow.

VIAVI adds that *NITRO* allows networks to be managed with less manual intervention and reduced skill sets by increasing the automation of workflows and lifecycles.

By feeding real-time data from physical instruments and software virtual agents into a single presentation layer, it says the platform helps reduce complexity and increase automation, both of which are said to be needed to "confidently evolve" to future networks.
www.viavisolutions.com

Carrier Wireless Service Certification programme

The Wireless Broadband Alliance (WBA) has launched a *Carrier Wireless Service Certification* (*CWSC*) programme to enable the independent testing and certification of devices, initially, for Wi-Fi roaming and Wi-Fi offload.

CWSC is the result of the WBA's multi-operator "Next-Generation Hotspot (NGH" trial program which has been running since 2011. Twenty vendors and 50 operators participated in the end-to-end trial, simulating carrier services with real-life scenarios, credentials and devices.

For instance, it says that as the number of devices purchased from sources other than the mobile operator proliferates, established in-house testing methods are no longer enough. The alliance says *CWSC* will enable carri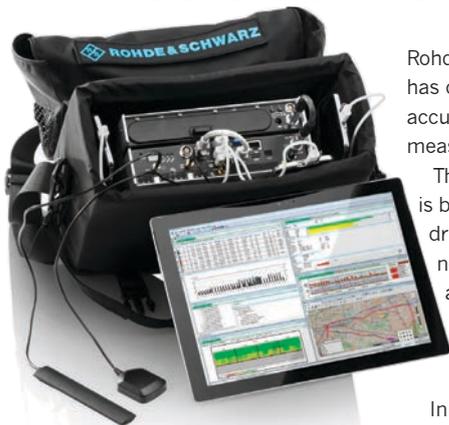ers to test Wi-Fi services from end-to-end (provisioning and billing) against different equipment and credentials. It reckons this removes issues prior to commercial release, ensuring a better customer experience.

For vendors, the programme means the end of "endless" testing with different carriers. Instead, they will now be able to test multiple devices across multiple carrier networks, gaining time to market. The WBA adds they can also gain interopera-bility certification to validate carrier requirements in order to facilitate sales and save testing resources.

Going forward, the alliance plans to introduce new services such as: NGH in-line provisioning (secure SSID); policy interworking (ANDSF and HotSpot 2.0); QoS (end-to-end); and Wi-Fi calling.
www.wballiance.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

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.

The rise and rise of Ka-band satellites over Africa

Yahsat's third Ka-band satellite, Al Yah 3, is transferred to the launch pad in French Guiana before a relatively successful launch on 26 January 2018.

With many of the latest satellites for Africa developed specifically for Ka-band, DR. NICOLA DAVIES and RAHIEL NASIR find out if that's the best option for enabling broadband connectivity from space.

At the World Economic Forum held in Davos in January 2018, the UN's Broadband Commission launched yet more targets to bring online the world's 3.8 billion people who are still not connected to the internet. It has set what it describes as seven "ambitious yet achievable" targets in support of *Connecting the Other Half* of the global population over the next few years.

By 2025, the commission says:

- All countries should have a funded national broadband plan or strategy, or include broadband in their universal access and services definition.
- Entry-level broadband services should be made affordable in developing countries, at less than two per cent of monthly gross national income per capita.
- Broadband/internet user penetration should reach 75 per cent worldwide, 65 per cent in developing countries, and 35 per cent in least developed countries.

Other targets include ensuring more people have sustainable digital skills, boosting connectivity for small businesses, and achieving gender equality across all targets.

None of this will sound particularly new – the UN has been setting similar targets since the turn of the century, first with its millennium development goals which were then followed up in 2015 with the sustainable development goals.

And yet, according to the UN's own statistics, billions of people around the world still lack any kind of internet access. Out of the 47 nations defined as "least developed countries" by the ITU, 28 are in Africa while the others are located mainly in Asia, the Pacific, and the Middle East.

Of course, resources are scarce in these countries. And as is well documented, severe weather and terrain often further inhibit the installation of the infrastructure needed to advance a developing nation. But there are technical solutions to help both overcome these challenge as well as support targets for universal broadband connectivity. And arguably, the best possible solution involves the use of satellites.

The world is a "connected village"

With the demand for affordable broadband connectivity increasing, many operators have been focusing on developing and launching satellites that feature Ka-band payloads.

Ka-band spectrum operates in the upper frequencies (26.5-40GHz) which allows for greater bandwidth than C-, L-band or Ku-bands. While Ku also operates at a higher speed, much of the bandwidth is already taken up, leaving little access to the average consumer.

Ka utilises smaller and cheaper equipment, making it an ideal choice for consumer internet use. While airlines have leveraged Ku-band spectrum for several years, they are beginning to harness technology that also supports Ka in order to give passengers internet access during flights.

While C-band frequencies (which operate

within 4-8GHz) are less focused this makes them less susceptible to weather changes. A less focused signal also lends itself to greater coverage. However, while broadband via satellite using C has been available for many years, the dish is much larger, making it awkward to transport and install in remote areas. These dishes are also somewhat more expensive.

Nonetheless, although Ka may be regarded more popular at the moment, Patrick Van Niftrik, SES' EMEA VP of spectrum management and development, says that we would not be where we are today as a society without C-band. In a blog posted in 2015, he wrote: "The world became a connected village first and foremost thanks to satellite, and it started with C-band."

Martin Jarrold, chief of international programme development at the Global VSAT Forum (GVF), adds that C-band continues to serve an extremely important purpose, and points out that UN organisations use the spectrum for vital public safety functions, disaster relief efforts, humanitarian and development programmes.

Furthermore, Ka frequencies have often been dismissed due to the potential of fading in stormy weather. Eran Shapiro, director of business and technology ventures for Spacecom, says: "C-band remains the band of choice due to its greater effectiveness in relation to rain fade and greater geographic reach."
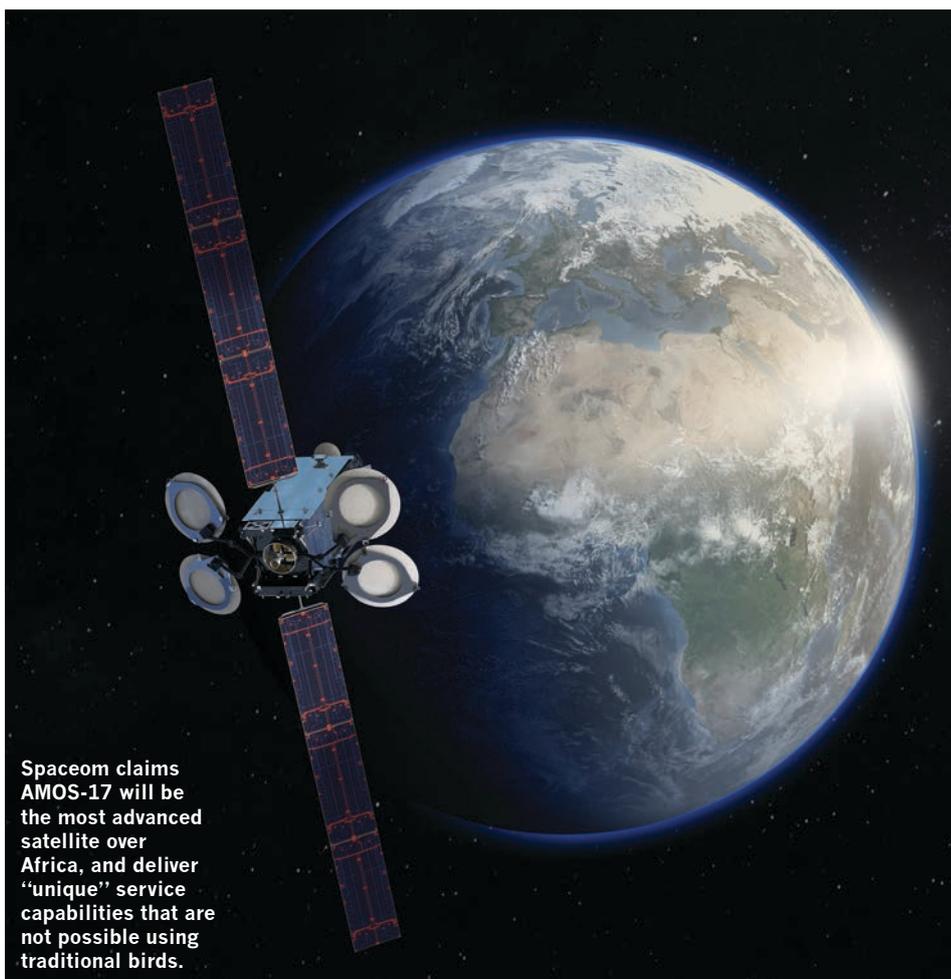
Researchers continue to work towards addressing the rain fade issue, and one such advancement involves the use of adaptive coding modulation (ACM). By automatically strengthening and adjusting the coding and modulation of the satellite and therefore providing 'uninterrupted service', rain fade becomes less of a problem, according to frequency control specialist Bliley Technologies.

While one of the advantages of leveraging Ka is the use of a smaller antenna, researchers have also found success in using larger antennas to combat rain fade in certain situations. Additionally, satcom services provider Link Communications Systems says rain fade can be avoided by using antennas in pairs as part of the ground infrastructure (but it also notes that interestingly, rain fade doesn't continue to decrease with the addition of more than two antennas).

Compared to other spectra used by satellites, Ka frequencies have only been available for a relatively short amount of time. The GVF suggests that the band wasn't even utilised for commercial purposes until the 1970s.

Superbird A1 was the first satellite to support Ka-band technology. It was developed by Sky Perfect JSAT and was launched in December 1992 to cover Japan. *Superbird A1* has since been retired. It was not until 1999 that a commercial communications satellite that used Ka was orbited. Developed by Asia Broadcast Satellite, *ABS 7* was positioned to support services in Afghanistan/Pakistan and the Middle East, and continues to function today.

Since then, all of the mainstream satellite

Spaceom claims AMOS-17 will be the most advanced satellite over Africa, and deliver ''unique'' service capabilities that are not possible using traditional birds.

operators have launched spacecraft with Ka-band missions, and there have also been several relative newcomers who develop, build and launch satellites that exclusively use the spectrum.

Ka keeps coming

Around 48 satellites are presently scheduled to launch around the world between 2018 and 2020. Of these, 24 support Ka-band, and include dedicated birds for the region such as *HYLAS 4* from Avanti Communications.

Avanti launched its first satellite in 2010, but its first African orbiter came two years later with the launch of *HYLAS 2*. Both carry Ka-band payloads, as does its third Africa satellite which is currently being constructed under a joint venture with the European Space Agency and will consist of eight beams within a single steerable antenna capable of covering an area the size of Southern Africa.

In the meantime, Avanti plans to launch *HYLAS 4* with Arianespace in March 2018. The hybrid propulsion satellite features part traditional chemical orbit raising, part electric orbit raising and electric station keeping which means it will reach geostationary orbit in just 10 days, saving around 90 days of electric orbit raising. Avanti says *HYLAS 4* can therefore reach its on station location by mid-March 2018. It adds that the launch configuration also provides a "lower mission risk profile", and means it is able to carry sufficient fuel to support up to 19 years in orbit.

The company adds that the new Ka-band satellite will double the capacity of its existing fleet and cover more than 35 countries across the globe. The addition of *HYLAS 4* will also see Avanti complete its coverage across Africa, in addition to having the capability to cover Latin America. "These markets can be reached through the satellite's four steerable beams which can be placed anywhere across the Earth's disc visible from the orbital slot of the satellite," states the firm.

Yahsat is another operator committed to Ka-band. On 26 January 2017, the UAE-based company confirmed the successful launch of its third satellite, *Al Yah 3*. It said that 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. But Yahsat pointed out that the satellite is "healthy and operating nominally," and that a revised flight plan will be executed in order to achieve the operational orbit and the original mission.

Like Avanti's *HYLAS 4*, *Al Yah 3* will also expand Ka-band coverage across Africa as well as establish a presence for Yahsat in Latin America. The hybrid electric propulsion satellite is due to begin delivering commercial services later in 2018. It promises to bring Yahsat's commercial Ka-band coverage to an additional 19 new markets in Africa and reach 60 per cent of the population, as well as cover more than 95 per cent of Brazil's population.
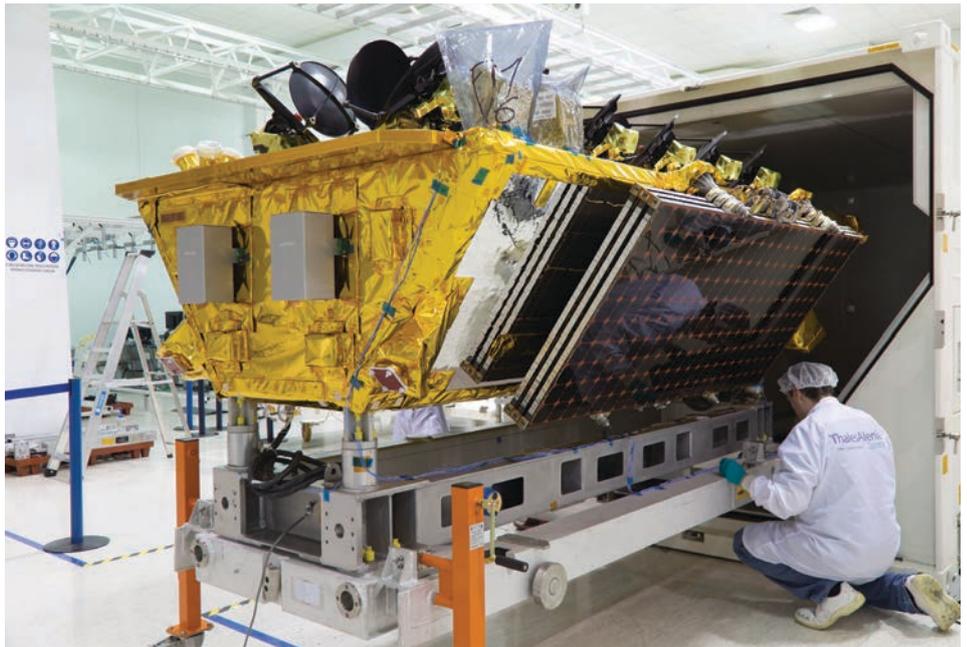
After experiencing two tragedies over the last few years – first with the loss of *AMOS-5* in

2015 (see 'Rocket Power' feature, Dec 2015-Jan 2016), and then with AMOS-6 exploding on the launch pad in 2016 (News, Aug-Sep 2016) – Spacecom plans to launch a new satellite in early 2019. AMOS-17 is specifically designed for Africa and will operate from 17°E to expand coverage across the continent as well as the Middle East and Europe. Spacecom says it will offer "extensive" Ka-, Ku- and C-band high throughput satellite services, combining broad regional beams and high throughput spot beams to maximise throughput and spectral efficiency. The firm claims AMOS-17 will be the "most advanced" satellite over Africa, and deliver "unique" service capabilities that are not possible on traditional satellites.

Another company aiming to make its satellite debut in Africa is Global IP. Its first high capacity satellite, GiSAT-1, is currently being built by Boeing and when it is launched at the end of 2018, the company claims the 150Gbps spacecraft will be larger than all the other Ka satellites located over Africa combined.

The loss of AMOS-6 created a problem for Eutelsat – together with Facebook, it was planning to use capacity on the satellite for its 'Konnect Africa' broadband initiative. Since then, Eutelsat has launched Konnect Africa as a separate broadband service business and has contracted to lease capacity on Yahsat's Al Yah 3.

Set up by Eutelsat in 2015, Konnect Africa's ambition is to provide affordable broadband connectivity across sub-Saharan Africa. It

Thales Alenia Space is building eight more satellites for O3b. Four are due for launch in March while the next quartet will go up in 2019 to bring the company's total number of orbiters to 20.

launched commercial services in June 2017 and is currently developing partnerships in nine African countries. Last November, the company unveiled its SmartWIFI hotspot service to enable retail outlets as well as healthcare centres or schools to become a connectivity point and digital gateway for the surrounding population. Eutelsat claims users will be able to connect to the internet from a distance of several hundred metres around the hotspot, and that access can be extended to several kilometres via off-the-shelf Wi-Fi repeaters.

Users can access the new service through vouchers or mobile payment schemes. Eutelsat adds that SmartWIFI also comes with a unique local data storage system, enabling users in remote areas to access smart digital content free of data charges, including online courses and education programmes, sports and entertainment.
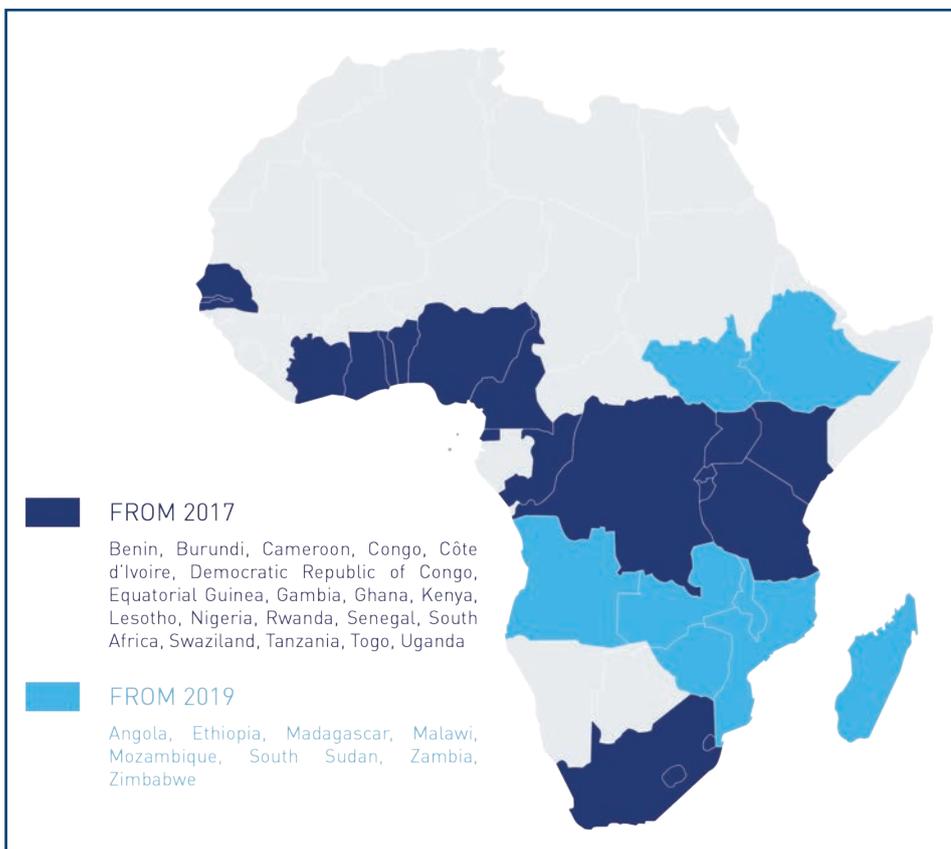
Away from Konnect Africa, Eutelsat's upcoming launch schedule for 2018-2019 includes four new satellites of which three will serve Africa while the fourth will use the company's Quantum beam technology and offer flexible coverage. Two will offer Ku-band transponders.

Towards the end of January 2018, O3b – which is now a wholly owned subsidiary of SES – announced that its next four MEO (medium Earth orbit) satellites had arrived in Korou in preparation for their launch in March 2018. Its claimed that the new Ka-band spacecraft, which will augment O3b's current fleet of 12, offer improved connectivity, capabilities and increased performance. SES plans to launch another four satellites in 2019 to bring the total number of O3b satellites to 20.

Going low

Clearly then, the future of broadband using satellite technology centres around leveraging Ka-band technology. So where does that leave a new generation of satellite companies that plan to put hundreds of low Earth orbit micro satellites into space to create a clustered, mesh network that will cover the planet?

Since one of the major purposes of utilising LEO satellites is to enable remote connectivity, the ground equipment needed to pick up lower frequencies such as those in C-band will need to be large. This is likely to make such equipment difficult and expensive to install in remote areas.

FROM 2017

Benin, Burundi, Cameroon, Congo, Côte d'Ivoire, Democratic Republic of Congo, Equatorial Guinea, Gambia, Ghana, Kenya, Lesotho, Nigeria, Rwanda, Senegal, South Africa, Swaziland, Tanzania, Togo, Uganda

FROM 2019

Angola, Ethiopia, Madagascar, Malawi, Mozambique, South Sudan, Zambia, Zimbabwe

Set up by Eutelsat in 2015, Konnect Africa's aim is to bring affordable broadband connectivity to sub-Sahara Africa. It is currently developing partnerships in various countries on the continent where it will offer services via Yahsat's Al Yah 3 which was launched in January 2018.

Although forthcoming LEO missions from the likes of Leosat, OneWeb, and Sky Space and Global have a lot to offer, the GVF's Jarrold says several factors need to be considered for their success.

Firstly, and as highlighted above, he reiterates that Ka-band may not be fast enough for online games or interactive programmes. Secondly, while LEO satellites require less power and are less expensive to produce, more of them must be deployed to create and support a reliable network. Thirdly, he points out that when a LEO satellite moves over the ocean or across an unpopulated area, the opportunity to generate revenue diminishes.

Another factor to consider is that because so many satellites are required, the process of synchronising them could present an issue. Furthermore, engineers will need to focus their energies on utilising those satellites already in orbit in addition to developing new satellites to add to the network.

Ultimately however, while LEO satellites have the potential to change the market landscape, the GVF says the technology will be "complementary" to traditional (GEO) HTS systems. Jarrold says: "Each has advantages over the other, with innovation in both of these space-based technologies continuing as the demand for availability and quality of services delivered to customers grows."

Spacecom's Shapiro is likely to support this view when he says: "We should not base our businesses on one technology, rather, we should spread our risks."

Technology continues to evolve and when satellites are developed Shapiro says they need to be versatile enough to support any advances that take place from construction to launch. And they need to be upgradable as well. Like others within the industry, Shapiro believes that if engineers focus on making a variety of bandwidths faster and more reliable through their satellite technology, there will be more options for the consumer.

Jarrold is quick to point out that frequency should not be the only factor considered when it comes to delivering broadband via satellite. "In this respect, HTS offers enormous advantages to many of the world's developing regions, including Africa and South Asia, in terms of meeting consumer broadband service demand," he says.

The cost of engineering HTS systems has come down, and the product reliability continues to increase. Furthermore, satellite companies will continue engineering structures to serve a variety of consumers, including the military, humanitarian organisations, as well as the average consumer. Consequently, the technology will continue to improve to support all bands.

At the end of the day, the choice of high frequency spectra like Ka- or Ku-band, or a lower

**Martin Jarrold,
Chief of international programme development,
Global VSAT Forum**

"HTS offers enormous advantages to many of the world's developing regions, including Africa and South Asia, in terms of meeting consumer broadband service demand."

frequency like C, is going to depend on the needs of the consumer. At this point, the pros and cons to each spectrum are dependent on how they are utilised. As Shapiro concludes: "Those who have the means and can afford to invest in a new ground terminal and technology, may likely go for a DTH Ka-band-based satellite broadband service. Enterprise and service operators who need to quickly expand their business and assure high service availability will continue with C-band." ∎

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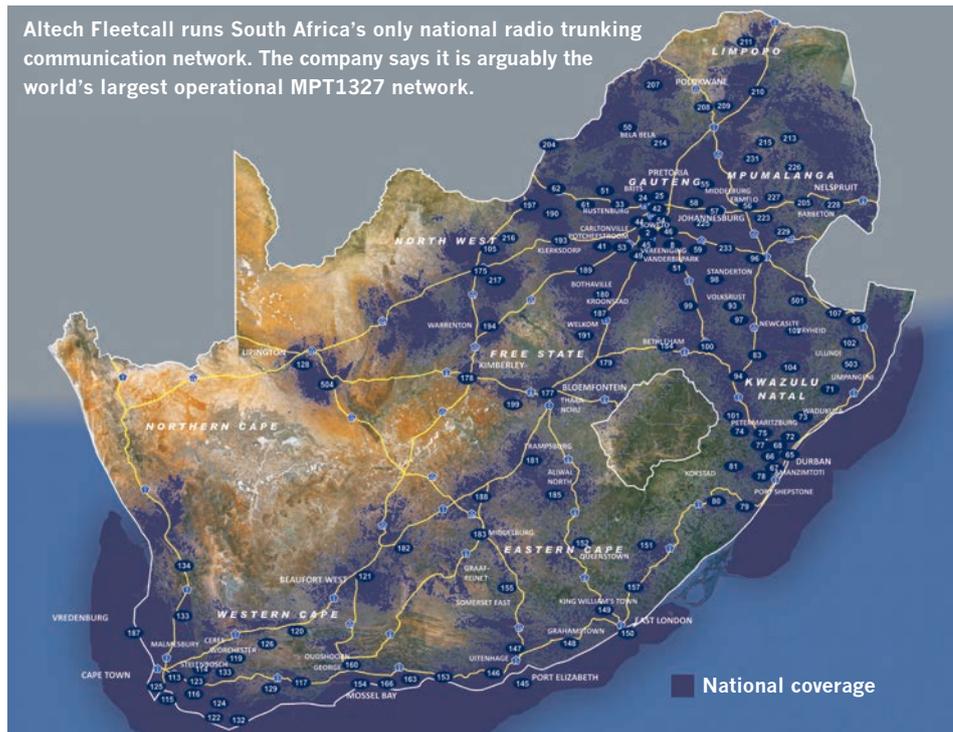
By early May 2015, the first phase of the DMR network rollout had been completed in Gauteng. This initial portion of the updated network provides coverage stretching from Sasolburg to Rustenburg and from Hammanskraal to Devon.

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.

National coverage

"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 2000s 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.
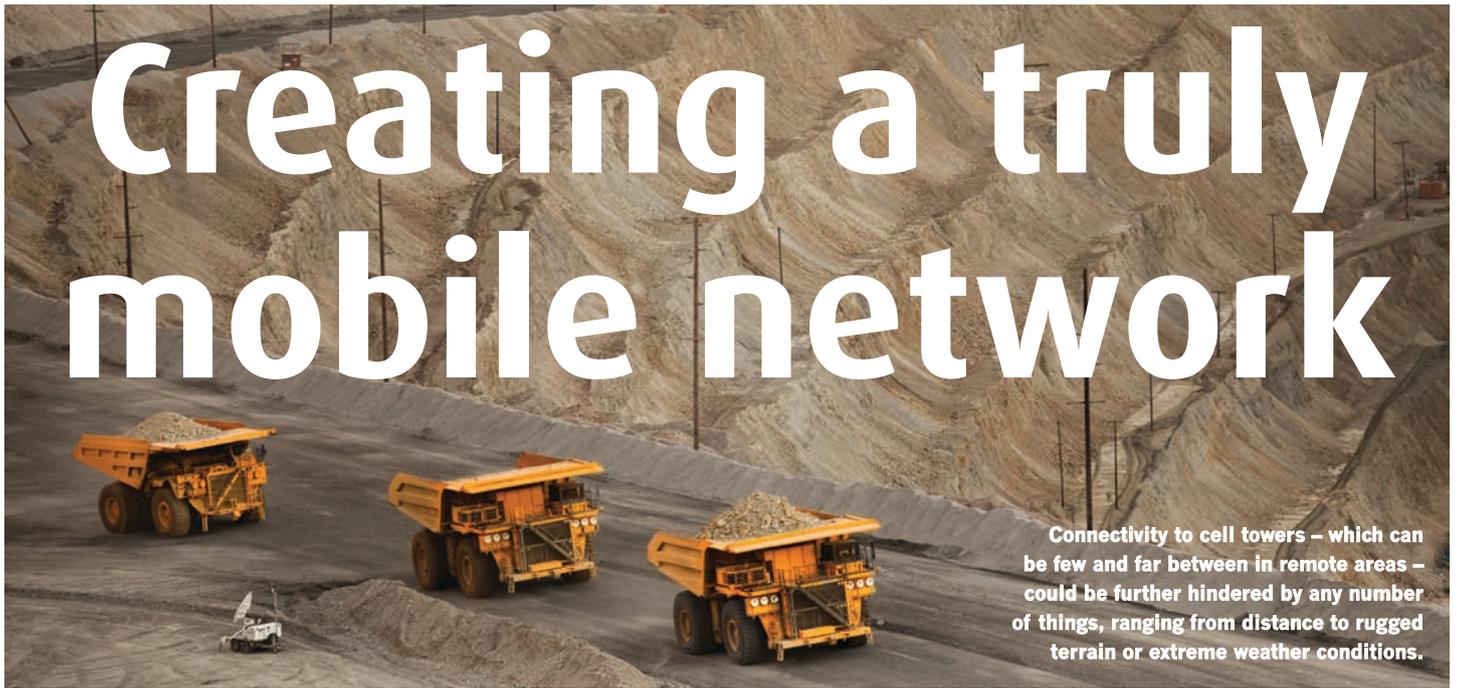
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Building Africa's digital future

Creating a truly mobile network

Connectivity to cell towers – which can be few and far between in remote areas – could be further hindered by any number of things, ranging from distance to rugged terrain or extreme weather conditions.

DAVA BAUMANN discusses how connectivity can be re-imagined using portable cell towers and kinetic mesh network architecture.

With the number of connected devices, sensors and 'smart' technologies on the rise, industry leaders are in a unique position to modernise their working environments and gain a number of never-before accessible skills, including real-time visibility into the status of people, equipment, and operations of their organisations.

However, with this new toolbox of skills and technologies, organisations find themselves faced with another dilemma: the need for a robust, reliable and mobile network that can keep up with these demands 24/7.

It is the operators of large worksites that are often forced to watch productivity slow to a halt as cellular and other 'make-to-break' traditional networks struggle to keep up with such new and dynamic operations. Connectivity to cell towers – which can be few and far between in remote areas – could be further hindered by any number of things, ranging from distance to rugged terrain or extreme weather conditions. Reliable connectivity issues can leave operators feeling trapped and their fleet stranded, limiting productivity and putting organisations in difficult positions.

What operators need in this day and age is a completely mobile network – a 'cell tower on wheels', to synonymously move or have the ability to become one with the fleet.

Instant connectivity with total mobility and scalability

Operators in remote and/or sprawling industrial environments don't always have enough existing cell towers (or any towers at all) located within their range, and it can take an enormous effort to have one installed in a new location.

But what if, instead of being statically tied to one site, the cell tower had the ability to get up and drive directly to the place you needed it, moving with ease to rapidly expand coverage to that area across the entire fleet and area of operation?

These cell towers on wheels could also spread as far and wide as a site requires, flexibly augmenting or creating infrastructure *ad hoc* to provide ubiquitous coverage across growing operations – no matter how far out they span.

And as more connected people, devices and machines are added to the expanding site, new cell towers would simply roll in to provide the increased network support required, as well as work with the nodes installed on the numerous moving assets the organisations have.

With the roving connectivity of a cell tower on wheels, the many moving assets that make up an industrial site – from equipment to vehicles to people – could take robust connectivity with them as they travelled. The tower would simply follow along, dodging line-of-sight issues caused by rugged terrain and seamlessly connecting hot zones to allow operators to maintain unwavering connectivity to, communications with, and control over all the 'things' that power more efficient and productive operations.

Giving the network the ability of 'wheels' means that even outer-edge communications would be completely reliable and provide a previously impossible connection directly to a control centre.

Kinetic mesh: the key to IIoT and digital transformation

Industrial operators can kickstart their organisation's journey to digitisation by deploying a kinetic mesh network topology. This type of network allows for multiple nodes to connect, broaden and strengthen the network where necessary. With the nodes essentially acting as compact, rugged, transportable, mini cell towers, virtually anything in the organisation's infrastructure can be turned into networking equipment.

In comparison to a regular cellular network, which has limited cross communication, a kinetic mesh network can communicate peer-to-peer seamlessly via numerous instantaneous connections. These form an adaptable, dynamic network that has the ability to provide reliable wide-range communications practically anywhere.

Without the need to trade-off one feature for another, kinetic mesh networks provide unwavering bandwidth at high-speed, complete mobility, true mission critical reliability and scalability – a true future-ready network.

Building a reliable network starts with reliable hardware, and with the introduction of IIoT applications, they need more from their networks and they need it now. From rising bandwidth demands to an increase of cyber security concerns, the need for unwavering communications are at an all-time high. For example, devices connected via Wi-Fi experience a three to five second disconnect as they move between access points.[1] This slight break in transmission can make or break mission critical situations, with essential data being lost

or interrupted. The potential benefits that kinetic mesh networks bring when it comes to digitising industrial organisations are limitless, and due to the nature of the mesh network topology, there are numerous ways it can be used to transform a company's daily operations.

For example, kinetic mesh's 'predictive maintenance' feature gives companies the ability to visualise a problem and respond before it happens, minimising maintenance costs by up to 30 per cent and eliminating complete breakdowns of equipment by nearly 70 per cent, significantly reducing capex and opex. Furthermore, automation of machinery or other previously manual processes and monitoring equipment and methods can boost productivity by as much as 30 per cent.[2]

Organisations are catching on

Oil and gas field environments are already tempestuous and unpredictable enough, even before throwing network and connectivity issues into the mix. Rapid developments in technology are disrupting organisations' current operating models and pushing for change, forcing companies to update their thinking when it comes to technology. Changing the way organisations think when it comes to realising new tech and shifting the focus from simply implementing a gadget or wearable here and there to a total overhaul of network infrastructure should be viewed as a necessity, not a burden.

Today's oilfield operators must manage remote wells across hundreds of square miles of rugged terrain, manually retrieving information from each individual wellhead and reporting back to the command centre weekly. This process is long, tedious and potentially unsafe for employees, and furthermore, the data collected on each weekly trip is virtually redundant once it reaches the command centre.

Digital technology adoption is offering a way forward, helping industry leaders move from caution to optimism in the coming years. According to Deloitte,[3] 77 per cent of oil and gas organisations surveyed in 2017 are either exploring or designing their organisations with the future in mind. The fastest growth areas of digital investment in the sector are predicted to be in AI, robotics, drones, and wearables. And it is with this growth that organisations can expect increases in production by at least 20 per cent, with features such as remote wellhead monitoring installed.[4]

With 89 per cent of oil and gas professionals believing mobility will revolutionise their operating environments,[3] kinetic mesh networks give operators the unwavering and secure connectivity needed to access and act on ever-increasing volumes of data, thus ensuring that productivity is maximised throughout inevitable market swings. Automation of processes and machinery, precision drilling, wellhead communications, automated drilling and pumping, drones for surveillance and inspection, together with production control and reporting are the key areas of interest for a successful transition into the digital age.

Like oil and gas organisations, mining companies can also reap the benefits of kinetic mesh in their impending digital transformations.

In an industry where short periods of operational downtime can cause millions of dollars in losses, mining operators must be

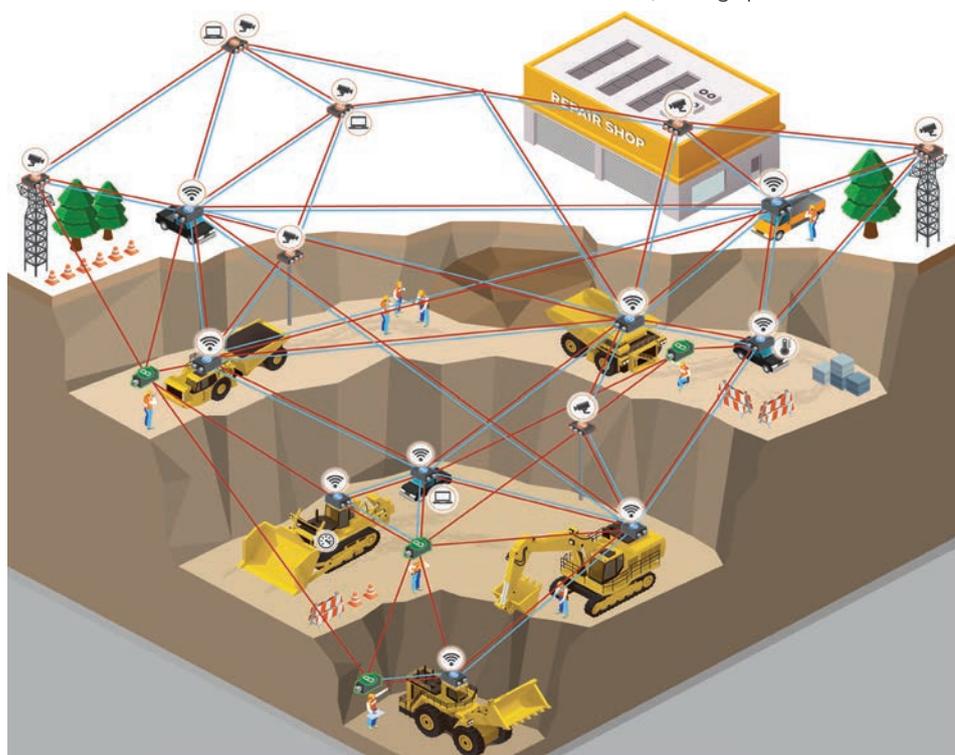**Dava Baumann, VP of global marketing, Rajant Corporation**

empowered to continuously monitor, manage and control their fleets of high-value equipment, vehicles and personnel wherever they roam. Kinetic mesh networks are proven to stand up to the extremes of mine environments, and effectively connect sprawling open pit and underground mining operations.

For example, an industry model for an open pit mine producing 80,000 tons of ore per day estimates the cost of the required machinery to be in excess of USD47.5m.[5] These high-value assets must be carefully managed to ensure uptime is always optimised, which in turn will maximise production. By placing nodes directly on these vehicles, shovels and pumps, the organisation can seamlessly link them together – gaining real-time information from each asset's applications on status, efficiency, maintenance needs, and more, even as they move across the rugged landscape.

In 2017, fleet automation and optimisation were the key trends in the mining industry, with Deloitte estimating in its annual trend report that approximately 35 per cent of current mining positions in South Africa will be completely automated by 2037.[6] By analysing real-time data with analytical engines, mines can often improve their processed mineral yields by three to 10 per cent within months. Using self-driving technology in mines can result in a 15 to 20 per cent increase in production, as well as reduced costs in fuel and maintenance.[4]

Autonomous equipment, aerial surveillance and inspection, automated positioning systems, M2M communications, and production reporting are only some of the potential applications that kinetic mesh networks could support in mines across the world. They have already been implemented in some of the largest mining operations around the world to reliably cover people and assets across all remote sites. And so far there is no sign of any slowdown – globally, 69 per cent of mining firms say they are looking at remote operation and monitoring centres, 29 per cent at robotics, and 27 per cent at unmanned drones.[6] ∎

A kinetic mesh network topology features multiple nodes that basically act as transportable mini cell towers. Virtually anything in the organisation's infrastructure can be turned into networking equipment. Giving the network the ability of 'wheels' means that even outer-edge communications would be completely reliable and provide a previously impossible connection directly to a control centre.

[1] https://www.mbtmag.com/article/2016/07/your-network-infrastructure-ready-iiot
[2] Industrial IoT Survey 2017, MindBrowser & The IoT Magazine
[3] https://www2.deloitte.com/content/dam/Deloitte/us/Documents/human-capital/us-cons-og-hc-trends-industry-report.pdf
[4] https://www.rajant.com/moving-assets/
[5] https://www.rajant.com/applications/mining/
[6] https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Energy-and-Resources/gx-er-tracking-the-trends-2017.pdf

Atlas is using the TW1m as an integral part of its next-generation electronic verification system. PHOTO: © AIRBUS

TETRA modem aids security in the Emirates

Atlas is using TETRA to transmit information about vessels located off the UAE coast as an instrumental part of its next-generation electronic verification system.

The telco is using Airbus' latest *TW1m* TETRA modem to integrate confidential data, such as GPS positioning and text messages, into its vessel identification system which is run by a government agency. The system consists of radars, long range cameras, e-passport trackers, location and correlation servers, as well as command and control systems. Atlas has been operating the first generation of this technology since around 2007 and is planning to establish a new scheme soon.

The *TW1m* contributes to the tracking and identification of registered and un-registered ships off the UAE coast. Airbus claims it is an "extremely secure" solution, especially when other communication systems are not in operation. The company says the modem transmits voice and data safely thanks to end-to-end encryption and can be incorporated in supervisory systems, custom telemetry and position tracking.

"Our components meet all the essential specifications set by the UAE government institutions", says Selim Bouri, head of Middle East for Secure Land Communications at Airbus.

He also points out that Middle East-ern markets are increasingly "path-breaking" for the entire professional mobile radio industry worldwide.

Openwave helps Zain with "darkening" networks

Zain Saudi Arabia has deployed an NFV-based solution from Openwave Mobility to manage rising levels of encrypted mobile data traffic on its network.

According to Openwave, encrypted data from OTT services is "darkening" networks. It says this is preventing operators from being able to gain insight into mobile traffic to manage QoE. The firm adds that in some parts of the world, more than 60 per cent of data is encrypted and that this could reach 80 per cent before the end of 2017.

Khalid Charaa, core planning senior manager for Zain Saudi Arabia, says: "We have seen a sharp rise in HTTPS and QUIC traffic over the past few months, and proactively took steps to find solutions that could ease congestion and deliver superb QoE."

By using Openwave's virtualised solution, the operator aims to manage and monetise encrypted data including streaming videos, and deliver what the vendor describes as "outstanding" quality of experience for customers.

Indranil Chatterjee, SVP of product and sales at Openwave Mobility, says more than 50 per cent of data travelling on mobile networks is video. He believes that this is straining networks and, along with encrypted data, adversely impacts QoE.

"Our research has shown that subscribers will only tolerate six seconds of buffering before they abandon their video and even consider leaving their operators," says Chatterjee. "In a highly competitive mobile landscape, carriers can ill-afford to overlook quality."

Coriant to enhance Vogel national network

Vogel Telecom has selected an integrated OTN switching and coherent optical transport platform from Coriant to scale its nationwide backbone network. The Brazilian 'carrier's carrier' also expects the system to enhance the delivery of flexible end-user services, including Ethernet, MPLS-TP and SDH.
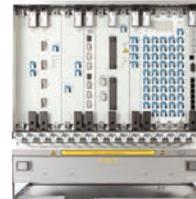
Vogel's national network infrastructure spans more than 21,000km of fibre and supports high-capacity connectivity services across more than 600 cities in 13 states as well as the Federal District of Brasília.

The new national backbone project covers over 4,000km of fibre transmission and connects the states of Rio Grande do Sul, Santa Catarina, Paraná, São Paulo, Minas Gerais and Rio de Janeiro. Coriant says the end-to-end solution, which extends from metro to long haul network segments, supports up to 5Tbps of capacity and is designed to support up to 10Tbps in the future as demand evolves.

Products deployed include: Coriant's *7100* pico packet optical transport platform for metro access; *mTera* universal transport platform for agnostic service

aggregation and OTN switching; and the *hiT 7300* (*pictured*) multi-haul transport platform for long haul coherent DWDM transmission.

According to the vendor, its system will provide Vogel with "seamless interworking and efficient service hand-offs" between metro, core and long haul domains. The firm also claims its platform will lead to "significant improvements" in network operations, while enabling "faster and more cost-effective" creation of resilient, high-speed services optimised for end-user application demands.

Ericsson helps steer solar race car to victory

Solar Team Eindhoven (STE) once again used Ericsson's technology for its sun-powered race car in the World Solar Challenge 2017.

At the time of writing, this year's competition had just ended and saw 17 teams race 3,022km through the Australian outback with the sun as the only source of energy for their cars. STE came top in the Cruiser Class with their *Stella Vie* solar car, making it their third victory in a row at the biennial event.

STE is a multidisciplinary team of 21 students from the Technical University Eindhoven. In 2015, they worked with Ericsson on their *Stella Lux* car which was built using the vendor' IoT platform. The vehicle

used Ericsson's *Solar Navigator* application to aggregate in-car, traffic and weather data to perform in-depth analytics and optimise the route.

For 2017, *Stella Vie* was upgraded with a re-designed *Solar Navigator* application. Ericsson says this now takes height profile maps into account, finds the most-efficient route, and shows drivers how much energy is saved compared to a standard, fossil fuel-powered car.

According to the company, its technology helped STE to stay ahead by ensuring that unnecessary acceleration was avoided by optimising routes around traffic congestion and by taking traffic flows into account.

Solar Team Eindhoven claimed a third victory in the World Solar Challenge in their sun-powered car, Stella Vie. PHOTO: TU EINDHOVEN/BART VAN OVERBEEKE

By considering local weather conditions along the route, the application also enabled the best energy contribution of the solar panels and lowest resistance from rainfall, as well as suggesting an optimal route to harness the power of the sun.

East Africa Com

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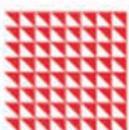**Connectivity champions unite:**
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ENGAGED ATTENDEES

30
SOLUTIONS-FOCUSED EXHIBITORS

50
VISIONARY SPEAKERS

27%
CXO LEVEL

> "
> We saw a fabulous speaker line up – some of the biggest names in the industry and I made very useful contacts."
>
> Ishkhan Alexio Manyonde,
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Dialog claims South Asian "firsts" with IoT network and 5G

Sri Lankan cellco Dialog has launched a NarrowBand-Internet of Things (NB-IoT) network across Sri Lanka.

In making the announcement in mid-October, the Axiata Group subsidiary claimed it had become the first operator to launch NB-IoT in South Asia. However, Singapore's M1 also launched a commercial nationwide NB-IoT network earlier this year in August (see News, Q117 issue).

Dialog has activated the technology on its nationwide network via a software upgrade to existing 4G base stations. The company says the launch of the network will enhance the functionality of its IoT related services such as the connected home and connected car applications that were launched as part of its Smartlife platform in early July.

"NB-IoT provides a great springboard for us to further leverage IoT in introducing revolutionary services that will enrich Sri Lankan lives," says Pradeep De Almeida, group CTO, Dialog Axiata. "The network will amplify opportunity for solutions such as smart metering utilities, smart parking systems, smart garbage collection, logistic solutions, as well as other applications in agriculture and farming."

In a separate development in August, Dialog worked with its technology partners Ericsson and Huawei to trial 5G. In what it claimed was another first for South Asia, its says the demonstration established the capabilities of 5G to deliver throughputs in excess of 35Gbps on the air interface.

During the trial, Dialog and its partners showcased 5G technology solutions such as Massive MIMO and cloud radio, together with what the operator described as "futuristic" applications such as IoT-based smart parking, real-time 4K video streaming, industry automation and augmented reality using robots, as well as other digital business solutions.

Eutelsat sets orbit raising record for electric satellite

Eutelsat's latest satellite for Asia has now entered commercial service after claiming to break the record for the fastest satellite electric orbit raising (EOR).
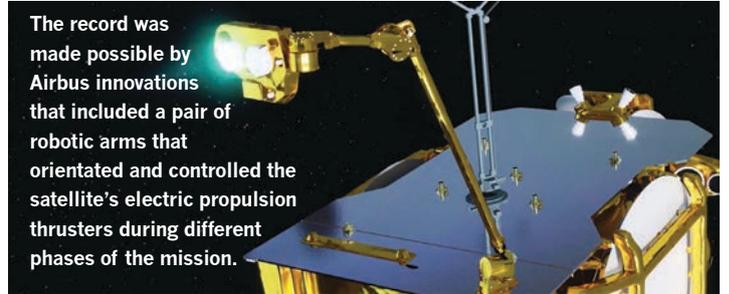
EUTELSAT 172B was launched from Kourou on 1 June. After the solar array and electric propulsion arms had been deployed and initial testing had been completed, the EOR phase began on 8 June. Eutelsat says that during this stage the satellite consumed almost six-times less propellant mass than a spacecraft with chemical propulsion.

EUTELSAT 172B took just four-months to reach its orbital slot of 172°E before going live in November.

The satellite was built using the latest EOR version of the Airbus' Eurostar E3000 platform and had a launch mass of only 3,550kg.

"We are the first company to demonstrate full electric propulsion for satellites of this size and capacity,

The record was made possible by Airbus innovations that included a pair of robotic arms that orientated and controlled the satellite's electric propulsion thrusters during different phases of the mission.

enabling their launch in the most cost-efficient manner," said Airbus' head of space systems, Nicolas Chamussy. "Furthermore, with our system design, operation strategy and the plasma thruster technology we implement, we have completed the fastest electric orbit raising ever from transfer to geostationary orbit, which will allow Eutelsat to put their electric satellite in service in a record time."

EUTELSAT 172B has a triple mission that includes: a trans-Pacific C-band payload to help reach new growth markets in South East Asia and for delivering increased power and broader coverage to enhance the service previously provided via EUTELSAT 172A; a regular Ku-band payload which doubles capacity at 172°E and connects North Pacific, North East Asia, South East Pacific, South West Pacific and South Pacific; and a high throughput Ku-band payload designed for in-flight broadband with multiple user spots optimised to serve densely-used Asian and trans-Pacific flight paths.

Facial recognition app helps tackle slavery

Credas is a new app which has been created to help companies in the construction industry ensure that their employees and sub-contractors are verified to work in the UK.

A UK government report earlier this year estimated that there are between 10,000 and 13,000 modern slaves in the country. And in a 2015 study conducted by the European Union, construction was second on the list of economic sectors in the EU most prone to

labour exploitation.

Since the UK introduced the Modern Slavery Act in 2015, all companies with an annual turnover of more than GBP36m must detail what they have done to ensure modern slavery is not present in their business or supply chain.

It's claimed Credas uses real-time facial recognition technology to quickly process and validate more than 4,000 different types of ID to help construction companies recruit ethically.

The verification process consists of three simple steps: a selfie, an image of the photo ID, and a 'liveness' test. The liveness test involves the user taking a second selfie whilst copying a simple action, and confirms that he or she is completing the verification in real-time.

The app is compatible with all mobile devices, and Credas claims its facial recognition software is 97.7 per cent accurate. All data captured by the app is held in a Microsoft Azure-based cloud platform.

MediaTek and SoftBank test NarrowBand-IoT

MediaTek and SoftBank plan to conduct a series of interoperability tests in 1Q18 to pave the way for the development of NarrowBand-IoT commercial applications in Japan.

MediaTek claims to have played a "pivotal" role in the formulation and implementation of the 3GPP LPWA specification for NB-IoT. The company recently unveiled its highly integrated and ultra-low-power MT2625 NB-IoT SoC

(System-on-Chip), and announced its collaboration with China Mobile to build the world's smallest NB-IoT module (16mm X 18mm) around the chipset.

The MT2625 chipset has been built to meet the needs of cost-sensitive and small IoT devices and uses MediaTek's power consumption technology which is said to enable IoT devices to work with batteries for years.

The firm adds that its "highly integrated" SoC combines an Arm

Cortex-M microcontroller, pseudo-static RAM, flash memory and power management unit into a small package to lower the cost of production while also speeding up time-to-market.

The MT2625 is also said to support a full frequency band (450MHz to 2.1GHz) of 3GPP R13 (NB1) and R14 (NB2) standards for a wide range of IoT applications including smart home control, logistics tracking and smart meters.

First steps to DTH

Ukraine's State Space Agency, UkrKosmos, is now offering satellite transponder services for content sharing to the country's regional broadcasters. Utilising Spacecom's *AMOS-7* satellite at the 4°W prime orbital position, the agency is starting with an initial 19 regional channels on the bouquet, which includes 13 SD and six HD, reaching throughout Ukraine. Spacecom says that joining the bouquet will enable most of the region's broadcasters to take the first step towards creating a digital DTH platform.

NB-IoT smart meter

Huawei says it has developed the first NB-IoT smart meter. EDP Distribuição is using the technology for a pilot project in the Parque das Nações area in Lisbon as part of the UPGRID project of the EC's *Horizon 2020 Programme*. The area is already covered by NB-IoT and has been equipped with two base stations provided by NOS, which becomes the first operator in Portugal to test 4.5G-IoT technology on its network infrastructure. Around 100 customers will take part in the pilot which runs until the end of the year.

TETRA on Titicaca

Hytera is delivering a turnkey video surveillance and mission critical network in Puno. The Peruvian city is on the shores of Lake Titicaca at an altitude of over 3,800m, and one of its greatest attractions are the Uros Floating Islands. This and its proximity to the Bolivian border means that it is a regular stop on the South American tourist trail. To ensure security, the city authorities will deploy Hytera's *DIB-R5* outdoor TETRA base station, *PT580H Plus* portable and *MT680 Plus* mobile radios, as well as a command and control centre equipped with AVL/ APL and dispatcher consoles.

IoT and GPS enable Mobike to manage smart cycles

Cycle sharing service Mobike will use IoT solutions to support its station-free smart bikes in the US.

AT&T's 4G connectivity combined with Qualcomm's LTE IoT modems and Mobike's smartphone app will enable users to locate, unlock and securely pay for the nearest available cycle. At the end of their ride, they will be able to return the bike to a designated Mobike location or any regular cycle parking area.

Mobike says it currently manages more than seven million smart cycles across more than 160 cities globally. They feature the company's smart lock which is enabled by Qualcomm's *MDM9206* global multimode modem. It features LTE IoT connectivity and GNSS position-location capability to help customers identify an available bike, quickly unlock the smart lock, and assist with real-time management.

Mobike's bicycles feature a smart lock that is enabled by Qualcomm's MDM9206 LTE IoT modem.

Since the entire fleet is GPS-enabled, Mobike says it can get cycles to locations where they are needed most. During high demand, it can even offer app users incentives to move bikes from remote areas to more populous parts of the city.

The entire system also provides continuous monitoring of the bike's status, and AT&T's network will enable Mobike to capture detailed usage data from every bike.

"By providing IoT connectivity for Mobike, we're advancing both the sharing economy and the future of smart cities in a meaningful way," says Chris Penrose, president, IoT solutions, AT&T.

G+D enables finance group to provide mobile payment for savings banks

The German Savings Banks Finance Group has begun to test a mobile payment solution ahead of its planned launch in 2018.

The platform has been developed by S-Payment, a subsidiary of the Deutscher Sparkassen Verlag (DSV) group. A two-month pilot programme with ten issuing savings banks went live in September with G+D Mobile Security providing token aggregation as a managed service and the mobile wallet.

The firm connects the banks with the Mastercard Digital Enablement Service (MDES). Test users have a wallet app installed on their smartphones. After registration and authentication, the selected Mastercard credit card is tokenised using G+D Mobile Security's *Convego CloudPay* service connected with MDES. This manages the OTA provisioning of the virtual card (token) to the wallet and can support any subsequent lifecycle management

requirements, says G+D.

Once authenticated, users can make mobile payments at any contactless POS terminal that supports Mastercard.

G+D Mobile Security describes the Savings Banks Finance Group's rollout of mobile payment as "ground-breaking". It also claims that the use of its technology has enabled S-Payment to provide its service to the banks selected for the pilot with "minimum efforts".

Emergency system trials as volcano erupts

Mobile phone software that allows communication without relying on network coverage had its first real world trial at the end of September following a volcanic eruption on the island of Ambae in Vanuatu.

Serval Software was developed by a team led by Dr. Paul Gardner-Stephen at Flinders University in South Australia. It doesn't require tower infrastructure and instead harnesses a 'meshed' network of phones connected to small extender devices *(see World News, May-June 2016 issue)*.

When Gardner-Stephen and his team arrived in Ambae to put *Serval Software* to the test on 29 September, Manaro Volcano continued to spurt plumes of smoke, ash and rock. A

full evacuation was ordered, and the eruption left the island almost completely disconnected from the rest of the region.

The team had installed five mesh extenders in the Efaté Island village of Pang Pang on a previous trip. The small village is only around a kilometre long and lacks mobile phone coverage. Gardner-Stephen and his team are now working to test the devices in real conditions. He says: "The mesh extenders are just hammered onto a piece of wood and stuck on the side of a house. We've tied them on coconut palms and people can carry them around in a backpack."

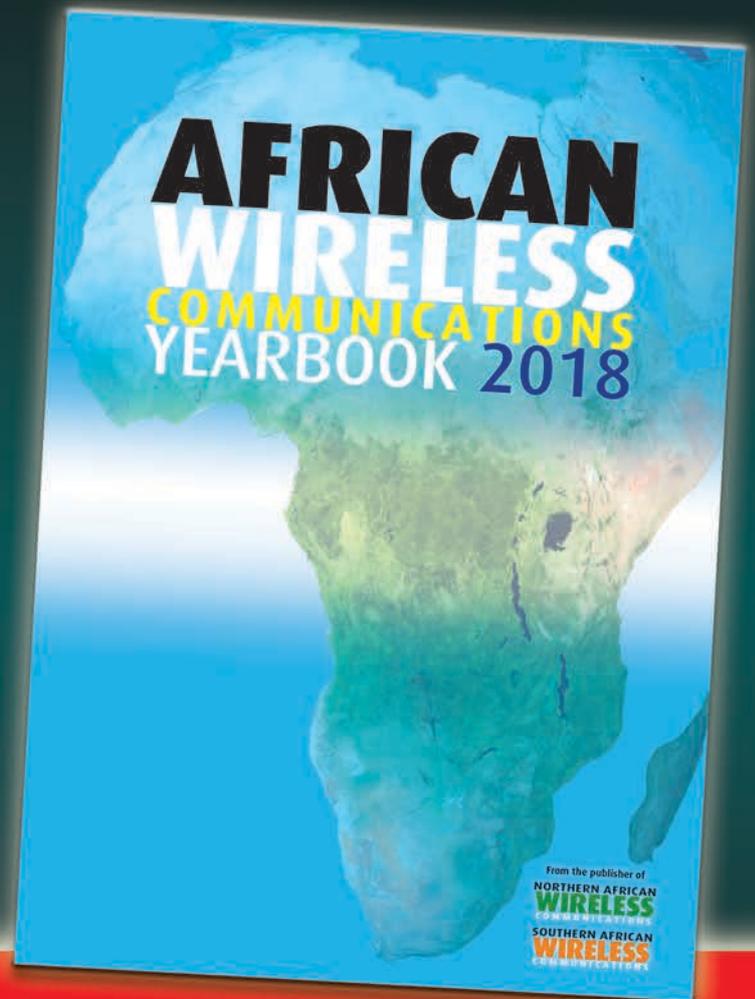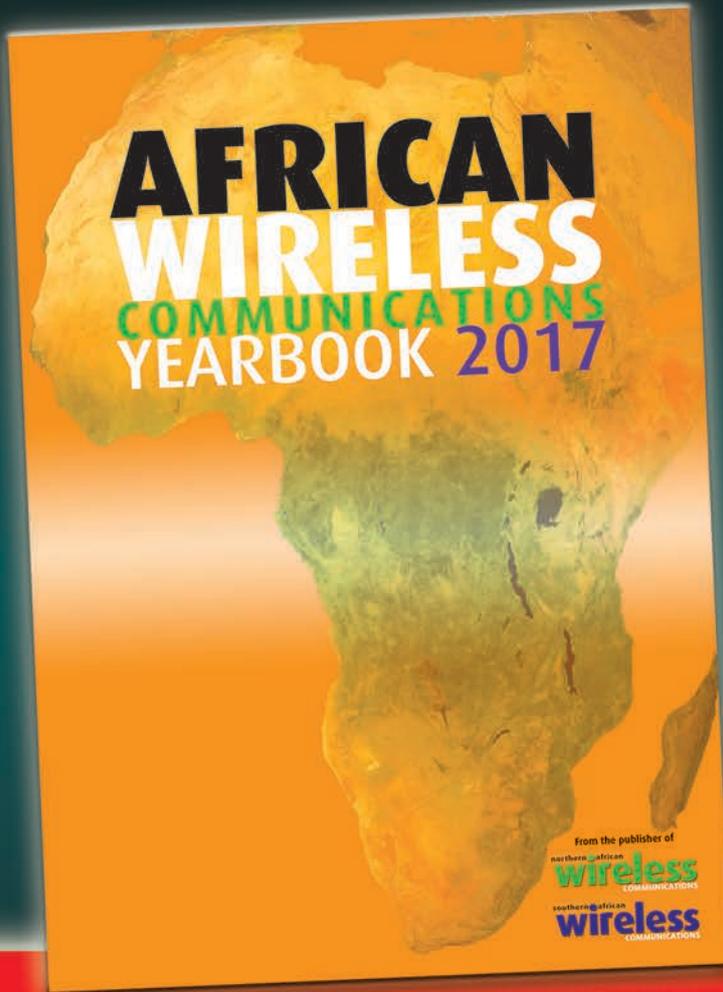He adds that the project is looking to boost its presence in Vanuatu by

Dr. Paul Gardner-Stephen tests his mobile technology in Vanuatu following a volcanic eruption in the region.

working with local operators. "Our system stands alone from everything else. If we can integrate that in a seamless way with the existing cellular networks, even if you're beyond the range of phone coverage, our devices can repeat a way back from the edge of coverage."