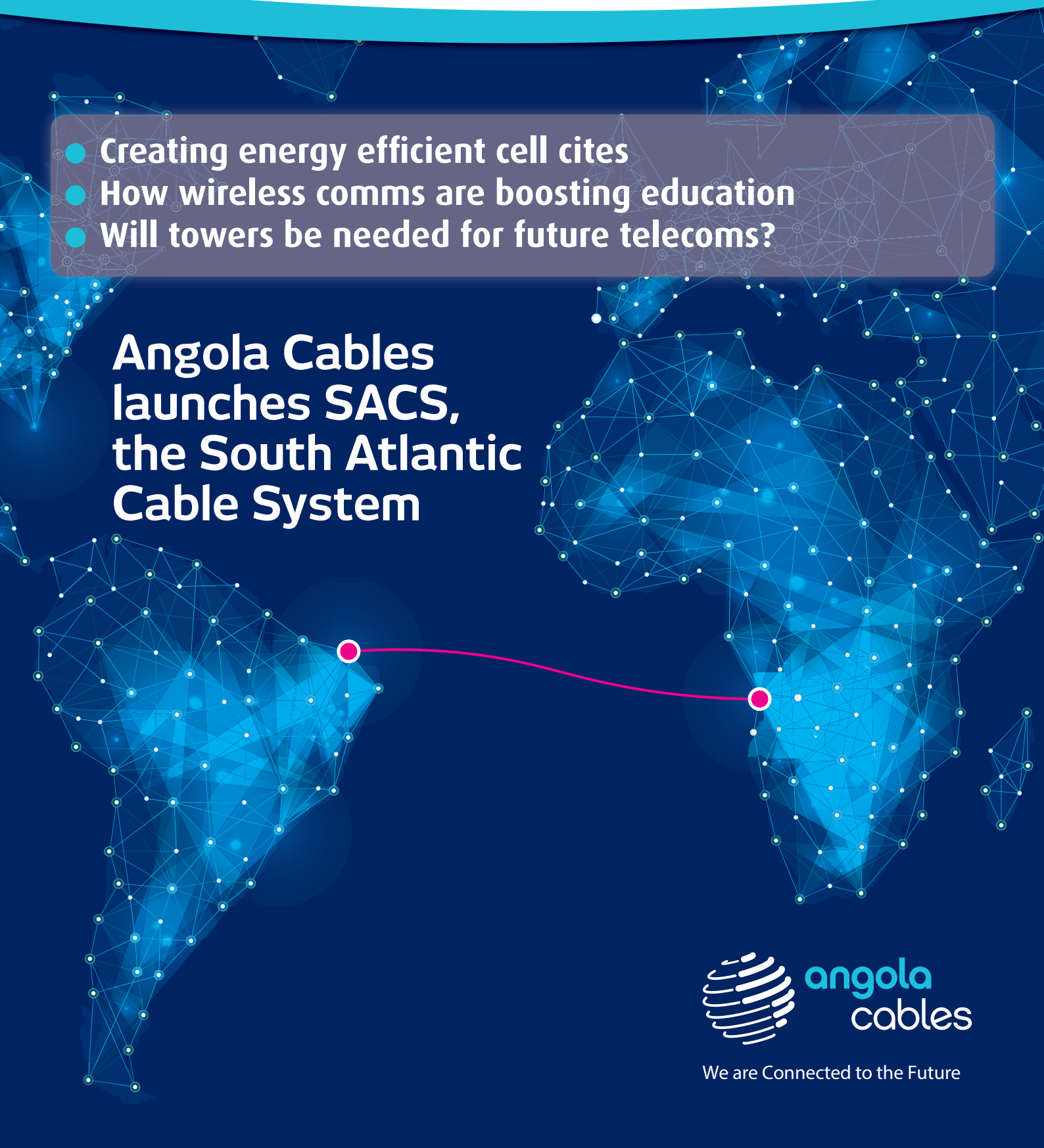
FEBRUARY/MARCH 2016
Volume 15
Number 1

northern african wireless COMMUNICATIONS

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

- Creating energy efficient cell cites
- How wireless comms are boosting education
- Will towers be needed for future telecoms?

Angola Cables launches SACS, the South Atlantic Cable System



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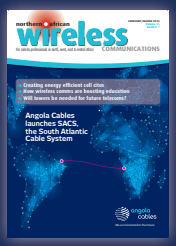

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KADIUM

Thermodynamic engine can deliver power, clean water and connectivity

A clean-tech start-up company claims to have developed a solar-powered machine that can bring internet connectivity, clean water, and electricity to communities across Africa.

Watly uses a combination of photovoltaic and thermal energies to power the *Watly 3.0* thermodynamic computer which, according to its developers, can sanitise more than 5,000 litres of contaminated water (including ocean water) a day, as well as generate electricity and Wi-Fi connectivity. The machine uses solar heat collected by super efficient vacuum-tubes to vaporise and therefore sanitise the water. This process also includes the use of graphene technology.

Photovoltaic panels located on the roof generate off-grid electricity to power *Watly*'s internal electronics, and can also be use for recharging external devices such as mobiles.

Each *Watly* can be deployed as standalone infrastructure, but multiple machines can also be used as part of a, "Energynet" which, it's claimed, "can power entire cities and

Watly 3.0 was developed after the successful trial of a smaller machine in Abenta Village, Ghana.

countries". They can all communicate with each other and be controlled with the *Central Network Management* platform via radio links, existing 3G or 4G networks, and/or satellite.

Watly has been funded from Horizon 2020, the European Union's programme for innovation. The development of the system follows the successful trial of a smaller machine, *Watly 2.0*, in the village of Abenta, Ghana.

The firm is now launching a crowd funding campaign that will be used to create another *Watly 3.0*, with contributors being allowed to decide where the first model will be placed, with the options being Nigeria, Ghana, or Sudan.

Liquid Telecom to build new undersea cable

Liquid Sea, a wholly-owned subsidiary of Liquid Telecom, will build a new submarine cable that will run approximately 10,000km from South Africa to the Middle East with onward connectivity to Europe.

The system will connect to the operator's pan-African terrestrial network to offer what's claimed to be a "reliable and affordable" international connectivity service to landlocked and coastal countries in Africa.

Liquid says the project will also include landing stations in several ports that are currently not served by existing undersea cables.

Liquid Sea promises to offer speeds of 20-30Tbps which are said to be up to 10 times the capacity of existing submarine cables in the region.

The project is already fully funded and will take around two years to complete. Liquid Telecom has now issued a request for tender to international companies involved in the construction of submarine cables.

Group CEO Nic Rudnick says: "The impact of Liquid Sea will be a far more reliable and ultra-fast connection for governments, businesses, schools and homes in both coastal and land-locked countries across Africa."

Airtel Uganda invests in 3G network upgrade

ZTE has completed the upgrade of Airtel Uganda's 3G network, with the aim of ramping up performance and 4G deployment. As part of the upgrade, the vendor says it deployed the country's first nationwide commercial UMTS900 system, and claims this has increased network performance by 20 per cent.

The project consisted of Airtel swapping out a total of 674 3G sites. It involved the adoption of ZTE's multi-mode ultra band and integrated *SDR 2.0* solution which it says is designed to support a "smooth evolution" towards LTE/LTE-A networks.

According to ZTE, the improvement will mean wider coverage and an enhanced indoor 3G experience. The firm says it will also mean lower equipment power consumption and tower renting fees, resulting in reduced overall capex and opex.

The upgrade is the first collaboration between the two companies in Africa, but Airtel Uganda CTO Rajesh Agrawal hopes ZTE can deliver more successful projects for the operator in the coming year.

ZTE builds 100G backbone in Ethiopia – News, p6

Shell Nigeria uses IoT for remote oilfield monitoring

IoT (Internet of Things) connectivity has enabled Shell Nigeria to monitor its remote infrastructure in the Niger Delta.

The Digital Oilfield (DOF) solution is providing pipeline surveillance and wellhead monitoring. It was implemented for Shell by KONČAR, a Croatia-based producer of industrial electronics and power electronics devices and systems.

The company used end-point devices enabled with RPMA *(Random Phase Multiple Access)* network technology from US machine-to-machine specialist Ingenu. This provided Shell Nigeria with field data about pipeline pressure,

The M2M 'Digital Oilfield' system means Shell Nigeria can monitor its remote pipelines and wellheads.

temperature and flow. KONČAR's remote terminal units and wireless pressure and temperature transmitters were installed in flow stations, manifolds and wellheads to provide connection to the back office, ensuring reliable information transmission.

According to Ingenu, RPMA uniquely enables devices to connect more efficiently and cost-effectively in both the uplink and downlink. It claims the technology requires fewer towers to provide coverage to large areas – 1:10 compared to 1:30 needed for cellular. Unlike alternative communications solutions such as satellite, PI to SMS, and GPRS, the company adds that its LPWA network technology can be installed using minimal infrastructure, which resulted in a total project cost savings of more than USD1 million for Shell Nigeria over the alternatives.

The system was integrated and supported by technology services company Upland Consulting Nigeria. Its president and CEO Bola Awobamise says: "The key criteria for selecting a solution were the technology's ability to cover difficult terrain, power performance, and long-range transmission as well as network scalability, two-way communications, and secure data transmission. RPMA offered all of these attributes and eclipsed the competition with its connectivity, network capacity, and exceptional value."

Ethio signs up ZTE to build 100G backbone network

Ethio Telecom has chosen ZTE to construct its new high-bandwidth backbone transmission network covering Ethiopia's western and southern regions.

The 100G dense wavelength division multiplexing optical transport network (DWDM/OTN) transmission backbone will increase capacity by ten times, says ZTE, and will help the country's state-run monopoly telco develop 3G, LTE and broadband services.

According to ZTE, the network integrates an intelligent WDM automatic switch optical network (WASON) and uses polarisation-division multiplexing quadrature phase shift keying (PM-QPSK) modulation, coherent reception and software decision forward error correction (SD-FEC) technologies.

It says the transmission backbone network will be built to achieve a large-capacity OTN for cross connects, optical network intelligent scheduling and ultra-long distance transmission. The aim of the project is to give Ethio Telecom the capacity it needs to evolve its 2G, 3G, LTE, fixed-line voice and broadband services in the future.

Ethio Telecom has been working to double capacity to 60 million subscribers by the end of this year - two-thirds of the population - and improve total telecoms network coverage to 85 percent. As a strategic partner, ZTE will help the operator and jointly promote developments in Ethiopia's telecoms market.

While the USD1.6bn deal for the backbone transmission network was originally signed with Huawei and ZTE in 2013, giving each 50 per cent of the project, Ethio Telecom later handed part of ZTE's portion to Ericsson after disagreements over the cost of upgrading the existing network.

Egypt sees world's first deployment of E-band link with 5Gbps capacity

Orange's mobile operation in Egypt (formerly Mobinil) has become the first operator worldwide to deploy Ericsson's *MINI-LINK 6352* microwave radio.

The *6352* is an outdoor unit for E-band frequencies – 70/80GHz – and supports 5.5Gbps capacity over 750MHz channel.

Rafiah Ibrahim, head of Ericsson MEA, says: "The advantages of E-band are its wide spectrum and channels that enable very high capacities. An enhanced customer experience is the key to differentiation for operators to succeed in competitive markets such as Egypt."

According to the vendor, E-band spectrum is instrumental in supporting microwave to meet the capacity increase for backhaul as well as fronthaul. It claims the deployment of *MINI LINK* will improve Egypt's readiness for widespread LTE adoption, and enable Orange to become a data centric operator.

Ericsson believes E-band spectrum will experience major growth globally and represent up to 20 per cent of new deployments in 2020, with traditional bands still accounting for 70 per cent.

In separate news, Orange announced the re-branding of Mobinil in early March. All the operator's retail outlets across Egypt have been re-named, and it is promising new services such as the *Mobile Connect* secure authentication solution, as well as access to Orange devices specifically tailored for the local market.

The Egyptian company is the largest subsidiary of the Orange Group, with 33.4 million customers at the end of December 2015, and accounts for 27 per cent of its revenues earned from the MEA region.

Ericsson says its MINI-LINK 6352 has an embedded L2 switch that makes it ideal for multiple combinations of mobile backhaul solutions.

Satcoms supporting energy companies

SpeedCast International will use capacity on Gazprom Space System's *Yamal-402* satellite to provide high-performance services to global oil and gas companies across Africa.

The Russian Ku-band satellite orbital at 55°E, and SpeedCast claims customers will benefit from the "high-performance" and "excellent look angles" for the region offered by the spacecraft.

It also says that with the uplink based in Germany, customers will be able to land their traffic directly into Europe and take advantage of high-speed interconnection throughout that continent.

Furthermore, SpeedCast reckons Germany's "excellent" standards of infrastructure and advanced data laws will ensure the highest levels of security.

Dmirty Sevastiyanov (*pictured*), director general of Gazprom Space Systems, adds: "Our partnership with SpeedCast will further strengthen our common ability to deliver the reliable and efficient broadband and mobile connectivity that energy companies demand nowadays."

Gemalto links with MTN for new Token

Digital security supplier Gemalto is to provide its *LinqUs* Mobile ID platform to MTN Nigeria, marking the first commercial rollout of SIM-based services delivering mobile authentication for all users.

Compliant with Mobile Connect (the latest GSMA standards) *MTN Token* is available immediately to the cellco's 70 million subscribers in Nigeria. It is designed to give users a universal digital ID combined with mobile-based second factor authentication, for easy and secure access to web services, payments and financial transactions.

"With the launch of *MTN Token*, we are the first private provider of secure online identity and positioned as a warrant of digital ID and authentication in Nigeria," says A'isha Umar Mumuni, general manager for products and innovation at MTN Nigeria. "As our network of service providers adopting *MTN Token* grows, the solution will deliver significant reductions in fraud whilst easing the frustration often experienced by consumers on their digital journeys."

MTN Token takes advantage of the secure SIM vault, protecting sensitive data and transactions.It uses the subscriber's mobile number as the user name; depending on the level of protection required by the service provider, the process is completed either by simply pressing 'OK' on the handset, or by entering a unique user-selected PIN.

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Smile launches Voice over LTE in Nigeria and Uganda

Smile Telecoms says it has become the first operator in East Africa to offer VoLTE services.

The cellco has launched two LTE products, *SmileVoice* and *SmileUnlimited*, in Nigeria and Uganda. It says Tanzania and the DRC will follow later this year.

According to company, *SmileVoice* allows *Android* and *iPhone* customers to make high-quality voice calls to anywhere in the world with their data bundles, at the lowest local call rate in Nigeria. It comes in two forms: customers can either download a free mobile app or use a VoLTE-capable handset plus a Smile SIM card.

When out of range of the Smile network, the *SmileVoice* app can connect to the internet via 3G or Wi-Fi at home or abroad. Customers who make calls when travelling abroad will be charged their local call rates, as if they were calling from home.

Meanwhile, *SmileUnlimited* offers customers 30 days of unlimited access to Smile's SuperFast 4G LTE mobile broadband service.

Beatrice Kiraso, chairperson of Smile Uganda, says as well as being the region's first to operator to develop and introduce Voice over LTE, Smile is also the world's first to develop and introduce a free VoLTE app that enables all customers in Uganda with *Android* and *iPhone* devices to experience "high-quality" voice calls.

Smile Uganda chairwoman Beatrice Kiraso is promising "high-quality" voice calls for subscribers.

Etisalat launches Internet of Things Service in Egypt

Etisalat Misr is launching M2M and IoT services in Egypt, following a deal with long-term partner, security supplier Oberthur Technologies.

The aim is to enable Etisalat's enterprise customers to quickly launch new services based on Oberthur's *M-Sense* solution software platform. Local ecosystem partners can use the platform's ready-made components and existing application frameworks, including sensor data visualisation, reporting, business rules and off-the-shelf applications, in order to build customised applications.

Oberthur claims its ability to rapidly develop and propose a scalable commercial configuration was a critical element in Etisalat's decision to use *M-Sense*. It says the full platform serving the initial priority projects and selected IoT Services will be available in a short timeframe.

According to the company, *M-Sense* offers a "rich set" of horizontal capabilities for both application enablement and device management. It secures collection, visualisation and real-time management of various IoT data from any M2M device, and controls remotely connected enterprise assets in real time.

Etisalat hopes it will accelerate the deployment of vertical applications, for example for smart cities, universities or businesses such as transport, oil and energy or real estate.

Dedicated broadband for enterprises in Ghana

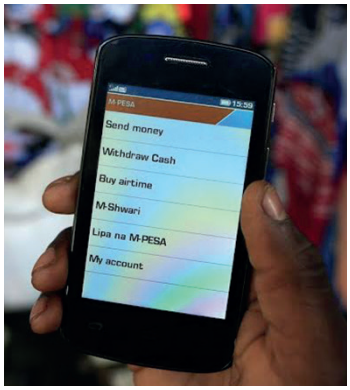
AfricaOnline is boosting the broadband service it offers to corporate clients in Ghana with the launch of its Radwin Network.

The new symmetrical fixed wireless broadband network will initially cover greater Accra, before being extended to peri-urban areas and cities such as Kumasi, Takoradi and Tamale where radio connectivity is already present.

AfricaOnline Ghana MD Kwadwo Ohemeng Asumaning says: "We plan to leverage our existing customers to encourage them to increase capacity, follow up on clients who churned due to the instability of the previous unlicensed network, as well as target newly established business looking for reliability through a superior service."

While the popularity of 4G and LTE technology is increasing in the region, Asumaning claims the Radwin Network will allow more tailoring of solutions to ensure greater value for money, and is well-suited to companies with several branches that need dedicated uncapped symmetrical bandwidth.

He adds: "We believe that our long-term presence in Ghana, serving major key corporates and SMEs, gives us the experience and competencies to better understand the needs of our customers and recommend appropriate solutions to their requirements."



The research also revealed that more than 80 per cent of respondents cited fraud as their primary concern with offering mobile money services.

Africa leads in mobile money services

Africa and South East Asia are leading the world in mobile money implementation, new research has revealed.

According to risk management and analytics firm Neural Technologies, 61 per cent of African telcos are running one or more mobile money service, while in South East Asia it is 75 per cent. Globally, the figure is only 63 per cent, and it's just 30 per cent in Western Europe. Eastern Europe reported the highest implementation of money transfer services, at 67 per cent.

The GSMA said that there were more than one billion mobile money transactions in December 2015, with 100 million new registered accounts becoming active during the year.

"Mobile money services are becoming an increasingly important part of the global telecoms and banking industries, and we will only see it grow further in years to come," says Neural Technologies' CCO and deputy CEO Luke Taylor. "It was encouraging to see 45 per cent of global respondents recognising mobile money as a channel for new services and revenues. In Africa, the Middle East and South East Asia, this rose to over 50 per cent of respondents, which gives us an indication on where these markets will be heading in the next 12 and 24 months and beyond.

The findings form part of Neural's Telecoms *Risk Management Global Survey 2016*. More than 100 telecoms fraud experts completed the survey which asked questions about key aspects of the market, from company losses to the emergence of Big Data, OTT and IoT.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New tech hub aims to track and control disease

In the wake of the 2014 Ebola outbreak, a new technology hub is to be created in Egypt to trace and control diseases, predict outbreaks and engage communities.

The African Health Data and Disease Control Hub (AHDCH) is an Egyptian government initiative, with the Association of Friends of the National Cancer-free Initiative (AFNCI) as implementing partner and Microsoft providing technology support.

"The AHDCH aims to play a primary role in disease control, enhancing the quality of life of citizens in affected areas, and helping African countries achieve their Sustainable Development Goals around health and the environment," says Ambassador Dr. Hazem Fahmy, secretary general of the Egyptian Agency of Partnership for Development (EAPD).

EAPD secretary general Dr. Hazem Fahmy says the hub will help African nations achieve their SDGs around health.

The hub will include what's described as a state-of-the-art virtual platform developed on a scalable backbone infrastructure. While the platform will be headquartered in Egypt, it will act as a one-stop solution for all African countries, providing a nationwide directory of diseases, prevention methods, medical facility maps, vaccinations and medications.

It will also publish government news and campaigns, and the creators say they are open to collaboration with relevant national, regional and international organisations.

Customised training will be handled by the AFNCI, who will also manage the day-to-day operations of the hub, including collecting data, generating reports and maintaining an active community of users. Microsoft will provide the primary technology, knowledge and expertise for solution development.

The hub should be completed by the end of 2016, with rollouts expected over the following three years.

ICT's crucial role in Ethiopian education

Ethiopia's Ministry of Education is teaming-up with Microsoft to use ICT to transform education, further innovation and develop employability.

Under an agreement driven by Microsoft's *Shape the Future* public-private partnership initiative, the two organisations aim to promote inclusive digital access, encourage innovative and creative thinking, develop critical skills, and build the capacity of local teachers.

To achieve this, learning institutions will receive access to software tools, online learning programmes, certification programmes for educators, support and consulting services, as well as affordable licencing options.

Dr. Kaba Urgessa, Ethiopia's minister for higher education, says: "Our economic competitiveness depends on how our schools and universities use ICT to prepare students for the modern workplace. The agreement will ensure that our technology investments are used to support our broader education goals."

According to the African Economic Outlook, around 11 million young people are expected to enter the continent's labour market every year for the next decade. However, in the youth labour market of 36 countries, the outlooks said there is still a 54 per cent mismatch between the skills of job seekers and employers' needs.

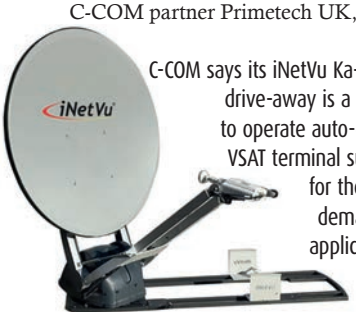
"When bringing ICT into Ethiopian classrooms, our focus will be on aligning our programmes with industry requirements and demands," says Ali Faramawy, corporate VP of Microsoft MEA. "Localised content and empowered teachers play a crucial role in this. While ICT can indeed have a profound impact on student learning, that impact needs to be mediated by other factors, including educators."

Connecting the education sector – Wireless Users, pp22-24.

Avanti approval for C-COM mobile antenna

C-COM Satellite Systems has received type approval for its *iNetVu Ka-1202G* antenna system from Avanti Communications.

In a test performed by a European C-COM partner Primetech UK, the 1.2m auto-deploying mobile antenna, along with its new advanced 7710 auto-acquire controller, delivered more than 10Mbps upload and up to maximum modem capacity 59Mbps download rates using an iDirect *X7* satellite router with a 3W transceiver.



C-COM says its iNetVu Ka-1202G drive-away is a simple to operate auto-deploy VSAT terminal suitable for the most demanding applications.

C-COM says the system was tested using three-axis motorisation allowing the user to operate within the same Ka-band beam or to roam to adjacent beams with auto-polarisation switching function.

The company adds that the system performed well even during a substantial hailstorm, where SNR marginally dropped from 17.8dB to 14.5dB.

"Our resellers in Europe, Middle East and Africa now have more choices on the size of antenna and associated broadband speeds they can offer their customers," says C-COM Satellite Systems CEO Leslie Klein.

The *Ka-1202G* is C-COM's third vehicle-mounted antenna to be approved for operation on Avanti's *HYLAS 1*, its first Ka-band satellite launched for Europe in 2010, and *HYLAS 2* which went up two years later and provides services across Africa from 31°E.

SES prepares installers for TV migration in Senegal

Satellite operator SES has partnered with Ecole Ecole SupÉrieure Multinationale des TÉlÉcommunications (ESMT) on a training programme to support Senegal's migration to satellite and digital television.

Dakar-based ESMT offers professional certifications and graduate courses in telecoms. Partnering with SES and its *ELEVATE* programme, it worked with 10 instructors who provided training to 116 local satellite installers.

Launched in 2012, *ELEVATE* is SES' quality assurance and accreditation training programme for installers across the continent. It claims more than 5,000 installers in a dozen countries have already been trained under the scheme.

"The *ELEVATE* programme has a "train the trainer" aspect," says Ibrahima Guimba-Saidou, SVP of SES Commercial in Africa. "Together with our local partner ESMT, SES colleagues identified talented installers and provided them with training and guidance on how to become instructors, thus enabling them to train other local installers. This allows SES to train more installers across French-speaking West Africa."

Along with the training sessions, installers are provided with specialised tools, free training material, and downloadable manuals. ESMT trainers are also supporting the *ELEVATE* programme in Nigeria to train more installers.

Currently, only one in three homes in Africa has a TV set, and of these only 10 per cent have access to digital TV. However, demand is expected to grow significantly in the coming years.

Ibrahima Guimba-Saidou, SVP of SES Commercial in Africa, says the ELEVATE programme has a "train the trainer" approach.

Orange to launch USD40 smartphone deal

Orange has signed a deal with Google to increase access to mobile internet across Africa and the Middle East.

Services will be targeted particularly at young people, with content covering fashion, sport and music, as well as everyday tools such as Google Search, YouTube and Google Maps. Local services and content will be added later.

Offers will be rolled out during the second quarter of this year, with tariffs starting at USD40, for a high-specification smartphone and a communication bundle with voice, SMS and data.

"As the first pan-Africa and Middle East mobile partnership with Google on this scale, we are able to bring direct value to our customers by offering the best access and services to ensure they get the most out of the mobile internet," says Yves Maitre, EVP of connected objects and partnerships at Orange.

The deal will launch on the *Orange Rise 31 Special Edition*, a new and exclusive Orange-branded 3G device. It runs on *Android 6.0 Marshmallow*, has a four-inch screen, and comes with the latest version of Orange's *Experience* software suite.

The operator is also planning an educational campaign to show customers how to take advantage of *Google Search* and *Google Maps*.

The first device that will be launched under the partnership is Orange Rise 31 Special Edition, a new and exclusive 3G smartphone.

N+ONE offers neutral peering in Morocco

Casablanca-based cloud services provider N+ONE Datacenters has launched Morocco's first neutral IXP (internet exchange point), with support from France-IX.

With the promise of improving in-country connectivity, the CASIX IXP aims to give ISPs and content delivery networks (CDNs) a neutral location for peering. According to N+ONE, this means less reliance on international IP transit and its associated costs, and also eliminates the possibility of the IXP owner, which is often a carrier, of having influence over the peering community or their customers.

N+ONE reckons that as the first and largest carrier-neutral data centre operator in Morocco, it is in a strong position to sponsor the country's first neutral IXP. Réda Ben Talha, the company's deputy director of sales and marketing, adds: "We will offer free colocation services for the exchange at all our facilities, and our ISP, CDN, banking and corporate clients who are early peering members are already benefitting from the ability to exchange locally and are gaining added value from a neutrally managed IXP."

France-IX promotes neutral peering in France and aims to see this rolled out across the Africa. It providing N+ONE with ongoing technical assistance and remote technical support. It's also donating equipment which has provided more than 100Gbps of total port capacity.

"There is a momentum in the region and our objective is to help keep it going," says France-IX MD Franck Simon *(pictured)*. "We will do so by backing N+ONE's initiatives and look forward to building an effective long-term partnership."

Xtera to supply new undersea cables

Xtera has been named as supplier for two cable projects: Omantel's planned undersea link between Oman and Eastern Africa, and the AAE-1 Consortium's network connecting Asia, Africa and Europe.

Omantel's new *G2A* cable will provide a direct highway from Salalah in Oman to Bosaso in Puntland, northeastern Somalia, and Berbera in Somaliland, with a terrestrial extension to Addis Ababa, Ethiopia. Being built in partnership with Ethio Telecom, Golis Telecom and Telesom Company, it is due to come online by the end of 2016.

"This is the first step on our expansion journey into Africa where we will go from Oman directly to Somalia and then extend the cable further into Africa to Ethiopia," says Sohail Qadir, vice president of Omantel Wholesale. "These two highly under-served countries will soon be connected to our international low-latency network, gain access to all the content hosted in Oman with Omantel and consume services from Europe and Southeast Asia."

The firm is supplying its turnkey 100G/100G+ submarine cable system solution, including subsea optical repeaters, *Nu-Wave Optima Submarine Line Terminal Equipment* (SLTE), cable and all marine services. It's designed for 20Tbps of capacity with the latest 100G technology, and should act as a replacement for current satellite technology.

Xtera has also picked up the contract from the AAE-1 Consortium to equip the three terrestrial segments found in the 25,000km *AAE-1* network connecting Asia, Africa and Europe.

This comprises crossing Egypt to connect the Mediterranean and Red Seas; crossing the Thailand peninsula to minimise the latency for the landing sites situated east of Thailand; and crossing Malaysia to connect the cable landing station north of Kuala Lumpur to Singapore. All three are based on two physically diverse fibre routes in order to maximise network availability.

Nigeria likes Facebook

Facebook says 16 million people in Nigeria now access its network every month, and all of them do so via mobile. Speaking on 'Friends Day' (4 February), or Facebook's 12th birthday, Nicola Mendelsohn, the company's EMEA VP, said: "We're only one per cent done in Nigeria and inspired to do even more in this fast-moving, mobile first country." Facebook also said that this was the year it will "deepen" its partnerships with Nigerian businesses. It plans to work with them to develop and initiatives to deliver personalised mobile marketing at scale.

OSN Ultra HD plans

OSN has purchased additional capacity on *EUTELSAT 8 West B* which orbits at 7/8° West which is said to be the leading TV neighbourhood for the MENA region. The satellite will support more expansion for OSN, including new HD channels and the introduction of Ultra HD services. Pay TV provider OSN say it is the "ultimate destination" for the widest choice of brand new premium global entertainment in the Middle East and Africa. It has been working with Eutelsat since 2006.

Telco gains billing Agilty

Tecnotree says a "leading operator in West Africa" has deployed its *Agility* convergent billing platform. The unnamed customer will use the system to manage its end-to-end subscriber lifecycle across different business lines, reduce operational and maintenance costs, increase revenue by cross selling, and enhance both customer experience and loyalty. Tecnotree adds that *Agility* will give the operator a consolidated view for managing all subscribers irrespective of their products, payment modes, contract types and technology.

angola cables

We are Connected to the Future

SACS

South Atlantic Cable System

Distance: 6.000 Kms

Capacity: 40 Tbps

Construction commences on Angola Cables' South Atlantic Cable System (SACS)

First submarine cable system directly linking Africa and Latin America will help to spur international trade and economic growth in both continents

Angola Cables S.A., an Angolan telecoms wholesale operator, and NEC Corporation, a leading IT system supplier, announced recently that the contract to build the South Atlantic Cable System (SACS), the first subsea fiber optic cable system ever to connect Africa and South America in the southern hemisphere has come into force.

SACS is scheduled to be ready for service by the middle of 2018. The project cost is expected to reach $160million and will be partially co-funded by the Japan Bank for International Cooperation (JBIC) and Sumitomo Mitsui Banking Corporation (SMBC) with the support of Nippon Export and Investment Insurance (NEXI) through the Banco de Desenvolvimento de Angola (BDA).

SACS will connect Luanda, Angola and Fortaleza, Brazil, directly linking the African continent to Latin America for the first time, spanning more than 6,200km across the South Atlantic ocean, enabling high-speed and large capacity international data transmissions.

From Fortaleza, SACS can be connected to another cable system which stretches to Miami (Florida), enabling Angola and Africa to connect directly with the USA. SACS will feature the latest optical technologies to provide the most advanced subsea telecommunications system, coupled with a control plane based on innovative Software-Defi ned Networking (SDN) technology to serve bandwidth-intensive applications. SACS will have an initial design capacity of 40Tpbs (100Gbps x 100 Wavelengths x 4 fiber pairs).

"Our main objective is to improve the quality of communications between Africa and the Americas, creating a totally new route in the south hemisphere, providing term and peak capacity product offerings and support for the region's expanding data requirements of today and for tomorrow," says António Nunes, CEO of Angola Cables *(pictured left)*. **"SACS will be constructed using state-of-the-art technology, with 100G-coherent design for low latency, reliable delivery for even the most demanding bandwidth needs and direct data centre to data centre connectivity across the Atlantic."**

"The South Atlantic Cable System is a unique cable system that will directly link Angola to Brazil and the rest of the world, and NEC Corporation prides itself to be the system supplier and would like to thank Angola Cables for giving NEC the chance to be part of this epoch-making cable," said Toru Kawauchi, General Manager at NEC's Submarine Network Division.

Angola Cables is an Angolan telecommunications company founded in 2009, which operates in the international wholesale market and whose core business is the commercialization of capacity in international circuits for voice and data through Submarine Cable Systems connecting Africa to Europe and Americas and also between South America and North America. It also operates the Angonix (the biggest Angolan IXP) in its data centre in Luanda, the Angonap. Angola Cables' goal is to transform Angola into one of the telecommunication hubs in Africa.

Find more about Angola Cables at

www.angolacables.co.ao

www.facebook.com/AngolaCables
www.youtube.com/user/TVAngolaCables
www.linkedin.com/AngolaCables

Regulator commissions new spectrum management system

The Communications Authority of Kenya (CA) is implementing a new system to regulate the frequency spectrum across the country.

Joe Mucheru, cabinet secretary of the Kenyan Ministry of Information, Communication and Technology (ICT), said the system would be a critical regulatory tool that will facilitate efficient planning and utilisation of spectrum resource in view of increasing demands between fixed and mobile services and broadcasting.

The spectrum management and monitoring system was commissioned from Rohde & Schwarz in March 2016 and includes both mobile and stationary components. The CA will monitor HF, VHF and UHF spectra from eleven stationary measuring and direction finding (DF) stations.

Rohde & Schwarz equipped four off-road vehicles to extend the range of the direction finding base and fix interferer positions while moving.

Rohde & Schwarz has also equipped four off-road vehicles to extend the range of the DF base and fix interferer positions while moving. The system is centrally controlled from Nairobi, with an additional regional operations centre in Mombasa.

By monitoring the electromagnetic spectrum and locating sources of suspect signals, the CA will be able to prevent, detect and ultimately eliminate interference in radiocommunication services. The authority will be able to streamline management of spectrum in the country, effectively addressing issues of illegal installations, frequency interferences as well as efficiency in processing of applications for spectrum usage.

CA director general Francis Wangusi adds: ''Unscrupulous people are interested in using these scarce resources illegally. This system will ensure our spectrum is clean. It will give us alerts where we have illegal installations so we can respond promptly."

Yahsat promises 18 new African markets for IEC

Yahsat has signed an MoU with the IEC Telecom Group to look at the possibility of new joint opportunities in Africa. The agreement comes ahead of Yahsat taking delivery of its third satellite, *Al Yah 3*, which is currently being built in the US by Orbital ATK.

The launch of the satellite during the first quarter of next year will make Yahsat's broadband product, *YahClick*, available in 18 new African markets. The company says this will almost triple its existing presence across the continent, covering 60 per cent of the population.

IEC Telecom provides mobile and fixed satcoms services, and its MoU with Yahsat will explore ways for it to offer *YahClick* broadband products, services and value-added solutions to support the satellite operator's increased coverage across Africa.

"We will look at potential ways to build on our long and valued history with IEC Telecom, which dates back to the pre-launch of our second satellite, *Y1B*, in 2012," says Yahsat CCO David Murphy. "Building on our existing partnership would ensure *YahClick* delivers on its promise to have an unmatched service area, and provides constant connectivity to aid the socio-economic development of the region."

Yahsat CCO David Murphy (left) with Erwan Emilian, CEO of IEC Telecom Group.

According to Yahsat, IEC's customers will benefit from the "high-performance and excellent look angles" for Africa offered by *Al Yah 3*. With the uplink based in Athens and Luxembourg, it says clients will be able to land their traffic directly into Europe, Middle East and Africa, taking advantage of high-speed interconnection throughout these regions.

IEC believes the prospect of adding 18 additional markets with *Al Yah 3* will "enhance and strengthen" its portfolio in the professional Ka-band VSAT marketplace.

Erwan Emilian, the company's CEO, adds: "With Yahsat, we would be able to continue meeting our goal of providing our enterprise, government, humanitarian, O&G, mining, education and health customers [in Africa] with enhanced Ka-band HTS connectivity backed by an unmatched network reliability and consolidated by our added-value services."

More music from Mahindra and Mondial

Mahindra Comviva is hoping to further strengthen its digital music content portfolio on the continent following a partnership deal with Mondial Multimedia.

Under the agreement, Mondial Multimedia will provide the most popular content from local artists in Côte d'Ivoire such as Josey, Serge Beynaud, Force One, Arafat DJ, Zouglou Makers, Abou Nidal, amongst others.

"Mondial Multimedia works closely with a number of local artists to source an extensive selection of digital music content that cater to the diverse tastes of consumer's in the region," says Atul Madan, Mahindra Comviva's head of digital services. "We are constantly working towards revolutionising the music market in Africa by providing localised content, identifying independent artists and labels, and disseminating music across the region."

With more than 300,000 tracks on board and over 200 content providers, Mahindra Comviva claims to be one of the largest content aggregators in Africa, the Middle East and Asia. In Africa alone, the company says it has collaborated with more than 150 content partners.

"This partnership, coupled with our proven expertise in deploying and managing music services for operators across multiple growth markets, will further drive the success of managed music services and infotainment services in Africa," says Madan.

MTN aiming to attract businesses with Telefónica and Switching House deals

MTN is hoping to boost its standing in the enterprise market following the signing of two separate strategic deals.

Last December it announced a partnership with Spain's Telefónica which will see the two companies work together to benefit from their joint scale, combined expertise, and market access.

The partners initially aim to improve their appeal to enterprise customers. This will include services to multinational companies in each other's footprint, collaboration in M2M, and new digital products and services targeting the B2B segment.

Both operators will also discuss how to engage effectively in international wholesale, devices and network/IT procurement. They may also work on new initiatives, such as mobile money

or Big Data projects, and collaborate on commercial and marketing strategies.

MTN's second agreement is with Switching House. They have launched a cashless payment solution and claim to have bridged the divide between large enterprises and informal merchants.

According to MTN, an estimated 70 per cent of informal merchants in Africa are not able to make and receive electronic payments. Debbie Minnaar, GM for products and services at the group's enterprise business unit, says: "This switching payment solution will enable MTN to increase the economic participation of informal cash-only merchants in Africa while allowing users to safely transact in a digital space."

The solution leverages MTN's *Mobile Money* platform. It will enable informal merchants and traders to pay for goods using basic SMS or USSD on smart or feature phones, and without the need for a formal bank account.

It's claimed multinationals benefit from transactions occurring in real-time, and the elimination of the risks and administrative overheads associated with cash transactions, as well as a reduction in costs associated with formal banking.

As well as using mobile devices, customers can also integrate the solution into their existing enterprise resource planning systems.

Orange and Ecobank boost MFS

Orange and Ecobank have launched a bank-to-wallet money transfer service linked to *Orange Money* in Côte d'Ivoire, Guinea Conakry and Niger.

Their partnership, which has already been operational in Mali since January 2015 and in Cameroon since August 2015, facilitates money transfers for both company's customers by allowing them to top-up their *Orange Money* e-wallets from their bank accounts and vice versa.

Orange says customers can use their mobiles to securely transfer money between accounts at any time, without the need to go to a distribution point or to have any physical cash. Ecobank customers can also view bank account balance and obtain mini-statements by SMS via the service.

According to the mobile operator, the new service in Côte d'Ivoire, Guinea Conakry and Niger furthers the development of mobile financial services in Africa. It says since the service was first launched last year, nearly EUR110m have been transferred between Ecobank and *Orange Money* accounts.

Thierry Millet, director of Orange Money, mobile payment and contactless, says: "Customers will also benefit from the extensive network of thousands of licensed Orange Money vendors in addition to Ecobank's own high-street branches, considerably increasing the number of withdrawal points."

Camusat and Eutelsat to help operators connect remote and rural areas

Camusat and Eutelsat will work together to provide mobile operators with turnkey solutions to help them extend their networks into remote and rural areas in Africa.

The two companies say they will draw upon their respective expertise of connectivity markets. Eutelsat says it can deliver satellite coverage

Eutelsat's deputy CEO Michel Azibert (left) says the agreement covers the "entire communications chain". Also pictured is Camusat CEO Richard Thomas.

INVESTMENTS, MERGERS & ACQUISITIONS

Date	Buyer	Seller	Item	Price	Notes
3/2/16	Amadeus & MTN	Travelstart	Investment	USD40m	Sweden-based Travelstart claims to be Africa's leading online travel agency & operates in the continent from Cape Town. Plans to grow into new markets & also develop a strategic partnership with MTN to leverage its mobile network.
4/2/16	Cisco	Jasper Technologies	Company	USD1.4bn	Cisco reckons the proposed acquisition will mean it can offer a complete IoT service solution that is interoperable across devices, & works with IoT service providers, application developers & an ecosystem of partners.
8/2/16	Orange	Millicom	Tigo DRC	USD160m	CEO Mauricio Ramos says proceeds from the sale will strengthen Millicom's balance sheet, enable it to reinvest in existing Latin American & African markets, thus improving earnings & cash flow, & reducing leverage.
9/3/16	KORE Wireless Group	Wyless Group Holdings	Company	NA	According to KORE, it's all-cash transaction to buy Wyless creates the only truly global, independent, multi-platform, IoT services company.

NEW APPOINTMENTS

Date	Name	New employer	New position	Previous employer	Previous position
1/2/16	Jacques Kerrest	Intelsat	EVP & CFO	DPC Data Inc.	President
2/2/16	Ross Spearman	Tait Communications	CTO	Ericsson US	VP & CTO
10/2/16	Charlotte Thomsen	Danimex Communication	CEO	Danimex Communication	Deputy CEO
25/2/16	Dr. Edmund Kong	MEASAT	CTO	Orbital ATK	Product line chief engineer
1/3/16	Pascal Menezes	MEF (Metro Ethernet Forum)	CTO	Microsoft Skype for Business	Principal
9/3/16	Mike Coffey	KORE Wireless Group	COO	Wyless Group	CEO
17/3/16	Skot Butler	Intelsat General	President	Intelsat General	VP of satellite networks & space services
17/3/16	Yona Ovadia	Gilat Satellite Networks	CEO	Amdocs	Group president
30/3/16	Yolanda Zoleka Cuba	Vodafone Ghana	CEO	Vodacom Group	Strategy & new business director
30/3/16	Daniel Loria	Millicom	EVP of HR	Syngenta North America	Head of HR

across the continent, while Paris-based Camusat specialises in telecom infrastructure deployment. This includes building, providing electrical power, and maintaining towers for mobile networks via more than 1,000 employees in Africa.

Speaking during the signing of the agreement last November, Eutelsat's deputy CEO and commercial and development director Michel Azibert said: "In addition to regular lease of satellite capacity to support network development, our new partnership with Camusat equips us to offer solutions covering the entire communication chain with maximum flexibility and irrespective of location."

Accounting software makes Eaton look more attractive to investors

Eaton Towers has implemented Adaptive Insights' software to consolidate financials across seven countries, transforming its financial reporting and driving business expansion.

The deployment is said to have enabled Eaton to accelerate its monthly reporting by 100 per cent. Adaptive says the software also facilitated the towerco to raise USD350m in equity funding last year which was critical to its expansion from three to six markets in less than a year.

Eaton now has 5,000 towers in seven African countries. Adaptive says the firm is using *Consolidation* to give it visibility into the performance of each region, and *OfficeConnect* to allow "easy, professional reporting" of that performance to both current and potential investors.

"The delivery of affordable mobile communications requires that we carefully manage our own financial performance and expenses," says Peter Cannan, Eaton's group financial controller. "At the same time, we are on a fast growth trajectory and needed software that I could set up myself and would be easily understood by our users with very little training. Adaptive Insights software fit the bill, and today we are rolling up and reporting on substantial amounts of data – sometimes with the simple click of a button."

According to Adaptive Insights' *CFO Indicator Q3 2015* report, one-third of CFOs predict the amount of data they manage will increase by more than 50 per cent within the next five years. Additionally, 41 per cent of finance teams manage data from three to five source systems, and 22 per cent pull from as many as five to 10 systems.

The vendor says the increase in both data and data sources has a significant impact on finance teams of all sizes and across all industries looking to consolidate and report performance.

LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
3/12/15	IDT Corporation	US	1Q16	USD	390.6	13.0	0.19	Compared to 1Q15, consolidated revenue decreased 5.4% while consolidated adjusted EBITDA increased 24.6%. Plans to launch new version of *Boss Revolution* app during 2Q16.
27/1/16	Ericsson	Sweden	FY15	SEK	246.9 (bn)	NA	3.70	India, Indonesia & Mexico remained strong while Russia, Brazil & parts of Middle East continued to be weak, mainly due to macroeconomic developments. Reported YoY sales for South East Asia & Oceania up 21%; India up 74%.
28/1/16	Bharti Airtel	India	3Q16	INR	24,066	8,475	NA	In constant currency terms, Africa revenues adjusted for impact of divestment of tower assets grew by 4.6% YoY. Data revenues up 40.8% YoY to reach $146m, led by increase in customer base by 37%. Data revenues now contribute to 14.3% of overall Africa revenues compared to 10.5% in 3Q15.
16/2/16	Orange	France	FY15	EUR	40.236bn	12.426bn	0.6	Exceeded financial targets, stabilising restated EBITDA. Revenues grew for the second consecutive quarter (up 0.1% in 4Q after rising 0.5% in 3Q). Mobile base in Africa & Middle East grew to 110.2m customers at 31 December 2015 (+4.1% on a comparable basis), while *Orange Money* had 16.4m users (31% increase YoY).
17/2/16	Eutelsat	France	1H16	EUR	774.4	600.3	1.09	Expects to meet full-year target of growth of 2 to 3% at constant currency & excluding non-recurring revenues, taking into account new satellites recently entered into service. However, given the termination of a contract for HTS capacity on *EUTELSAT 3B* & slower growth of *KA-SAT*, outlook is expected at lower end of this range.
17/2/16	VimpelCom	Netherlands	FY15	USD	9,625	2,857		Total group revenue in 2015 increased organically 1% YoY to $9.6bn. But in emerging markets, total revenue decreased organically 2% due to negative performance in Algeria where service revenue dropped 7% as high value customers churned.
22/2/16	Intelsat	Luxembourg	4Q15	USD	571.3*	443.5*	0.55*	*Preliminary results. Net income expected to be $49.1m, prior to the effect of any impairments, for the three months ended 31 December 2015. This compares to $16.2m for the same period in 2014. EBITDA for 4Q14 was $462m.
26/2/16	SES	Luxembourg	FY15	EUR	2,014.5	1,494.2	1.30	YoY revenues up 5% (-3.2% at constant currency). Will launch seven new satellites between 2016 and end-2017 to add to the 52 in orbit as at December 2015. Schedule includes SES-9 & SES-12, both for APAC.
3/3/16	MTN	South Africa	FY15	ZAR	146,353	59,125	131.0	Weak macro-economic conditions, increased competition, greater regulatory pressures (notably in Nigeria) & operational challenges in some markets resulted in a lower than expected performance. Reported basic headline earnings per share (HEPS) declined 51.4% to 746 cents. This was largely due to Nigerian fine which had a 402 cents negative impact on HEPS.
1/4/16	Huawei	China	FY15	CNY	395,009			Carrier, consumer & enterprise divisions all reported increases. In EMEA, rapid growth in wireless & fixed networks, plus increased share in smartphone market, yielded CNY128,016m – a 27.2% increase in revenue over 2014.

Controllis claims to cut off-grid costs with DC generator

What's described as a "breakthrough" generator promises to transform the way telcos supply power to their off-grid sites. According to UK-based Controllis, the new *Basic48-10* brings the total capital cost of off-grid DC power systems below that of an equivalent AC generator-based system.

The *Basic48-10* features the vendor's *DCPrimePower* technology and RSC-HMU hybrid remote management and control system, enabling operators to use a range of different charging regimes including float and hybrid battery.

Controllis says the generators has been designed to significantly reduce fuel consumption in site operation. It says these are accomplished by its very high efficiency *DCPrimePower* permanent magnet alternator, mounting the generator directly on the engine fly wheel thus negating the need for alternator coupling or bearings, and precisely varying the engine speed according to site loads.

The *Basic48-10* has been designed to easily integrate with renewable energy solutions. It can be supplied with optional 48V solar PV charging controllers for up to 12kW of solar capacity, and the controllers are integrated with the *RSC-HMU* via MODBUS to provide full remote visibility of the entire system, including solar output and battery status.

Controllis says when power demand is not met by the solar output or the battery bank, the *Basic48-10* automatically switches itself on and takes over the charging role until the renewable source can again provide sufficient energy to meet site needs.

The *RSC-HMU* monitors and manages a wide range of critical engine and fuel system parameters as well as generator site security. It communicates directly to the *Controllis Remote Management Server (RMS)* which provides comprehensive configuration, alarm management and delivery. The server integrates into any operator's NOC via SNMP or MOD/TCP-IP, and interfaces back to the RMS via its internal 9BandUMTS/GPRS modem, any other IP or RS485 interface available on site.

MANUFACTURER: Controllis

PRODUCT: BASIC48-10

MORE INFORMATION:
www.controllis.com

Digi hardens router for industrial LTE connections

Digi International has developed a ruggedised version of its commercial-grade *WR11* cellular router. It says the temperature hardened *TransPort WR11 XT* provides a secure and reliable LTE connection for industrial and retail applications in harsh environments.

The new router is builds upon the capabilities of the *WR11*. Digi says these include global cellular carrier certifications, license-free enterprise software, PCI-ready security features, small form factor, dual SIM capabilities, and what's claimed to be "advanced" network management via the *Digi Remote Manager* system.

The *TransPort WR11 XT* features a ruggedised aluminium enclosure and DIN-rail form factor, an increased operating temperature range from -30°C to +70°C, flanges for shelf- or wall-mounting, and a screw-down SIM cover.

The device comes with Digi's license-free enterprise routing and security software, and models are available that offer support for LTE, LTE with 3G fallback, as well as global HSPA+.

MANUFACTURER:
Digi International

PRODUCT: TransPort WR11 XT

MORE INFORMATION:
www.digi.com

Lenovo unveils new way to connect

Lenovo has launched a new global wireless roaming service. A long-time MVNO, the company will now offer *Lenovo Connect* which it describes as a "seamless" communication service that works across devices, networks and borders for customers in China and EMEA.

The company says the new service eliminates the need to buy a separate SIM and offers benefits such as low-priced global roaming by leveraging Lenovo's Big Data and cloud services.

While in China the service is available via an app on selected devices, in EMEA the company is working with channel partners to bring *Lenovo Connect* to customers using a variety of *ThinkPad* devices. Initially available in 45 EMEA markets, its claimed customers will be able to take advantage of secure data connectivity at competitive rates.

Lenovo adds that the service will be supported by customised data plans designed to support both domestic and international roaming use in more than 110 countries globally.

MANUFACTURER: Lenovo

PRODUCT: Lenovo Connect

MORE INFORMATION:
www.lenovo.com

"100 per cent accurate" revenue assurance platform

Risk management and analytics expert Neural Technologies reckons the latest version of its revenue assurance platform offers a complete end-to-end rating engine, meaning it is 100 per cent accurate "down to the cent".

Minotaur 10 is designed to offer customers an "enhanced" value proposition with 5G and Big Data-ready functionality. It also features real-time data processing, smartphone and tablet data entry/incident reporting capabilities, integrated test call generation, and introduces NoSQL.

Neural says its improved rating capabilities and the ability to connect directly to any data source in the OSS or BSS stack remove the need for any intermediary software, meaning operators will experience lower complexity, faster integration, and fewer third-party costs.

The firm believes this direct connection simplifies connecting of new devices and networks which will grow enormously as a result of the IoT. It adds that customers will experience faster operational speeds because of the direct connection from data sources to the platform.

MANUFACTURER:
Neural Technologies

PRODUCT: Minotaur 10

MORE INFORMATION:
www.neuralt.com

First DVB-S2X VSAT modem launched

Newtec describes the *MDM5000* as its most advanced VSAT modem to date. It is said to be the first to support wideband DVB-S2X, and is capable of receiving forward carriers of up to 140MHz and processing more than 200Mbps of throughput.

With forward symbol rates from 1 to 133 Mbaud and coding up to 256APSK, it's claimed the *MDM5000* will boost efficiency and performance on legacy satellites while "fully unleashing" the potential of next-generation high throughput satellites (HTS). On the return channel, Newtec says the device supports SCPC, TDMA, and its unique *Mx-DMA* technology for up to 75Mbps.

It is designed to handle a wide range of services, including internet access, VoIP and backhauling, along with video contribution and multicasting.

As with Newtec's previous *Dialog* modems, the *MDM5000* incorporates Layer-3 routing, advanced QoS, TCP acceleration, pre-fetching, compression and encryption.

It also supports a new Layer-2 mode, facilitating integration with various networking topologies and routing protocols, like MPLS and BGP. Dual demodulators for "seamless" beam switching on future HTS networks are also included.

MANUFACTURER: Newtecc

PRODUCT: MDM5000

MORE INFORMATION: www.newtec.eu

CCS unveils self-organising backhaul solution with integrated small cell

CCS (Cambridge Communication Systems) has adapted its *Metnet* self-organising backhaul solution to host a small cell in a single, compact design.

According to the company, site acquisition for outdoor small cells is currently a slow and difficult process as separate small cell and backhaul units often exceed the size, weight and single-attachment restrictions for planning approvals. *Metnet* combines a small cell and, as a result, CCS says it is smaller and more acceptable to local planning departments which considerably speeds up deployment.

The company says its system operates in a single frequency channel with no radio planning required. It adds that each unit has a wide 270º field of view and supports multiple connections, so there's no need for manual alignment and only one is required per site. Each node is also capable of providing GPS-derived local master synchronisation, with distributed timing recovery in the event of GPS failures.

The *Metnet* backhaul platform will host small cells in a universal design that utilises licensed or unlicensed spectrum, including LTE-A, LTE-U, MulteFire, Wi-Fi and ultimately 5G variants.

MANUFACTURER: Cambridge Communication Systems

PRODUCT: Metnet

MORE INFORMATION: www.ccsl.com

Viavi cuts costs for cell site installations

Viavi Solutions (formerly JDSU) has added baseband unit (BBU) emulation to its *CellAdvisor* base station analyser to enable comprehensive testing during RRH installations at sites. The company reckons the new feature dramatically reduces the need for repeat site visits and tower climbs to speed up deployment times and significantly reduce opex.

Viavi says that traditionally, cell site installation is segmented into two parts performed during different visits. First, a technician climbs the tower to install the RRH, and conducts sweep testing and fibre inspection. Second, the BBU is installed on a separate visit, where the RRH is put on air, and a comprehensive cell site test can occur.

By adding BBU emulation, the vendor says CellAdvisor opens up a more comprehensive cell site test to identify and address problems on the first visit. Following installation of the radio, technicians can now put it on the air to verify performance of, or identify problems with equipment (radio, antennas, coaxial cables) or the radio environment, including external interference, noise or passive inter-modulation.

MANUFACTURER: Viavi

PRODUCT: CellAdvisor

MORE INFORMATION: www.viavisolutions.com

ALSO LOOK OUT FOR

New antennas promise low cost in-flight broadband

A UK university professor says passengers will soon be able to use low-cost mobile broadband on planes, following his acclaimed research into developing a new generation of antennas.

Yang Hao, professor of antennas and electromagnetics at Queen Mary University of London, recently won the prestigious GBP300,000 Institution of Engineering and Technology A F Harvey Engineering award for his work which focused on antennas with better aesthetics and fundamentally novel designs. It's claimed this will allow them to be used in "new and exciting" ways, particularly in satellite communications for many industries including aviation and aerospace.

One element of his work looked at the use of high-throughput satcoms that will enable passengers to take advantage of low-cost broadband internet services when they travel by plane. While air passengers currently have to switch their mobile phones to 'flight mode' and pay an additional charge to access data on their device, it's claimed Hao's research will enable a "seamless broadband experience" from land to air, at no additional cost.

The IET said Hao was awarded the prize in recognition of his research achievements in microwaves, antennas and, in particular, metamaterial antenna innovations which draw inspiration from transformation optics.

"The IET A F Harvey Engineering Research Prize will push the boundaries of our research to the next level, out of the lab towards real engineering applications and industry," said Prof. Hao. "Our goal is to make low cost smart antenna systems, an engineering reality that can be enjoyed by everyone, from professionals in satellite communications to air passengers who want to stay connected on their mobile phone or devices."

Still waiting for the green light

While solar power represents 90 per cent of the green power adopted by mobile operators, only three per cent of cell sites actually use renewable energy sources, mainly in off grid-locations. PHOTO: ERICSSON

So-called 'green' telecoms technologies have been around for a while now but Africa's mobile operators still face deployment challenges, as DR. NICOLA DAVIES explains.

The availability of electricity is one of the biggest problems facing mobile networks in Africa. And even when operators can plug into the grid, outages and load shedding make electricity supply unreliable. As a result, both off-grid as well as on-grid sites with unreliable power supply rely heavily on diesel generators and, apart from their high running and maintenance costs (up to 46 per cent of opex for MNOs), it is well-known that gensets produce a high level of emissions.

Grid electricity is not much cheaper or cleaner, and according to the GSM Association (GSMA), it amounts to 40 per cent of running costs for cellular networks in Africa. Furthermore, utilities are heavily dependent on coal fuelled power stations – for example, 90 per cent of South Africa's energy comes from coal-fired generation.

Each off-grid site using diesel generator battery hybrid technology burns approximately 13,000 litres of diesel annually, producing 35 tonnes of CO2 emissions. On-grid sites with unreliable power supply produce an average of 18 metric tonnes of CO2 and use 6,700 litres of diesel every year.

Management, engineering and development consultancy Mott MacDonald points out that while there is a degree of variation across Africa depending on the status of each country's national electricity grid, mobile network operators do still heavily rely on diesel generators to ensure good site uptime.

"For example in Burkina Faso and Niger, less than half of sites have grid connection and virtually all have a diesel generator," says David Tanner, the firm's director of technology strategy and design. "By contrast, in Ghana and Kenya, the vast majority of sites have grid connection yet still use diesel generators to provide backup when necessary. Then there are some countries where diesel generators are less frequently used as their grid is more reliable."

There are currently around 145,000 cell sites running off the grid in Africa, and more than 84,000 in areas where grid power is unreliable. This adds up to emissions amounting to 6,587,000 metric tonnes from diesel generators alone – and that's without taking into account emissions from grid power supplied from coal burning power stations.

The green challenges for MNOs

Although Africa is only responsible for a small percentage of the 70 mega-tonnes of CO2 produced by the mobile industry globally, network penetration and the demand for mobile services is growing rapidly. Some countries on the continent only have 10 per cent network coverage and, in many remote parts, the demand for coverage extends beyond the boundaries of the existing basic infrastructure of roads and grid electricity.

Thus, for operators heeding the ever greater call for mobile services in Africa will result in a

considerable investment in cellular infrastructure accompanied by increased emissions in areas which lack grid electricity. With off grid sites expected to reach the 189,000-site mark by 2020 and bad grid sites increasing to 100,000, the emissions from diesel generators powering mobile networks will have an enormous impact on the environment unless green technologies are implemented.

On the surface, going green with renewable energy is highly feasible in Africa. Photovoltaic (PV) power and concentrated solar power (CSP) generation top the list, followed by wind and biomass, while geothermal energy could contribute significantly in East Africa. The GSMA believes solar PV power alone could generate as much as 656,700TWh across the continent. But Tanner believes exploiting these potential power sources could be more complicated than the statistics suggest, and says mobile service providers are deploying renewable options in specific locations that are economically feasible: "In Niger and Mozambique, between 15 and 30 per cent of sites are powered by solar – although this may also be grid backup – while in some countries solar use is virtually nil. Renewable options are specific to each location, both in terms of power and traffic demand as well as available sunshine hours. Hybrid is being more widely adopted as an option to reduce fuel costs and reduce noise pollution."

The GSMA reports that although many operators are already striving to use green technologies – such as solar and wind power, as well as fuel cells and biomass power generation – to reduce reliance on diesel generators, they face several challenges. These include the lack of economies of scale in certain areas owing to the low number of subscribers per site, a shortage of skilled technicians in host countries, and particularly low levels of expertise in renewable technologies. It also warns that without committed local partners to support green power initiatives, the efficiency and success of green alternatives will be limited.

Solar power offers the most promising alternative energy solution so far because it is highly scalable and can easily be adjusted by adding extra modules should load increase.

However, the high capex and space requirements this brings with it presents a problem for mobile operators. While solar represents 90 per cent of the green power adopted by MNOs, only three per cent of cell sites actually use renewable energy sources, mainly in off-grid locations. This low level of adoption can be attributed to the barriers green technologies present which can be summarised as follows:

- A lack of affordable and reliable alternative energy technologies
- A need for high capital expenditure
- The need for accessible technical resources and reliable local partners
- Support from regulators and government policymakers

Solar energy is the most widely implemented form of green energy being used by African cellular networks, with major players such as Vodacom and MTN already using the technology on many of their towers. For example, MTN has 600 solar sites in Zambia alone, while Vodacom has successfully combined solar and wind power on certain sites and previously worked with Nokia to reduce emissions across its operations.

Wind turbines to power cell sites have not gone further than a few pilot projects and face many more hindrances. High maintenance costs and variable wind speeds that impact on reliability, and therefore investment risks, have made this energy option less feasible unless it is adopted in conjunction with other technologies such as solar power.

Hydroelectric power may be feasible for sites near a suitable body of water but small-scale generation is hindered by a lack of available technology and suppliers. The capex needed to use HEP to fuel cellular sites has yet to be fully investigated.

Biomass technology may seem attractive, but in telecoms it presents a set of challenges that include the scalability of power generation plants, the complexities of constructing and running them, and the need for reliable supplies of biomass. In addition, sustainability is of concern. For example, the use of crops or land traditionally used for food production can ultimately impact on food supply and prices.

Fuel cell technology shows promise, and new innovations are being supported by an increased effort to ensure that the supply chain supports reliable operation. For instance, Malaysia's Digi recently claimed it had become the industry's first operator to develop a cell site powered by a self-sustaining system that will not require refuelling.

As part of a proof of concept, the cellco is spearheading an industry initiative that aims to look at the possibility of using hybrid hydrogen fuel cells to reduce or even replace the use of diesel. Earlier this year, it began conducting tests at a pilot base station site in near the district of Rompin in Pahang, south east Malaysia. The hybrid system works by extracting water from the atmosphere. It then breaks this down to produce hydrogen which powers the fuel cell and generates electricity for the base station.

According to Digi, currently available hybrid fuel cells are largely dependent on the delivery of hydrogen gas tanks, methanol or other fuel sources to power the cells. But the system it is testing in Malaysia does not require any of these and is therefore able to achieve carbon neutrality – the only by-products of this form of energy are oxygen and water, and no greenhouse gases are released into the atmosphere as a result of the process.

Digi's pilot study is ultimately funded by Malaysia's telecoms regulator, but for most operators around the world, new technologies such as hydrogen fuel cells are costly which creates barriers to their large-scale adoption.

Nonetheless, alternative energy sources do offer significant benefits. While mobile users and the environment gain from the more reliable communications brought about by the technology, the GSMA estimates that green energy will reduce annual opex for MNOs by as much as USD17,000 per tower per year – even when coupled with generators. This figure is based on an emissions reduction of 60 to 70 per cent per tower which would require an investment of USD42,000 per site.

African governments have a strong role to play in making the use of renewable energy more feasible through policies and incentives. With the mobile network industry being among the largest consumers of electricity and diesel, and with public utilities already stretched to the limit, many administrations across the region are either working on or have implemented renewable energy incentives.

These include tax breaks and relaxed import duties, and in Tanzania and South Africa, grants and subsidies are also available. Uganda has now upped the ante with 45 per cent subsidies for green energy equipment which is an increase on the 14 per cent previously offered. Ghana is offering full import tax exemption on green energy imports, while Nigeria has a temporary moratorium on import duties. Kenya offers investment tax exemption, while Tanzania offers sales and income tax exemptions on green energy products and revenues stemming from green energy projects. Senegal offers full tax exemption for green energy initiatives.

Other African countries, including Madagascar and Ethiopia are prioritising green infrastructure developments, but have yet to finalise incentives for the private sector.

In what's claimed to be a first in the mobile industry, Malaysian operator Digi is trialling a zero emissions hybrid hydrogen fuel cell systems at a pilot base station site near Rompin, Pahang (pictured).

That all sounds encouraging. However, the GSMA says financial inducements alone aren't enough to ease the telecoms industry's transition to renewable technologies. It states that building technical capacity will also be vital to the implementation of more environmentally-friendly technologies.

Creating more efficient gensets and BSTs

The standard figure for diesel generator efficiency is 20 per cent. That suggests a huge amount of energy wastage, but is this still the case? Greater fuel efficiency and reduced emissions could make diesel generators a greener alternative.

One of the solutions to improve energy efficiency is to allow the generator to power equipment while storing surplus energy in batteries. After all, a lot of the wasted energy from gensets comes from using only 'part load' energy. In addition, the efficiency of generators can reach up to 60 per cent depending on engine types and technologies.

With calls for improved energy efficiency and reduced emissions becoming ever more insistent, generator manufacturers are working to address the problem. According to some big name specialists such as Cummins, renewable energy isn't always reliable. It believes that combining renewable energy sources such as solar or wind power with a gas or diesel generator solves the reliability issues while still reducing emissions.

Cummins is currently working on a project in which municipal waste, agricultural waste, and sewage could be used to produce enough gas to run large generators. The costs and scalability of such an operation are yet to be determined, but the project is just one of the initiatives being tackled by the company's 'Emissions Solutions' arm.

According to Cummins, renewable energy isn't always reliable. It believes combining renewable energy sources with more efficient gas or diesel generator solves the issues while still reducing emissions. For instance, while the QSK95 is the company's most powerful diesel genset to date, it is also claimed to offer best-in-class fuel economy with savings of more than USD400,00 over the course of 8,000 hours of operation.

David Tanner, Director technology strategy & design, Mott MacDonald

"Advances in base station technology will continue to expand the areas where renewables can be applied."

Cummins also notes that by using a combination of strategies, MNOs can cut their energy requirements, subsequently reducing emissions and saving costs. Radio transceivers that are able to handle high temperatures without air conditioning, energy efficient radio equipment and building materials (such as substituting bricks and mortar for plastics), sharing equipment, and using a hybrid between renewable energy and diesel generators will all decrease the dependence on non-renewable power sources for mobile operators.

Eltek shares these views but also reckons that higher efficiency rectifiers, even if they only produce 1-2 per cent in additional savings, will make an enormous impact on an industry-wide scale. According to the firm which specialises in high efficiency power electronics, "tangible advantages" will accrue through using the most efficient rectifier technologies. Emerson Network Power supports this view by stating that the cost of ultra-efficient rectifiers can be recovered in 1.9 years, with a ten-year return on investment of 49 per cent.

There seems to be no single solution to energy efficiency and reduced emissions, and mobile technology company Huawei is among the proponents of a multi-faceted approach. Its 'Migrate Towards Simplicity' strategy specifically targets African telecoms and covers power, environmental monitoring, cooling, batteries, cabinets and security systems. Through the use of shared embedded power, mobile site controllers, and a robust network management system, Huawei claims its approach offers the "highest energy efficient power".

Mott MacDonald's Tanner says: "Advances in base station technology are bringing increasingly efficient electronics into the networks, which will continue to expand the areas where renewables can be applied. The main driving factor behind this will be cost."

Ericsson has been developing base station technologies since the very beginning of GSM. The Swedish company claims it implemented a 40 per cent power reduction in its BSTs as far back as 2008, and its recent focus on the IoT has led to LPWA (low-power, wide-area) applications for operators. Ericsson also says it has supplies solar base stations in Indonesia since 2007, and in keeping with its track record the firm is implementing solar power, which it says is "more reliable" than diesel generators in its efforts to connect the unconnected.

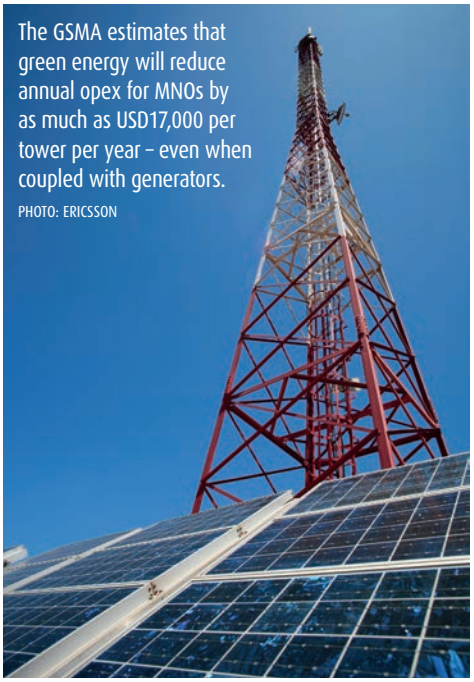
Meanwhile, Ericsson's Scandinavian rival Nokia says it is targeting flat energy consumption despite network growth. It has identified five points that need to be addressed in order to ensure energy efficiency: more productive base stations; site optimisation; network architecture evolution; network management and control; and network modernisation.

Apart from eliminating cooling and feeder losses, Nokia says it aims to reduce "idle" network elements. According to the company's 2020 energy strategy, renewable energy is the future for powering cellular technology, both in areas where power supplies are unreliable, and in countries and continents where this is not an issue. Solar energy is the current focus, but the viability of wind power and fuel cells is also being investigated.

A green and connected future?

Many analysts believe Africa's potential for economic expansion justifies it being dubbed the "new China". Cellular network coverage will therefore be an important enabler for this growth. With infrastructure in place, more companies will be increasingly attracted to investing more in the region – but with electricity providers offering limited or unreliable coverage in many countries, the continent will prove to be the ultimate test for the successful implementation of energy-efficient, 'green' cell sites.

With technologies such as *Watly*, a solar-powered generator that also provides desalinated water and connectivity coming to the fore *(see News, p5)*, people in Africa can expect more than just improved mobile phone coverage. They can also look forward to better work and educational opportunities, and perhaps even access to safer, cleaner water. ■



The GSMA estimates that green energy will reduce annual opex for MNOs by as much as USD17,000 per tower per year – even when coupled with generators.
PHOTO: ERICSSON

Furthering education

From creating innovative connectivity solutions to philanthropic CSR initiatives, wireless companies play a key role in helping educators across Africa.

Tigo's mobile library in Ghana gives schoolchildren the chance to not only see, but also interact, discover and learn with ICT.

According to the *eLearning Africa 2015* report, the worldwide electronic learning market was expected to reach USD107bn by the end of last year, compared to USD56.2bn in 2014. Others have predicted that by 2018, the global market will be valued at USD169bn. In Africa, it was valued at USD5.3bn in 2012, forecast to reach USD8.7bn in 2015, and is expected to hit USD12.2bn by 2018.

Speaking in the run-up to this year's eLearning conferencing event that will be held in Cairo in May, eLearning founder Rebecca Stromeyer said new opportunities for expanding education and training are being created across the continent.

"Technology is helping people to learn new skills, and in many sectors, such as farming, it is beginning to make a huge difference. Technology-assisted learning has begun to make a significant contribution to economic growth in many countries. The pace of change is only going to quicken over the next decade and the effect will be astonishing. We really are going to see a new Africa, a transformed Africa."

Citing unnamed education experts, Airtel says that as we progress in the 21st century, online learning will constitute 50 per cent of all learning and education. The mobile operator believes that the rapid rise of learning on the internet will occur not because it is more convenient, cheaper or faster, but because cognitive learning on the internet is better than learning in-person.

"This hands-on tool allows students to relate their interests on a personal level, which is believed to motivate students to do better in school," states the cellco. "Many educators believe it can encourage the type of independence students need to progress in their learning process."

Airtel is one of many wireless communication specialists that are playing their part in the e-learning revolution across the continent. Like many big name operators, it is investing in initiatives as part of its CSR programme. More of that below. Other companies are developing innovative education solutions for Africa. For instance, Gilat Satcom has come up with a solution that aims to provide everything a rural African school needs to deliver both face-to-face lessons and remote e-learning.

The *Digital Classroom In A Box* comprises a fully insulated and decorated shipping container powered by solar electricity. It features VSAT connectivity, a Wi-Fi router with 500m radius, a management and billing system, a projector, interactive screens, sound system, computers and tablets, and even tables and chairs.

Gilat developed the classroom in collaboration with Intelitek, a US-based provider of learning technology solutions. It came up with an e-learning content platform specifically developed to meet the needs of Africa's rural communities and also supplied a large number of ready-to-use syllabuses.

Eran Yoran, Gilat Satcom's CMO and head of business development, says: "The *Digital Classroom* provides a complete solution. Content can easily be emailed through to teachers whilst our high-speed satellite connection enables high-quality video conferencing."

The company came up with the idea as the e-learning component for its *'Smart Village'* portfolio. This is said to enable rural villages and remote communities in Africa to be a part of the continent's digital future. Launched last year, it aims to deliver IP services over a private satellite network with prices for connectivity for individual villagers starting from a dollar a month.

The *Smart Village* platform can be provided by governments, NGOs, telcos, ISPs, etc., to a community of users which act as the 'village'. They can choose to deploy one or all of three components, ranging from a basic business setup of two tablet devices for internet browsing, VoIP or video over IP services, to Wi-Fi and full GSM services integrated with a local MNO and provided via a base station that can be solar powered.

Via Afrika has also used shipping containers to house digital classrooms. Established in 1949, the company publishes a comprehensive range of educational materials for schools and colleges in South Africa and Botswana. The company also has publishing experience in Namibia, Mozambique, and Zambia.

The *Via Afrika Digital Education Centres (VADECs)* are converted shipping containers filled with 15 tablets, a computer, Wi-Fi internet access with Via Afrika sponsored data, more than 400 Via Afrika ebooks, apps and other digital content, as well as printed books. The company is listed as a Vodacom education partner, and its centres have been given 15GB of data per month for an initial period of two years.

Via Afrika says the aim of the *VADEC*s is to provide teachers and learners in rural areas the opportunity to work with technology and experience e-learning. It adds that it also uses the centres to trial and improve its digital material, and establish the level of training and intervention required for a meaningful e-learning experience to take place.

Working in partnership with Breadline Africa and the Nelson Mandela Foundation, the company has donated *VADEC*s to three schools in the Free State, Limpopo, and Mpumalanga. The teachers in the schools where the centres are located have been

Left: the Via Afrika Digital Education Centres are converted shipping containers. Right: each unit is equipped with various learning materials along with computers and 15GB per month Wi-Fi internet access.

trained on how to use technology, how to plan and present a lesson incorporating digital material, and how to facilitate and manage the use of technology in the classroom.

The Permanent Centre for Education in Kampala has used satellite technology to interconnect live classrooms in Uganda and Germany. The centre has been using SES' *Live Interactive Classroom* application as part of the ongoing KUganda eLearning project run by the Catholic University Eichstätt-Ingolstadt in Germany.

In October 2014, the application was used to deliver a class at the centre via SES Broadband Services' satellite broadband solution. During the interactive session, Professor Dr. Gaby Gien delivered a seminar from the university in Germany together with students in Eichstätt.

Live Interactive Classroom combines a video signal and presentation slides in what SES describes as "a comfortable interface". Using what's claimed to be state-of-the-art peer-to-peer technology, SES says it enables seamless audio/video communications with multiple students anywhere.

In addition, the company says no third-party software installation or licenses are needed, and it runs on standard equipment such as PCs, laptops or tablets on both sides, while tutor-controlled live feedback enables classroom-like interaction.

Prof. Dr. Gaby Gien said satellite broadband can help improve educational development by providing access where it wasn't previously possible.

Speaking for the KUganda initiative, Gien said that part of the education challenge in Africa is to provide local teachers with computers and resources. But she added that without internet connectivity, teachers and children are deprived of the use of educational content online.

"Bridging this digital divide is key. With this demonstration, we aim to show how satellite broadband can help to improve social and educational development by providing access where it wasn't previously possible."

Gien believes satellite broadband technology will enable those working with KUganda to plan frequent interactive training sessions, increase the scale and impact of their work, accelerate knowledge transfer, and reduce costs and time.

The *Live Interactive Classroom* application as demonstrated by KUganda is part of the SES *Broadband eEducation Network*, a service which offers an end-to-end learning environment for teachers, schools and classrooms, as well as for individual students.

Connecting classrooms in Kenya

According to the ICT Authority of Kenya, internet access has been widely tipped to be the key differentiator in economic performance, creating at least 1,000 jobs a month in the country's business process outsourcing sector since 2013. Recent efforts, driven by public-private partnerships, are expected to raise internet access further, from the current 52.3 per cent, as reported by the Communications Authority of Kenya.

One such partnership is the public-private partnership between the Nakuru County Government and Liquid Telecom Kenya. This has seen the roll-out of a free, fast and reliable public access Wi-Fi network, enabling rapid access to information vital for economic and educational advancement.

Under the partnership, Liquid designed and launched a high-capacity network that covers a 10km radius from Nakuru's central business district. Initially, the network was connected to a 200Mbps pool that is upgradable to 1Gbps based on demand.

The free public network has given all users with Wi-Fi-enabled devices open access to the internet with the exception of unlawful activities such as streaming or downloading of offensive content or content that violates copyright.

Speaking at the time of the deployment last year, Liquid Telecom Kenya CEO Ben Roberts said the most important aspect of the Wi-Fi network's design was ensuring adequate capacity and seamless connectivity through the use of equipment that will deliver on user experience.

"Liquid Telecom has put in place outdoor Wi-Fi nodes which are designed to carry huge capacities with the ability to withstand harsh climatic conditions to guarantee maximum and uninterrupted speeds while surfing," said Roberts. "With the built-in meshing technology incorporated in the network systems, users in Nakuru will not experience service interruptions when moving from one point to another within the areas covered in the town."

The network was built around the strategic points accessed by the highest proportions of the town's population. With 51 nodes installed, it serves users in the streets and open public areas such as stadia and parks.

Academic institutions, including JKUAT Nakuru Campus and Mount Kenya University in Nakuru, and Egerton University in Njoro, are also benefitting from free Wi-Fi. Liquid said this is expected to increase the use of e-learning, which in turn increases information retention among students by up to 60 per cent, according to the Research Institute of America. "With the uptake of e-learning by various colleges and universities in Kenya, and the wealth of knowledge available online, internet access in academic institutions has fast become a defining factor in the quality of education that students receive," said Roberts.

Airtel runs various education initiatives in Africa. For instance, Sigweng Karuoth Secondary School is one of 150 learning institutions in Kenya that has so far benefited from its *Internet for Schools* programme.

Since November 2014, pupils at the school have been enjoying free 24-hour access to the internet, allowing them to benefit from unlimited amount of education information available online. As a result, the operator says students have been able to access relevant materials such as revision papers, literature books and sample analysis, helping them learn and reinforce concepts learned in class.

In June 2015, Airtel announced a tie-up between *Internet for Schools* and the LEAP Hubs

entrepreneurship programme. Working with the Chandaria Foundation and Global Peace Foundation, it is supporting 41 schools in Kenya with free internet connections.

Launched in March 2014, LEAP Hubs are dedicated space within secondary schools where students are incubated and nurtured to be creative, innovative and be able to launch sustainable business ventures and social enterprises.

Through the partnership, Airtel is offering free internet connection to students within the programme who use the internet to access online resources and tools that help nurture and develop their business ideas.

Students participating in the LEAP Hubs programme continue to go through leadership and entrepreneurship training focusing on business plan development, financial literacy and critical 21st century skills that will empower them to be self-reliant job creators as opposed to job seekers.

By mid-2015, the programme had so far reached out to 15 schools in Nairobi, Kiambu and Machakos County, and was expected to expand to other parts of the country in the coming months with an expected growth of 40 schools.

Meanwhile, Avanti Communications has also been working in Kenya to deliver connected education to marginalised children. According to the pan-African satellite operator, Over one million children in the country do not regularly attend school, marginalised by societal issues including poverty and distance.

Led by Avanti and its partners – UK Aid, sQuid, Whizz and Camara – Project iMlango is said to be a first of its kind e-learning partnership, created to deliver improved educational outcomes in maths, literacy and life skills for marginalised children. The name is derived from the Swahili word 'iMlango' which means doorway or portal.

The project combines: high-speed internet connectivity to rural and remote schools; provision of tailored online educational content; electronic attendance monitoring with a conditional payment to families to improve non-attendance and drop-out rates; in-field capacity in technology and support resources; and real-time project monitoring/measurement.

At the heart of the initiative is a dynamic internet learning platform, accessed through high-speed satellite connectivity, where partners provide students with interactive educational content.

Deployed via Avanti's *HYLAS 2* satellite, broadband connectivity powers Project iMlango to ensure e-learning is successfully implemented in 195 remote and rural schools across Kenya. Over a two-year period, the project aims to provide improved education outcomes to more than 50,000 marginalised girls across 195 Kenyan primary schools, supporting 150,000 pupils in total.

Broadband connectivity via Avanti's HYLAS 2 satellite powers Project iMlango to ensure e-learning is successfully implemented across Kenya.

Mobile operators help build schools

Over the years, Tigo Ghana has been reaching out to deprived communities to support various educational projects in order to improve standards of living. In 2015, the mobile operator prioritised education in its CSR agenda under the banner *#Shelter4Education*.

Working with various heads of territories for Tigo and using their local knowledge, the initiative began with the identification of various schools that existed as poor, makeshift structures. Some of the factors to be considered in the initial selection of *#Shelter4Education* schools included network connectivity, Ghana Education Service (GES) accreditation, the pupil-to-teacher ratio, etc.

Once six schools had been identified, a close partnership was set up with community and opinion leaders, as well as the GES and the local government administration. The GES provided site plans while the communities provided local labour for the construction of each school. In addition to each school, Tigo also provided a headmaster's office, staff common room and kitchen, and toilet facilities.

Part of the sustainability plan for *#Shelter4Education* includes providing the children with their first digital experience through the Tigo Mobile Digital Library van which is fitted with computers and tablets. Tigo experts are on hand to provide the pupils with introductory classes on ICT.

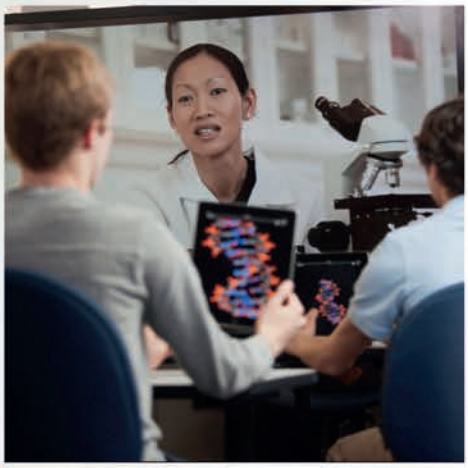
In a separate initiative, Airtel also runs an education programme under which it has so far adopted around 38 primary schools across rural areas in 17 African countries. Working closely with the governments in these countries, its flagship *Our School* initiative aims to improve the quality and delivery of education to children in underprivileged communities. It also works towards building community and employee engagement with the adopted schools.

Under the programme, the operator says it has so far supported more than 18,000 underprivileged children in the adopted schools. As well as delivering ICT and broadband connectivity, Airtel's support includes infrastructural refurbishment of classrooms, and the provisions of furniture, uniforms, books and teaching aids.

The cellco has worked in various schools across its footprint, including in Malawi where it adopted the Salima School for the Blind which is in Daniel Village, around 100km from the capital Lilongwe. The school has 2,063 pupils, some of which are visually impaired. There are four dilapidated school blocks which house eight classrooms but due to insufficient space, five of the classes learn under a tree.

Airtel helped Salima with its immediate needs which included double seater desks, exercise books, Braille paper, pencils and pens, uniforms, sunburn lotion for Albino pupils, and school bags. It also rebuilt two blocks, constructed additional blocks, toilets, a water pump for the community, 20 teacher's houses, and is providing monthly food supplies for visually impaired boarders. ■

The Obeng Yaw basi school in Adesio, Ghana, before and after Tigo carried out reconstruction as part of its #Shelter4Education initiative.





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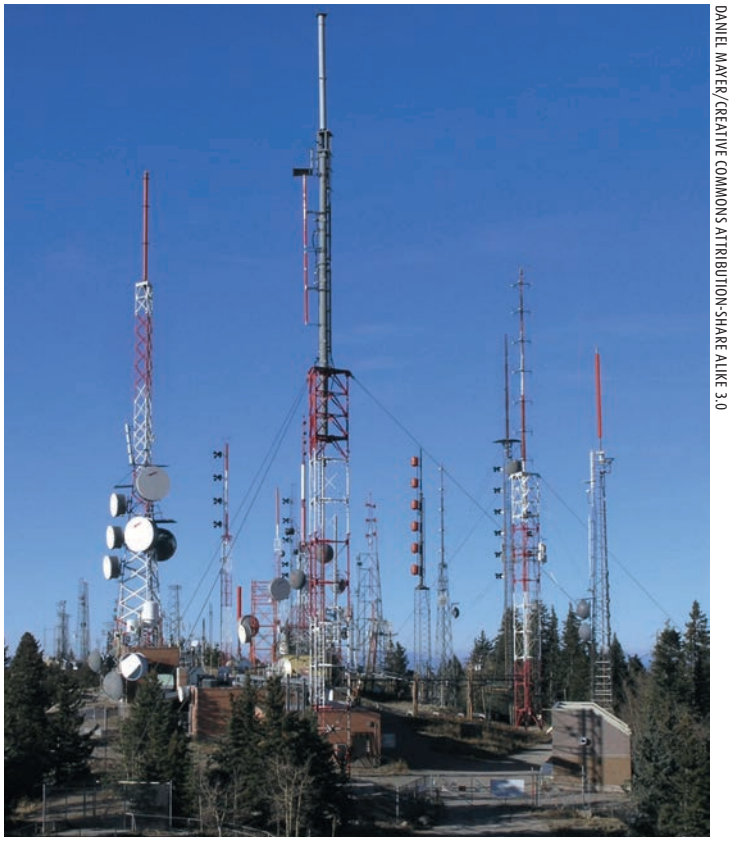
Are the towers ready to fall?



DANIEL MAYER/CREATIVE COMMONS ATTRIBUTION-SHARE ALIKE 3.0

While tower sharing has rapidly become a reality in Africa, not all stakeholders agree that this is a positive move for all the parties concerned.

With the advent of new communication technologies that are independent of the radio network, STEVE BAREFOOT believes the importance of mobile towers will eventually diminish.

Infrastructure sharing is not without its technical and competitive challenges but the benefits and potential cost savings are well-documented. Less well-documented is the possibility that new communication technologies will make exclusive ownership of the physical infrastructure even less attractive in the future.

MNOs that recognise the impact of these new technologies and embrace them as part of their long-term business strategy will enjoy a more sustainable business model that makes them more agile when it comes to demand for new services. Tower sharing may eventually be seen as the first step they take in becoming digital service providers where their resources are focused not on building and maintaining physical infrastructure, but on providing diverse services with multiple revenue streams.

Benefits of tower sharing

In a June 2015 report, the GSMA[1] noted that tower sharing could result in capex savings of 40 to 50 per cent, while opex savings could be as high as 30 per cent. This effectively lowers the infrastructure investment required by individual MNOs, thereby freeing resources for other projects or initiatives. For example, tower sharing is one way that providing service to remote areas might be facilitated without undue financial burden on any individual operator.

However, there is no consensus among all stakeholders that infrastructure sharing is an unequivocally positive move for all parties. Some MNOs who have existing tower infrastructures might argue that they have already invested heavily and that the financial benefits from being first movers have yet to be fully realised. As mobile penetration increases and markets approach saturation, the degree of first mover benefits likely is lessened. This factor may be impeding the adoption of tower sharing.

Others argue that the benefits gained by opening the door to competition by fast follower MNOs through tower sharing outweigh the concerns of the incumbents.

Although there will continue to be discussions of the virtues of infrastructure sharing from a practical standpoint, tower sharing is rapidly becoming a reality in Africa, either directly between cellcos or indirectly through towers managed by independent companies. For instance in its April 2015 issue, *TowerXchange* reported that towercos owned 47 per cent of the towers in Africa *(see figure 1, p28)*.

Julius Ngonga, partner at Ernst & Young's transaction advisory services and infrastructure advisory, seems to suggest that infrastructure sharing will be inevitable. In the November 2015 issue of the *Africa Research Bulletin*[2] he stated: "All mobile companies may soon find it necessary to separate infrastructure management from mobile services, giving more room to tower managers."

The same issue also quoted Eaton Tower's CEO Terry Rhode. He believes that while there was reluctance five or six years ago, the increased load on networks as more customers come on board and demand services means operators need to do more to cut costs and focus on product delivery.

Cynthia Gordon, CEO of Millicom Africa, is likely to agree here. In a blog posted in January 2016, she said: "Infrastructure sharing has now become an effective way for telecoms operators to deploy capital more efficiently and to increase mobile and data penetration in Africa."[3]

Tower infrastructure will become obsolete

It is probably true to say that cell towers will eventually become obsolete. While this will not be any time soon, as new technologies develop, the need for terrestrial line-of-site radio towers will at some point become increasingly less important. It may therefore be in the mobile operator's best strategic interest to recognise this and transition away from viewing exclusive tower ownership as a core business and an extension of its corporate identity.

There are a number of new technologies in varying stages of maturity that may diminish the need for cell towers. Some involve the delivery of familiar services through new transport methods, while others represent entirely new applications.

Technologies that could impact the need for cell tower ubiquity are services that are IP-based or those delivered across a next-generation network (NGN). One such IP-based service already deployed in some markets is Voice Over WiFi (VoWiFi), also known as 'Wi-Fi Calling'. While this capability has been available for some time in the form of various OTT applications, it is now becoming available as an MNO-delivered service and, in many cases, there is no need to download a separate application.

The elegance of VoWiFi is that all it requires is an IP network – and virtually any IP network will suffice. This means that a subscriber with a suitable handset will be able to connect to a residential, business or public Wi-Fi network to place a voice call. In such scenarios, the presence of a radio signal from a cell tower is irrelevant. Not only will this help extend voice service to rural areas without cell towers, but it also means that in urban dead zones – such as inside an office building– as long as there is Wi-Fi there is Wi-Fi Calling.

For IP-based services to succeed in reducing the dependence on mobile towers, there must be adequate and timely access to Wi-Fi. In this regard, Africa is home to several innovative initiatives spearheaded by governments, the private sector, and NGOs. One example is Project Isizwe[4] which is currently providing free Wi-Fi access to residents in and around the City of Tshwane in South Africa. However, project founder Alan Knott-Craig Jr. envisions free Wi-Fi to become ubiquitous throughout the continent. Speaking at a TED event last year, he said: "I'm confident that within my lifetime there will be free Wi-Fi within walking distance of every African citizen."

Evidence seems to support progress toward that vision as one million unique free Wi-Fi connections were reached in Tshwane in October 2015.[5] Knott-Craig also noted that the free Wi-Fi concept is not limited to densely populated urban areas, as evidenced by Project Isizwe delivering service to the Rural Eastern Cape.

South Africa is not the only African country to foster free Wi-Fi projects. Earlier this year in January, the Zambian High Commission in Pretoria announced that it was in talks with a South African company to develop a plan for deploying free Wi-Fi in Zambia.[6] And in East Africa, Liquid Telecom and the Nakuru County Government announced they had partnered to provide free wireless connectivity to residents of Nakuru.[7]

Alternatives to traditional internet connectivity

A Wi-Fi network without an appropriate backhaul or connection to the internet is reminiscent of a technological Potemkin village and of limited use. Fortunately, there are new technologies that may further diminish the need for towers by providing alternative connection methods.

One example is Google's *Project Loon* that aims to provide "internet for all" via a steerable array of balloons.[8] It has been making steady progress toward that goal since its inception in 2013 [*also see News, May-Jun 2013*]. For example in August 2015, the Government of Sri Lanka and Google signed an MoU to use *Project Loon* to extend broadband coverage to the entire island. Earlier this year in February, the government went on to announce that it was taking a 25 per cent stake in the venture.[9]

In contrast, another alternative to ground-based internet access that has also achieved commercial success on a broader scale is that of medium Earth orbit satellite platforms, such as the one provided by O3b Networks.

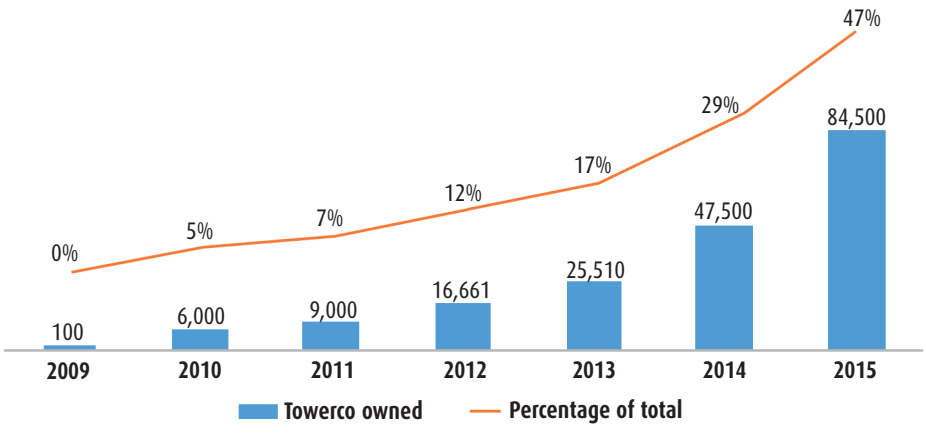
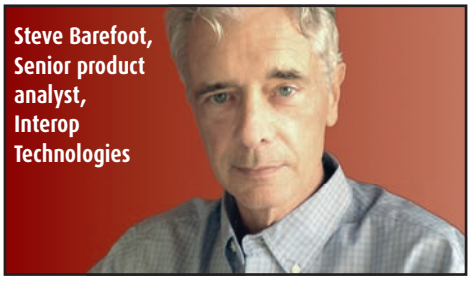


Figure 1: Increase in tower ownership by tower companies in sub-Sahara Africa. (Chart created by Interop Technologies from data in TowerXchange, April 2015 issue).



While satellite has long been used to provide backhaul and connect remote and rural areas, the other technologies mentioned above are still in the early phases of development and many challenges remain to their widespread use.

They nonetheless represent future alternatives to the requirement for running fibre through the ground to remote locations. Again, once an IP network has been established, the door is opened for the delivery of NGN services such as VoWiFi and Wi-Fi Calling. Once this hypothetical scenario becomes a reality, the need for maintaining expensive tower infrastructure will be further diminished.

While much of the success of these future technologies is conjecture, the key point is that new innovations will offer new opportunities. The mobile operators who minimise their cost of maintaining physical tower infrastructure will be in a better position to capitalise on these opportunities than those who do not.

Of course, the transition away from exclusive ownership of the infrastructure may be challenging since such ownership may be part of the identity of an individual organisation. But as mobile operators evolve into digital service providers, removing any encumbrance to providing services to customers must be minimised. As noted in an article[10] published last November by the Bolton Consulting Group: "Big companies often overestimate the longevity of their products and business models, and underinvest in building new ones." Perhaps tower sharing among MNOs is the first step toward building new ideas. ■

[1] GSMA Intelligence – Closing the coverage gap: a view from Asia – http://tinyurl.com/j6gz5yk
[2] Telecommunications: Africa – Africa Research Bulletin: Economic, Financial, and Technical Series 52.9 (2015): 21004B-21005C.
[3] Blog: Digital Trends for Africa in 2016 – http://tinyurl.com/j8jrwok
[4] http://projectisizwe.org/
[5] South Africa: Tshwane Free Wi-Fi hits one million unique connections – http://tinyurl.com/hudcjm4
[6] Free Wi-Fi in public places on cards – http://tinyurl.com/zsc98td
[7] Kenya: Liquid Telecom connects Nakuru County to free and fast high-capacity Wi-fi – http://tinyurl.com/ha5jppg
[8] Project Loon: Balloon Powered Internet for Everyone – https://www.google.com/loon/
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Gogo is anchor tenant for world's first GEO/LEO shared network

Gogo is partnering with Intelsat to leverage the first shared GEO/LEO satellite network for in-flight connectivity. The company will use multi-layered Ku-band capacity on Intelsat's *Epic* high throughput geosynchronous satellites combined with OneWeb's planned low earth orbit (LEO) satellite constellation.

The *Gogo 2Ku* airborne terminal is designed to be compatible with multiple networks. The company's network infrastructure will initially include the use of traditional wide beam services and Intelsat's HTS *Epic NG* platform which is expected to enter service later this year.

When the network is fully deployed with the launch of OneWeb's LEO satellites in 2019 *(see News, Jun-Jul 2015)*, Gogo says its *2Ku* systems will be able to dynamically route traffic across a fully global 10Tbps shared network based on coverage, latency, throughput and other performance criteria.

The firm says customers will benefit from the continuous planned upgrades of the shared network, including up to 250Mbps per plane on Intelsat's *EpicNG* fleet. It adds that One Web's LEO satellites are expected to be the first to enable high-performance services at high latitudes and on polar flights.

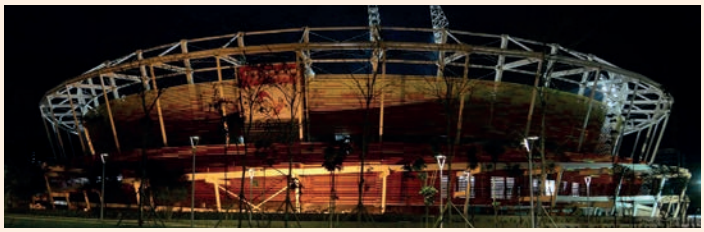
"OneWeb's unique constellation will enable broadband connectivity in the polar-regions and at high latitudes," says Gogo CTO Anand Chari. "It will also have low latency because the satellites are much closer to Earth. By using this shared network, Gogo's 2Ku solution will be capable of delivering hundreds of Mbps per aircraft over every part of the globe."

Teltronic provides critical comms for Rio

Teltronic has been chosen to provide critical communications at this year's Summer Olympic and Paralympic Games.

As part of the EUR10m contract with the the Public Security Secretary of Río de Janeiro State, the Spain-based critical comms specialist will cover several areas. These include the Barra da Tijuca, Copacabana, Deodoro and Maracanã competition venues, two airports as well as several key transport routes in the Olympic area.

This latest agreement for Teltronic (which is now part of the Sepura Group) will see an extension to the traffic capabilities of its existing network currently used by the Rio police. The existing network was originally provided for the Pan American Games in 2007 and, after some upgrades, now supports more than 100 dispatch operators and over 18,000 radios.



Teltronic will upgrade and extend its existing TETRA network at Olympic venues.

As part of the upgrade for the Olympics, the company will install more of its *Nebula* base stations to provide additional coverage for the state police, emergency services, and the Olympics organisation workforce.

The deployment will also feature: two extra TETRA carriers for each site to update the capacity of the existing network; BSTs with up to 12 TETRA transceivers to support high traffic loads throughout the event; Teltronic's *CeCoCo Control Centre* to accommodate a further 50 dispatch operators; and an additional 6,000 terminals with the vendor's *Synchronous Data Manager* application to pare down the GPS refresh time in AVL applications. Teltronic will also provide round-the-clock support during the games.

Connected cones protecting road crews

A European Union-funded project is leveraging the Internet of Things (IoT) to help save lives during roadworks in the UK.

Using motion sensors that are placed on existing traffic cones, highways contractors can monitor the location and status of the cones on a map, as well as receive alarms when one has been struck and workers may be in danger.

'Intellicone' is the result of a unique collaboration between New Wave Innovation, Highway Resource Solutions, ETI Software Solutions, Philips, Eldes, and Colas which is a major contractor for highways maintenance in the UK.

ETI's Beamfly software is used to manage Intellicone. The remote device management system provides a web portal which logs the status of each device as well as its location and displays this on a map in real time.

Intellicone is claimed to be easy to deploy because it operates in conjunction with existing traffic cones.

The vendor says remote monitoring and automatic reporting features make it simple to obtain accurate time and date stamps for any incidents, as well as providing a rich data set to report on deployments.

Most importantly, ETI says alarms are instantly activated when a cone is struck, improving the ability of workers to move to safety. In addition, near misses can be investigated in further detail to improve future working conditions.

"This is a timely example of how the Internet of Things can impact an industry," says Nick Wilcox, CEO of the UK division of ETI Software. "It is more than making a 'dumb' traffic cone 'smarter'; it's the ability to use the data collected to affect the greater good."

HGC deploys mobile fronthaul

Hutchison Global Communications (HGC) will use Infinera's *TM Series* system to provide mobile operators with high-capacity active mobile fronthaul services in Hong Kong.

As well as offering fixed line and IT services, HGC is a carrier's carrier and one of the country's largest-scale Wi-Fi service providers. The company is said to own an extensive fibre optic network in the Hong Kong region, and its four cross-border routes integrate three of mainland China's tier-one telcos with an international network.

With the rapid deployment of 3G and 4G, Infinera says mobile operators such as HGC's sister company 3 Hong Kong are transforming their networks by driving fibre to the cell tower and moving to a centralised or cloud-RAN architecture using fronthaul. It adds that this this new architecture prepares HGC and its mobile operator customers not only for the growth of 3G and 4G, but also for a smooth transition to 5G services.

According to Infinera, the *TM Series* mobile fronthaul system supports all of the CPRI (common public radio interface) and open base station architecture initiative rates, with HGC's initial services in Hong Kong ranging from 2.5Gbps to 10Gbps.

The vendor believes that with these services, HGC's customers can reduce their opex while improving RAN performance.

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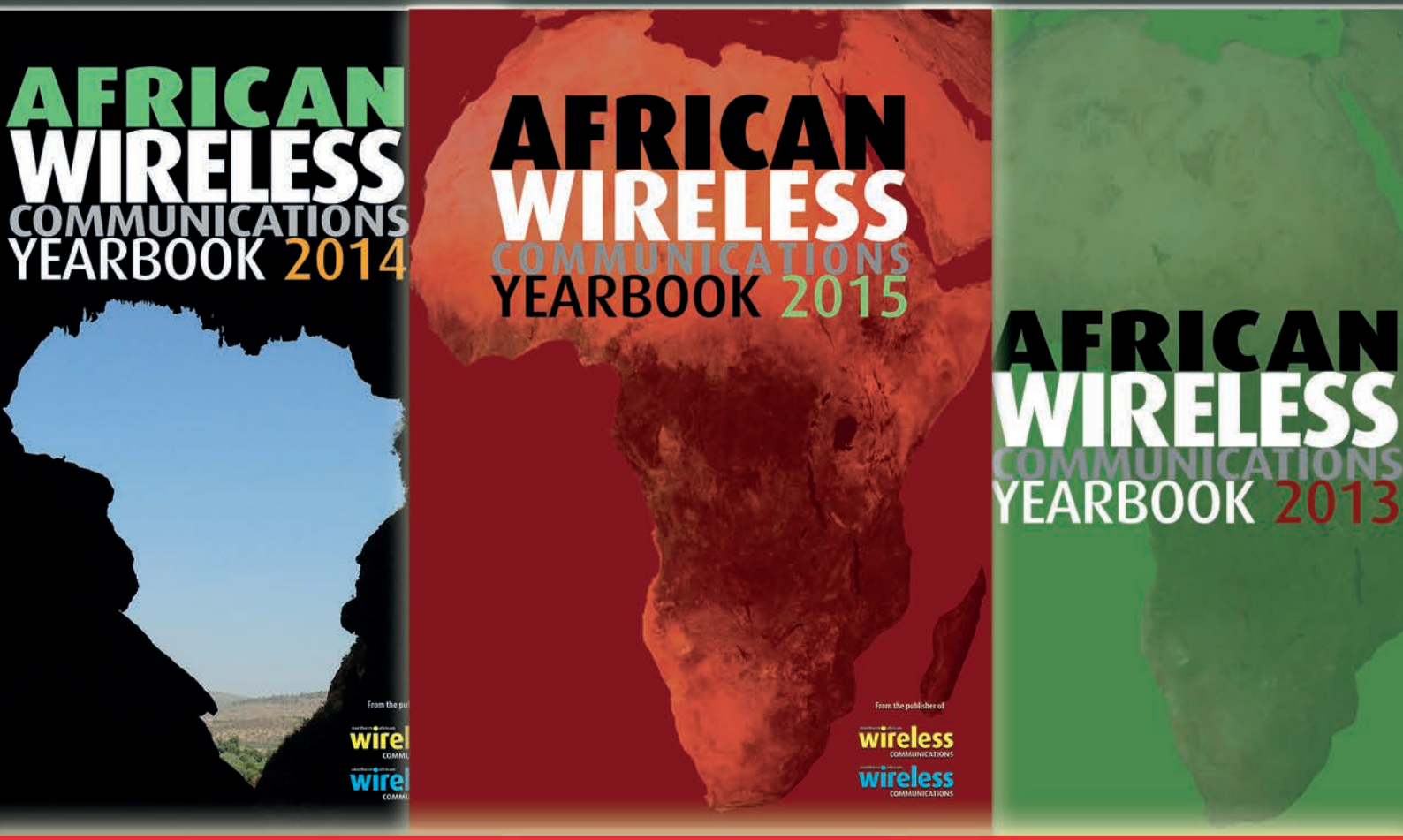

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World's first bike lock with IoT connection

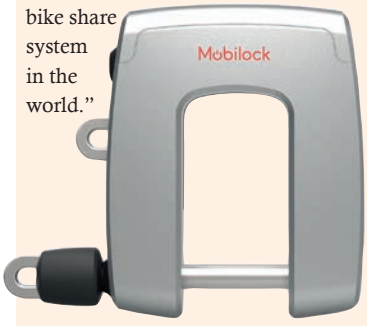
Mobilock is claimed to be the world's first bike lock that is connected to the Internet of Things (IoT).

In big cities such as London, New York, Paris, Hangzhou and others, public bike sharing systems play an important role in attempts to make transport more sustainable. To simplify these systems, Dutch company Mobilock has developed a bike lock that uses a smartphone app as a key. It says the lock can be used without check-out stations, parking docks or storage facilities.

The locks integrate low power, long range (LoRa) WAN technology. Mobilocks says because LoRa chips and sensors need little power, the system hardly uses energy. It adds that a device connected to a LoRA network is able to send data and commands for fifteen years, using only two penlite batteries.

The firm says the use of the technology enables bikes to be localised and monitored in real-time, even when they are in use.

In the Netherlands, Mobilocks uses a LoRa network provided by Dutch telco KPN. Mobilocks co-founder and MD Walter Nieuwendijk says: "Thanks to LoRa, rental companies can locate their bikes at any time and see who's riding it. Also, the system barely needs energy, while old GPS systems – for instance used in cars – need a lot of power. With this addition, Mobilock becomes the most complete and compact bike share system in the world."



The Mobilock bike lock uses a smartphone app as a key.

Sri Lanka buys into Project Loon


Local villagers and police found the wreckage of a Google balloon and its equipment in Gampola.

The Sri Lankan government has bought a stake in *Project Loon*, the Google initiative that aims to deliver broadband to underserved areas using mesh networks created by hot air balloons floating in the stratosphere.

In February, Sri Lanka's telecommunications minister Harin Fernando said the government will have a 25 per cent stake in a joint-venture setup with Google in return for the spectrum that will be allocated for the project.

He added that there would be no other state-funded investment into the initiative, and that 10 per cent of the joint venture will be offered to the country's existing telcos. Fernando told local reporters: "Our objective is to extend coverage so that the entire island will be covered. With competition, tariffs will also come down."

According to the minister, most of Sri Lanka's ISPs support *Project Loon* as a way of extending their coverage and offering lower prices for data services to consumers. This latest move follows last year's announcement that Indonesia's three biggest operators also plan to begin testing *Project Loon* later in 2016.

In Sri Lanka, testing the giant helium-filled balloons (each one measures 12 metres tall and 15 metres wide) and equipment needed for the project has already begun, and could last up to a year.

According to a widely reported incident in mid-February, one of the balloons crashed during its maiden test flight. Locals found the balloon with its electronic equipment in a tea plantation in Gampola, central Sri Lanka. The country's ICT Agency, which is working with Google, claimed the landing was planned and controlled.

Satellite-based IoT combines driver safety system with 'black box' capabilities

South Korea's PLK Technology will use a Telit GNSS IoT module to deliver positioning functionality for *Optian*, a new product that combines the features of an advanced driver assistant system (ADAS) and a high-end automotive black box.

PLK was established in 2000 as an in-house venture firm as part of Hyundai Motor Company but was spun off in 2003. Its ADAS uses camera image sensors to recognise lanes, vehicles, light sources, traffic lights and pedestrians. The company claims it was the first to develop a lane departure warning system based on colour image recognition.

Its new *Optian* system takes the functionality of a typical black box capable of post-processing accidents, and adds ADAS capabilities. PLK says this enables it to implement accident prevention measures, delivering lane departure warning and forward collision warnings, as well as front car departure alert functions. It does this by using Telit's *SL869-V2* module to sense displacement from which it derives speed and distance between cars to warn the driver about the risk of collision.

According to UK-based IoT specialist Telit, the *SL869-V2* is a sub-miniature multi-satellite receiver module that can be installed in vehicles, industrial, wearable and portable digital devices. It's claimed to deliver a high level of stability for navigation applications by tracking GPS and GLONASS at the same time, relaying accurate and fast-refreshing positioning data.

Tanzanian operators "failed" on security

Tanzania's regulator has accused the country's operators of ignoring repeated requests to secure their networks against malicious and spoof callers.

The TCRA (Tanzania Communications Regulatory Authority) claims consumers are being endangered by fraudsters sending deceitful and misleading messages aimed at tarnishing the targeted person's reputation or exhorting money.

Over a two-month period towards the end of last year, 42 incidents are said to have been reported to the regulator and the police, including one case where a victim stood to lose around TZS25,000,000 (USD11,435).

The TCRA said it reminded service providers last October of the requirement to put in place legal and technical measures to safeguard against the use of their networks in sending spoofed messages and to immediately block them.

Following an investigation carried out in mid-December, which also included an SMS spoofing test, the authority said the country's operators were still not complying with statutory regulations.

In a statement on its website signed by director general Dr. Ally Y. Simba, the TCRA noted that Airtel, Halotel, Smart, Tigo and Zantel have "failed, neglected and refused" to heed its directive to ensure a secure connectivity environment and protection mechanism against information security threats.

As well as being warned that they were in breach of the Electronic and Postal Communications Regulations 2011, the operators were ordered to put in place measures for a secure environment that will prevent spoofed messages and related security threats in their networks. They were also fined TZS25,000,000, and face the threat of further legal action should they continue to be in non-compliance.

Floating hospitals connect in Bangladesh with VSAT

SES has launched the first maritime VSATs on three hospital ships run by NGO Friendship in Bangladesh. With local technical help from Square Informatix, it installed the terminals on board the *Lifebuoy, Emirates* and *Rongdhonu (formerly Rainbow Warrior II)*.

Using the SATMED satellite-based e-health platform *(see World News, Jun-Jul 2014)*, Friendship will be able to establish communications with national and international doctors from remote areas, and provide medical counselling to marginalised communities through telemedicine.

"After implementing SATMED platform tools and services, the ships – via satellite connectivity – will be able to support and facilitate work in the areas of e-care, e-learning, e-surveillance, e-health management, and digital imaging," said Gerhard Bethscheider, MD of SES Techcom Services.

The Emirates Friendship Hospital is one of three vessels equipped by SES.

During the inauguration ceremony held in early March, two doctors consulted with patients from a remote island in Bangladesh known as a 'char' through teleconferencing directly from Europe.

Friendship says such a facility would have been previously "inconceivable" to the country's poor and marginalised people.

ABS-3A now in Brazil

ABS has been granted landing rights to operate its first satellite in Brazil. The revolutionary *ABS-3A* is now available to serve a wide range of verticals in the country, including mobile backhaul, rural broadband, video, oil and gas, and mobility applications. Launched last year, *ABS-3A* is the first commercial all-electrical propulsion satellite, and features an innovative design and wide beam coverage that enables it to support applications on both sides of the Atlantic Ocean. It provides 720MHz in C-band and 21MHz in Ku-band over Latin America, Europe, the Middle East and Africa.

TETRA thin in Germany

German Federal security forces will be equipped with what's claimed to be the world's smallest TETRA radio. Measuring 116 x 55 x 19mm and weighing 160g, Airbus Defence and Space says its *TH1n* is easy to carry in a jacket pocket or on a belt, and is particularly suitable for covert operations. Under a framework agreement signed with Germany's Federal Ministry of the Interior, the vendor will provide an undisclosed number of handsets, along with software and maintenance until the end of 2017.

NS upgrades train Wi-Fi

Dutch train operator Nederlandse Spoorwegen (NS) is upgrading its on-board Wi-Fi and passenger information services systems. The company has recently extended its contract with Nomad Digital, the specialist provider of wireless connectivity and ICT solutions to the rail sector. Under a new five-year framework agreement, NS will upgrade its on-board technology platform on intercity trains already using Nomad Digital's systems. This will deliver a common on-board technology platform across NS' fleet.

VimpelCom begins to virtualise networks

VimpelCom plans to build a complete virtual network infrastructure providing 4G, 3G and 2G mobile data services to customers across five markets in 2016.

It will use ZTE's virtual Evolved Packet Core (vEPC), and started implementing the technology in Laos and Kyrgyzstan in February. Following these markets, the operator plans to introduce fully virtualised networks in Uzbekistan, Armenia, and Tajikistan during the course of the year.

Once virtualised, ZTE says VimpelCom's operations in the five countries will move from a legacy-heavy network made up of separate elements to a common, software-driven and lean infrastructure.

VimpelCom Group CTO Yogesh Malik adds: "The reinvention of the current network to one that is software-driven and asset-light plays an important part in our digital transformation, and is a leap forward in bringing the digital world to customers as they navigate their digital lives."

In separate news, ZTE has helped AIS, Thailand's largest mobile operator, migrate 38 million customers from their existing home location registers to a new platform. Before going live with the system, ZTE says its *Universal Subscriber Profile Platform (USPP)* was fully vetted in a series of strict proof-of-concept tests conducted with AIS.

This included overloading protection capabilities with up to nine times normal traffic, simulating a 30 per cent packet loss in IP network transmission, repeated plugging/unplugging and switching of single board computers and hard disks, and other "extreme" tests and verifications.

According to ZTE, its *USPP* simultaneously supports all GSM and UMTS subscribers, and "smoothly" achieves VoLTE and VoWiFi services.

Energy and communications both powered from space

TerniEnergia will use Ka-band satellite technology from Avanti Communications to provide high-speed broadband connectivity to its photovoltaic renewable energy plants in South Africa.

Part of the Italeaf Group, TerniEnergia claims to be Italy's first smart energy company operating in the renewables and efficiency market.

It will use Avanti's satellite service to provide high-speed broadband connectivity to its solar power plants in Paleisheuwel in the Western Cape, and Tom Burke in the Northern Province. The sites cover a huge area ranging from 195 to 240 hectares, and are being constructed for an unnamed major Italian utility firm.

TerniEnergia has deployed a VPN using Avanti's *HYLAS 2* satellite which offers complete coverage of South Africa. It will deliver high-speed internet connectivity that will facilitate vital data exchanges between the photovoltaic plants, whilst providing operational support and remote reporting capability.


TerniEnergia builds huge photovoltaic plants, such as this 70 hectare site in the Lanuvio municipality near Rome.

Avanti adds that its service will ensure IP traffic remains secure and encrypted from end to end.

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