JANUARY/FEBRUARY 2015
Volume 19
Number 5

southern african wireless COMMUNICATIONS

For communications professionals in southern Africa

- The latest satellites for Africa and what they offer
- Is fibre the continent's best option for broadband?
- Mobile money and 'banking the unbanked'

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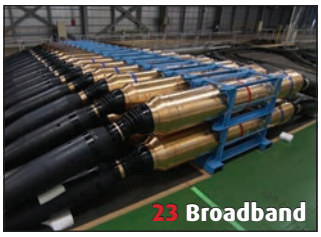

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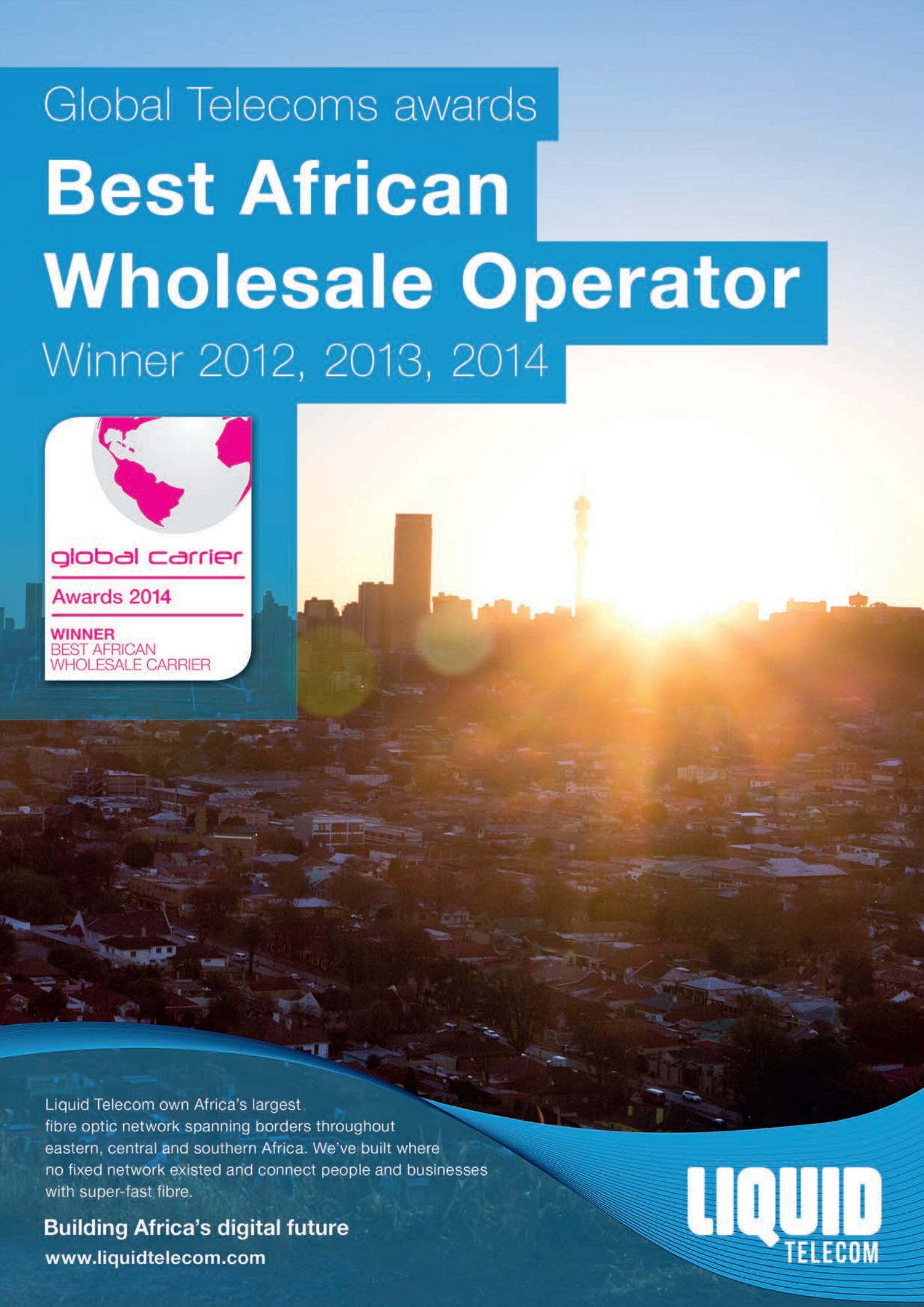

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LIQUID TELECOM

Gemalto claims it's secure despite state-sponsored hacking revelations

Digital security specialist Gemalto says it had no prior knowledge of US and UK intelligence agencies hacking its SIM cards following revelations published on the *Intercept* website in mid-February.

According to the report, during 2010 and 2011 operatives from the US National Security Agency (NSA) and the UK's Government Communications Headquarters (GCHQ) hacked SIM card encryption keys engraved in Gemalto's and possibly other vendors' SIM cards.

Citing former NSA IT contractor and whistleblower Edward Snowden as its source, *Intercept* said the intelligence agencies had "the potential to secretly monitor a large portion of the world's cellular communications, including both voice and data".

KuppingerCole senior analyst Alexei Balaganski claims the intelligence agencies did not just resort to hacking, but also ran a global surveillance operation on Gemalto's employees and partners.

"In the end, they managed to obtain copies of secret keys embedded into SIM cards that enable mobile phone identification in providers' networks, as well as encryption of phone calls," writes Balaganski in a blog. "Having these keys, NSA and GCHQ are in theory able to easily intercept and decrypt any call made from a mobile, as well as impersonate any mobile device with a copy of its SIM card."

Neither agency has so far commented on the allegations.

Netherlands-based Gemalto is said to be the world's largest SIM maker, annually shipping more than two billion cards globally. In Q314, it reported total revenues of EUR626m (USD707m) of which its mobile division accounted for EUR331m (USD347m).

Following its own investigations, Gemalto said that there are "reasonable grounds" to believe a joint surveillance operation by the NSA and GCHQ (pictured) "probably happened" during 2010 and 2011.

In Africa, Etisalat, MTN, Safaricom, Vodacom and Morocco's Inwi are among the mobile operators that use the firm's products, while governments in several countries including Algeria, Kenya and South Africa have deployed its digital security solutions. Total earnings from Gemalto's ongoing operations across the MEA region are worth EUR273m (USD308m).

"An onion and an orange"

Following the revelations, Gemalto quickly launched an investigation and published its findings on 25 February. It said that there were "reasonable grounds" to believe that an operation by the NSA and GCHQ "probably happened". But it added that the attacks only breached its office networks and could not have resulted in a massive theft of SIM encryption keys.

"The operation aimed to intercept the encryption keys as they were exchanged between mobile operators and their suppliers globally. By 2010, Gemalto had already widely deployed a secure transfer system with its customers and only rare exceptions to this scheme could have led to theft.

"In the case of an eventual key theft, the intelligence services would only be able to spy on communications on 2G mobile networks. 3G and 4G networks are not vulnerable to this type of attack," claimed the firm.

It confirmed that it did experience many attacks during 2010 and 2011, including "sophisticated intrusions" and several attempts to access the PCs of employees who had regular contact with customers.

"At the time we were unable to identify the perpetrators but we now think that they could be related to the NSA and GCHQ operation. These intrusions only affected the outer parts of our networks – our office networks – which are in contact with the outside world. The SIM encryption keys and other customer data in general, are not stored on these networks.

"It is important to understand that our network architecture is designed like a cross between an onion and an orange; it has multiple layers and segments which help to cluster and isolate data."

According to *Intercept*, the intelligence agencies targeted mobile operators in Afghanistan, Yemen, India, Serbia, Iran, Iceland, Somalia, Pakistan and Tajikistan. Gemalto said it has never sold SIMs to four of the 12 operators listed in the documents, in particular to the Somali carrier where a reported 300,000 keys were stolen. In the case of Pakistan, it confirmed that the transmission of data between its employees and operators in the country used the highly secure exchange process at that time.

Gemalto concluded by saying it will continue to monitor its networks and improve its processes.

Meanwhile Giesecke & Devrient (G&D), which is also one of the world's biggest SIM card makers supplying more than 350 operators globally, says there is no indication that it has suffered any similar hacks.

Carolina Kehrer, a spokesperson for the German-based manufacturer, said: "As a leading provider of security solutions and services, we take every precaution to protect customer confidentiality. Our data generation takes place in high-security areas, isolated both physically and virtually from the surrounding company network. We monitor the security and integrity of these separate areas on an ongoing basis."

Intelsat and Azercosmos team up for new satellite

Intelsat and Azercosmos will work together to build a new satellite that will orbit at 45°E.

The two firms say they will "leverage their respective strengths and capabilities" during the manufacturing and development phases for *Azerspace-2/Intelsat 38* which is expected to launch in 2017. The new satellite will cover Africa, Asia and Central and Eastern Europe.

For Intelsat, it will also provide continuity of service for *IS-12* which is currently at 45°E and provides DTH platforms and connectivity for corporate network services in Africa.

Azercosmos is the national satellite operator of Azerbaijan. It will use *Azerspace-2* for enhanced capacity and coverage to support the growing demands in the region for DTH, government and network services currently offered by *Azerspace-1*. "With our second telecommunications satellite, we will be in a stronger position to meet the increasing demand for broadband and media applications," says Azercosmos CEO Rashad Nabiyev. "Our partnership with Intelsat will further strengthen both of our positions in the region and provide the necessary capacity to efficiently expand our services geographically."

Intelsat adds that its tie-up with Azercosmos is a "great example" of working closely with other satellite operators. "Our collaboration will enable us to create additional capacity by leveraging our existing assets and maximising the value of our orbital rights," says deputy CEO Stephen Spengler.

Upcoming satellites for Africa – feature pp18-20

World's "largest" MPT network to go digital

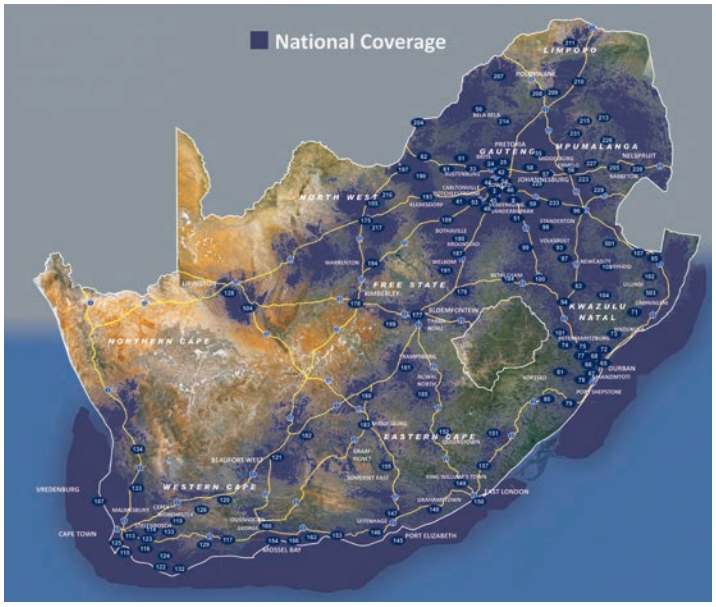
Altech Fleetcall is upgrading its analogue radio trunking network in South Africa using DMR (Digital Mobile Radio) systems from Hytera Communications.

Altech Fleetcall is South Africa's only licensed company to own and operate a national radio trunking communication network. Since 1994 it has built up a network of more than 170 high sites that offer multi-regional coverage or the choice of several regional zones nationwide. According to Hytera, it is arguably the largest operational MPT1327 network in the world.

Using Hytera's ETSI standard DMR Tier 3 trunking solution, Fleetcall says its network will offer higher data speeds, GPS tracking, flexible dispatching, multi-level monitoring, larger subscriber capacity, and "crystal clear" voice quality.

The digital solution will also give Fleetcall scalability and the ability to capitalise on the growing potential of network upgrading in South Africa.

Brett Nash, MD of Fleetcall's parent company Altech Radio Holdings, says: "Should the subscriber uptake warrant it, the network could potentially grow to 250 sites nationally. These sites would be deployed over a number of phases and be aligned with where the company perceives the greatest benefit."



Since 1994, Altech Fleetcall says it has built up a national radio trunking network of more than 170 high sites in South Africa.

Fleetcall provides trunking, PTT and DMR solutions for a number of verticals such as the transport, mining, security and emergency services industries, amongst others.

The company also provides airtime services for telemetry, dispatching, alarm monitoring, fleet management, security and several other wireless voice and data applications.

PCs from Afghanistan to a Tanzanian village school

Globecomm has donated 14 desktop computers to a school in Tanzania in the village of Selela as part of a collaboration with the Tanzanian Support Foundation (TSF).

The PCs were previously used for e-welfare support during military operations in Afghanistan but will now be re-deployed to help the small, rural community of Selela become more self-sufficient in education, healthcare, hygiene and clean water.

TSF has contracted social enterprise organisation Viafrica, which has regional offices in Tanzania and Kenya, to provide installation, maintenance and training for teachers and students at the village.

The Globecomm-TSF initiative, dubbed 'Project S', also involves the Montessori Lyceum Flevoland in the Netherlands which has raised money to purchase teaching materials for the Selela school. A student group led by two teachers will travel to Tanzania later this year to give pupils computer lessons.

Kitty Kill, comms manager for the Montessori Lyceum, says: "We teach our own students awareness and to take care of the environment. Using pre-used computers is an excellent form of recycling and sustainability."

MEASAT increases spectral efficiency on Africasat-1a

Customers on *Africasat-1a* will be able to benefit from additional cost savings following the successful test of 64APSK modulation on the satellite's high-powered pan-African beam.

The tests were conducted using NovelSat's *NS3000* high data rate satellite modem running its *NS3* transmission technology.

According to MEASAT, *Africasat-1a*'s Malaysia-based owner, all this increased spectral efficiency levels by between 20 and 50 per cent. It says that increased spectral efficiency enables more bits per Hertz leading to higher bandwidth and reduced costs.

MEASAT adds that the key application areas that will benefit are multiplexed IP trunking and voice backhaul for mobile operators, and point-to-point IP transit for ISPs.

NovelSat claims its technologies deliver the "fastest" data rates and the most "scalable" transmission solutions from 64Kbps to 850Mbps on a single modem.

NS3 is built around its *Satellite Modem Operating System*, a unified sat-coms platform designed to ensure optimal interoperability, throughput and scalability. It also offers software-upgradable features and waveforms.

Mahindra makes connections with its money service

Mahindra Comviva believes it has taken mobile money to the "next level" with the launch of its *connectMoney Service Manager* in partnership with Econet Wireless in Zimbabwe.

As part of the agreement, Econet has issued MasterCard debit cards linked to its *EcoCash* mobile money system, and says it is the largest rollout of secure chip and PIN payment cards in the country. It is also the first time that MasterCard debit cards are available to consumers using mobile money services in Africa.

connectMoney Service Manager links financial systems powered by MasterCard and other card networks. *EcoCash* account holders will receive debit cards allowing them make purchases at POS terminals and also to withdraw cash via ATMs accepting MasterCard, locally and internationally.

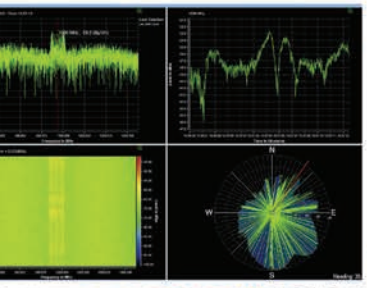
The service also enables Econet to offer virtual cards that are directly linked to the user's mobile money account. The virtual card number is delivered via SMS and is accepted for e-commerce payments.

EcoCash COO Japhet Aritho says: "This will further accelerate adoption of electronic payments in the country thus promoting the national agenda of a cashless society."

In a separate development, Mahindra Comviva has created what's claimed to be the world's first domestic interoperable mobile financial service between *Airtel Money* and *Tigo Pesa* in Tanzania.

The service enables customers to send and receive money directly between the rival cellcos' mobile money accounts.

Mobile money in Africa – Industry view from Orange, pp27-28



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Hendrik du Plooy, General sales manager, Broadlink

ON THE NETWORK

A-grade satellite connectivity is already a reality

While Richard Branson wants to put thousands of internet satellites into orbit, Broadlink's hub is already providing a means for multinationals making inroads into Africa.

Broadlink has invested in its own teleport facility situated at Africa's first vendor neutral satellite earth station – Teraco in Johannesburg.

The multiple advantages of this satellite hub are in line with demand for A-grade satellite connectivity alongside wireless requirements to seamlessly connect businesses to the continent.

As Africa continues on its path of economic growth, it requires an increasing number of companies to venture into remote areas beyond South Africa's borders. By being located at Teraco's facilities, Broadlink enables customers to connect directly to several South African telecoms operators, local and global businesses located in the data centre, as well as benefit from NAPAfrica's peering.

While the Western world can rely on fibre, Africa cannot and satellite is required to provide an efficient way of connecting the majority of the unconnected. Growth has already been seen in demand for broadband and rural connectivity, data and voice services for telcos, mobile operators, enterprises and government services.

There is no doubt that satellite technology can help bridge the African digital divide. There are well over 300 million people that are 50km away from fibre or cable broadband connections and this has a detrimental effect on connection quality.

There are even more people that do not have any internet access, and with a rapidly growing population, connectivity demand will be at an all-time high very soon.

Johannesburg-based Broadlink is a provider of microwave, fibre, satellite, voice and internet access services.

Site audits in Namibia carried out via drones

The Communications Regulatory Authority of Namibia (CRAN) has carried out audits of 25 broadcast transmission sites using remotely piloted aircraft (RPA).

The aim of the project was to determine the RF performance characteristics of identified sites and masts, installed antennas per mast, and the operational broadcasting services on every antenna, including an assessment of spectrum usage.

The audits were carried out on behalf of CRAN by German-based specialist LS telcom. Its software and services are designed to address the efficient use of RF spectrum in broadcast, PMR, mobile and microwave networks.

The company conducted the audits using RPAs which were each equipped with an onboard camera as well as measurement and sensor systems. In contrast to other measurement services, the firm says the site auditing procedures via drones took place without affecting operational services and without direct involvement of network operators.

LS telcom says the auditing of each site and mast via RPAs was done without affecting any operational services.

It adds that the detailed measurements, recordings and visuals of each site and mast infrastructure did not require core site or building entry, or power reduction of services.

"The site audit produced very detailed and informative results," said CRAN COO Jochen Traut. "This is the introduction of an exciting phase of efficient telecommunication regulation in Namibia."

The regulator will now incorporate the results of the audits into its central database for future referencing and compliancy assessment.

Liquid partners with CEC for Zambia fibre

CEC Liquid Telecom plans to build a new fibre link between Lusaka and Livingstone, and claims it will offer the "most reliable high-speed" broadband connectivity in southern Zambia.

The 500km fibre connection will cost an estimated USD5m and provide additional capacity, increased redundancy and route diversity.

It will start in Lusaka, transit through eight southern circuit towns including Choma, Kafue, Kalomo, Mazabuka and Monze, before terminating at Victoria Falls in Livingstone. From there, the new link will interconnect with Liquid Telecom's fibre network in Zimbabwe. Onward international access will be enabled via the group's pan-African satellite and fibre networks which connect to EASsy, SAT3, SEACOM, TEAMS and WACS.

The Lusaka-Livingstone link is due to be completed by June 2015. CEC Liquid Telecom will then build out to the border towns of Kazungula and Sesheke to connect with Namibia and Botswana.

CEC Liquid Telecom provides IP transit, MPLS, backhaul, disaster recovery and data protection services to a wide variety of customers.

It was setup as a joint venture between Liquid Telecom Group and Zambian power transmission, distribution and generation firm, Copperbelt Energy Corporation.

CEC's fibre infrastructure stretches across 5,000km and is said to be the first fully-redundant network in Zambia.

Telstra launches new PoP for Africa

Telstra is aiming to provide greater connectivity and redundancy options for businesses operating across the continent with the launch of a new PoP in Johannesburg.

The Australian telco says the PoP builds on its existing network-to-network interconnection across 16 African countries which include Kenya, Mozambique, Zimbabwe, et al.

Telstra has licenses in Asia, Europe and the US, and says it offers access to more than 2,000 PoPs in 230 countries and territories across the world. It claims the deployment of a PoP in South Africa represent "another step" in its international expansion, and will act as a gateway for businesses looking to grow their footprint across South Africa and beyond.

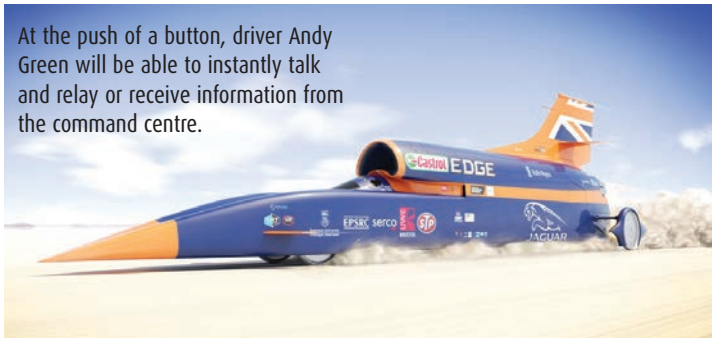
Bernadette Noujaim Baldwin says Telstra is seeing growing demand from foreign firms based in South Africa.

"South Africa is an emerging power, with one of the fastest-growing internet economies in the world," says Bernadette Noujaim Baldwin, Telstra's head of connectivity and platforms portfolio, global enterprise and services.

"With these economic conditions in mind, we're seeing demand for data connectivity throughout South Africa grow as an increasing number of Asian, European and American headquartered businesses look here for long-term growth opportunities."

She adds that Telstra needed an expert local provider and therefore launched the new PoP in partnership with Gauteng-based pan-African telecom services provider Internet Solutions (IS). Telstra will leverage IS' network footprint to extend its service coverage and provide customers the same security, redundancy and quality of service offered on its own network.

Emcom to deliver DMR at the speed of sound



At the push of a button, driver Andy Green will be able to instantly talk and relay or receive information from the command centre.

South African-based PMR specialist Emcom Wireless has had a busy year so far with news of a deal for the national police service as well as a deployment to the Bloodhound Supersonic Car project.

In August, the Bloodhound team will attempt to break the world land speed record on the Hakskeenpan in South Africa. As he tries to topple the record of 763.035mph, driver Andy Green will be able to communicate instantly with the control centre at the press of a button thanks to a DMR system supplied by Emcom.

Sipho Tony Sibanda, Emcom Wireless' executive director in charge of business development, says: "Our DMR solution will provide real-time voice and data communications and allow the command centre to not only talk to the driver but monitor his vital statistics such as heart and breathing rates, as well as offer capability to transmit real-time vehicle performance criteria throughout the attempt."

The network will use Tait Communications' Tier 3 *TAITNET* DMR platform which will directly link all operations to the control centre on the Hakskeenpan. All support teams, engineers, emergency crews and airborne assets (such as aircraft filming the event) will benefit from having coordinated group radio communications without interfering with each other.

The system was specifically configured at Emcom Durban Radio workshops and even has the capability to integrate with the LTE network supplied by MTN *(see News, Sep-Oct 2012)*. "Yes, we can make two-way radio talk to cellphones and vice versa!" Sibanda enthuses.

In a separate deal, Emcom has won a three-year equipment contract with the South African Police Service. It will supply 4-13GHz microwave radios and 400MHz technology from New Zealand specialist MiMoMx to enable inter-linking of the various radio repeater sites situated across the country.

"The existing repeater systems will be upgraded and migrated to wide area simulcast, thus ensuring cost-effective, seamless wide area for voice communications, utilising existing spectrum allocation," says Emcom CTO Stefan Skarabis. "The SAPS will have a bespoke, secure internal network that will allow the freedom of not having to pay or rely on third-party network operators to carry traffic."

Erratum

The Jul-Aug 2014 issue of *Southern African Wireless Communications* featured a news item about South African Airways using an in-flight payment system developed by Satellite Authorisation (SatAuth). This article incorrectly referred to Gilat as being a co-developer of the system. SatAuth has asked us to point out that it was setup in 2001 as a purely South African company, and that it has never had any involvement with Gilat. SatAuth says its in-flight payment system is a wholly South African development and that it has not had any assistance outside of South Africa. We would like to apologise for any confusion our original article may have caused.

SES military satellite

Luxembourg's government has ordered a new satellite as part of a joint venture with SES. *SES-16/GovSat* will be built by Orbital ATK and orbit at 21.5ºE when it is launched in Q2 2017 by SpaceX. SES says the multi-mission satellite will use dedicated military frequencies (X-band and military Ka-band) to provide high-powered and fully steerable spot beams covering the EMEA region. The Luxembourg government has pre-committed to significant capacity in support of its NATO obligations, but the remainder will be available to governmental and institutional users.

AWS Direct from MTN

MTN Group is aiming to become the first African cellco to offer Amazon Web Services (AWS) Direct Connect to business customers across the continent. The new service will leverage the extensive footprint of MTN's Global MPLS network to provide customers with connectivity between their data centres or businesses and the AWS EU Ireland region. MTN says this will give users across Africa a dedicated link with which they can access the "scalable and reliable" AWS cloud.

"Business-in-a-box" lets local vendors sell airtime

Namibia's Paratus Telecom has launched a new mobile airtime distribution service. *Katiti* runs on Nomanini's cloud-based mobile POS platform and is designed to be used by informal traders and entrepreneurs.

Local vendors are given what Paratus describes as a "business-in-a-box" – a terminal that is said to be "virtually indestructible" and from which merchants can sell pre-paid airtime vouchers.

The company says the "beauty of the system" is that reselling doesn't require any connectivity or even electricity. It claims that the terminal's battery lasts for five days and is fully charged after just eight hours. As the platform is cloud-based, vendors simply 'upload' airtime when they have internet access, and all they need to do is select the type and amount of airtime to be sold and a voucher is printed within seconds.

A local vendor in the Elmarie Katutura suburb of Windhoek shows off her *Katiti* terminal.

Paratus MD John D'Alton says: "We wanted to bring something new to the market – something that would not only benefit us, and the millions of people who use pre-paid phones, but that would also give entrepreneurial individuals an opportunity to supplement their incomes."

Cape Town-based Nomanini's mobile POS service specialises in facilitating cash payments in emerging markets and uses Google's *Cloud Platform*. Since 2010, it has launched in six countries across Africa and is currently said to process more than a million transactions per month and up to 50 requests a second.

Nomanini CTO Dale Humby is one of three official Google development experts in Africa. He now wants to evolve his firm's system to help users gain actionable value from their data.

"[For example], each terminal is fitted with GPS. By combining geolocation data with the number of transactions processed by each device, we can help clients monitor performance, identify areas where they would benefit from deploying more devices, and predict stock needs for individual retailers," he says.

Paratus Telecom finalises purchase of Vox Telecom – Wireless Business, p14

iWayAfrica first with 'GBaaS' launch

iWayAfrica says it has become one of the first ISPs in the region to offer global bandwidth as a service to enterprise users in Zimbabwe.

With its MPLS-like managed solution, iWayAfrica claims business networks gain the advantage of guaranteed international bandwidth, visibility of their global traffic broken down by applications and sources, and the ability to define intricate priorities and policies.

The cloud-based service is enabled by DiViNetworks which specialises in software-centric network systems. Unlike other MPLS or DPI solutions, DiViNetworks says its service does not require any CPE or capex investment. The firm reckons it can be set up within minutes and is easily configured and managed by IT personnel, enabling operators to gain Tier 1 intelligent network functionality as a software defined networking (SDN) service.

DiViNetworks adds that the flexibility of the service enables setting policies for any content or application. It also supports ad-hoc policies, such as prioritising traffic of employees travelling abroad, or guaranteeing bandwidth for a video-conference with an overseas customer.

First subsea cable across South Atlantic

Angola Cables has signed a contract to build the world's first submarine cable system across the South Atlantic. The international wholesale carrier will work with NEC as the system supplier.

Stretching 6,165km, SACS (South Atlantic Cable System) will connect Angola with Brazil, directly linking Africa to Latin America for the first time.

In Angola, it will land at the Sangono cable landing station near Luanda, while the Brazilian landing point will be at a purpose built data centre in Fortaleza.

The total amount of investment for SACS is estimated to be around USD160m. It will feature four-fibre-pair cable and optical transmission technologies with an initial design capacity of 40Tbps (100Gbps x 100 wavelengths x four fibre pairs). Construction is expected to begin before the end of 2015 and the system is targeted to be ready for service during Q4 2016.

Angola Cables' mission is to transform Angola into a major telecoms hub in Africa, according to CEO António Nunes.

Angola Cables also plans to build another cable system, Cable of the Americas (COTA), which will connect Santos and Fortaleza to Miami in the US. COTA and the SACS will enable Angola Cables to connect Angola and Africa directly to Brazil and the USA, adding to today's existing connectivity from Africa to Europe via WACS.

Angola Cables CEO António Nunes says his company's mission is to transform Angola into one of the major telecommunication hubs in Africa.

"This new submarine cable, together with our other projects, will help to improve connectivity between Angola and Africa to Latin and North America.

"We will continue to develop our internet highways to enable our telecoms, ISP and enterprise customers to differentiate themselves in today's competitive and highly-evolving African marketplace."

Vodacom's fixed networking move

Vodacom is hoping to expand its customer base in South Africa's enterprise and residential markets with the rollout of FTTH (fibre to the home).

The ultra-broadband infrastructure will use passive optical networks and point-to-point Ethernet to deliver triple-play services directly from Vodacom's central office. The operator forecasts that its FTTH network will reach around 150,000 homes and 100,000 businesses within the next three years. It plans to deploy a converged network to offer mobile, voice, video and data services in all major population centres in South Africa, including Johannesburg, Pretoria, Cape Town and Durban.

Vodacom will use Alcatel-Lucent's end-to-end *7360 ISAM FX* GPON system and customer experience platform to provide performance management capabilities through both wireline and wireless methods. The vendor will also supply professional and managed services, as well as OSS.

Alcatel-Lucent says it first began talking to Vodacom about expanding its business into the fixed access market five years ago. "This [FTTH] effort represents a significant and bold move by Vodacom into the fixed network space and allows them to take advantage of new, revenue-generating business models," says Willem Hendrickx, the vendor's EMEA president.

This latest fibre deployment follows Vodacom's rollout of fibre-to-the-business services towards the end of last year *(see News, Sep-Oct 2014).*

Hermes gives energy company a boost

Hermes Datacomms will partner with O3b Networks to deliver satcoms services to a major energy customer in Angola. The UK-based firm, which specialises in communications systems for the mining, oil and gas sectors, says it can now provide "ultra-low latency services" using O3b's fleet of medium Earth orbit (MEO) satellites.

Hermes will provide a fully managed service which will connect its unnamed customer's sites in Africa with corporate and operational centres in Europe using O3b's integrated gateway and backhaul network. It says the client will benefit from a low latency network that can be monitored in real-time, with operations that can be controlled and managed in the same way as a fibre network.

Hermes account manager Barry Bouwmeester says: "Oil and gas operators increasingly tell us that they need higher throughput combined with low latency to cope with the significant amounts of data that is being generated within their operational networks. Advanced communications services are number one on their list of priorities.

"O3b offers the solution and will improve the efficiency of our customers' operations by enabling applications that are so critical to their success."

O3b's MEO satellites are positioned at around 8,000km above the Earth's surface and are said to offer ultra low latencies of 150 milliseconds.

With the launch of its final set of four satellites last December, O3b says its initially planned constellation of 12 satellites is now complete.

ST-3: Reliable connectivity for Africa from Asia's leading satellite operator

Singtel now offers new and exciting opportunities for satellite connectivity in Africa.

Singtel is Asia's leading communications group and has more than 35 years of experience in the satellite business. Today, we offer an unrivalled range of customised fixed and mobile satellite services to enterprise and maritime users, broadcasters, government agencies, NGOs and more.

As well as owning and operating satellites, we also offer access to more than 30 satellites worldwide from our three teleports in Singapore that were first established in 1971. We also have partnerships with other teleports around the world for comprehensive global coverage.

ST-3 delivers high power C-band coverage across virtually all of Africa, the Middle East and South East Asia. With high performance east and west hemi beams, it provides powerful connectivity to support transponder leasing, VSATs, IP services, and much more. Its prime orbital location of 75°E makes it particularly suitable for a diverse group of services ranging from cellular backhaul and enterprise data to primary distribution of HDTV channels.

Singtel is more than just a satellite operator. We are a full telecoms service provider offering satellite capacity, submarine cable services and data centre facilities. We can integrate all of those platforms to offer a full and customised suite of unique services to customers.

For example, we are already providing some clients in Africa's mining sector with complete end-to-end services that include satellite links, connectivity to data centres, the internet and private MPLS networks, as well as LAN integration and other managed services.

With our Global Offices around the world, prospective customers in major cities can come and meet us in person to discuss their individual requirements for a tailored package of services.

And if all that wasn't enough, we have proven track record of maintaining 99.98% availability of service. We regularly upgrade our terrestrial infrastructure to ensure that our customers always enjoy high performance and reliability for their mission-critical applications, even in remote areas.

Satellite continues to play a vital role in connecting companies and communities to access areas of Africa. ST-3 offers you a cost effective way of capitalising on the technology's possibilities, as well as the unique opportunity to partner with Singtel, a company that has decades of unparalleled experience and expertise in the field.

Get in touch with us today to find out more about how we can help you to reach your target audiences.

For More Information:

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Singtel

Let's make everyday better

IHS secures billions in funding for more expansion across Africa

In what's described as the largest capital raise in Africa since 2007, IHS Towers has agreed funding worth USD2.6 billion. The deals, announced towards the end of last year, comprise equity of USD2bn and a loan facility of USD600m.

The equity has been secured from existing and new shareholders, while the debt component is split between USD and NGN with a seven- and eight-year tranche. The facility was fully underwritten which IHS says confirms its status in the credit markets.

The company has now raised a total of USD4.5bn since 2012 and claims to be the largest towerco in the EMEA region. IHS says the latest funding will support new site build programmes across its footprint, and will also be used to deliver greener power technologies to its tower portfolio such as more efficient operational management solutions, solar systems, and high efficiency generator units.

IHS CEO Issam Darwish says Airtel's users will now benefit from greater efficiencies and increased network uptimes.

In December 2014, the firm announced it will acquire more than 1,100 towers from Airtel in Zambia and Rwanda in a deal reportedly worth around USD313m.

Airtel Africa's entire estate of around 17,000 towers has been up for sale for some time now, and thousands have already been sold to Eaton Towers and Helios Towers Africa in separate deals *(also see Wireless Business, May-Jun 2014)*.

Airtel's agreements with IHS, which are subject to statutory and regulatory approvals, will involve the sale and lease back of towers in Zambia and Rwanda under a 10-year renewable contract.

The operator says this will enable it to focus on its core business and customers, de-leverage through debt reduction, and reduce its ongoing capex on passive infrastructure.

Once approved, this latest deal will mean that IHS will manage more than 21,000 towers in Africa, adding to its existing assets in Cameroon, Côte d'Ivoire and Nigeria.

It is also likely to result in further employment opportunities. Over the last few years IHS says it has created "several thousand" direct and indirect job opportunities, adding that it continues to invest "heavily" in the recruitment, training and development of its workforce.

"We are clear in our ambition to play a leading role in the creation of the widest, most efficient and reliable mobile networks in Africa," says IHS CEO Issam Darwish. "The social and economic benefits to the local economies where we operate are significant."

Millicom earns a billion in Africa

Millicom says its revenues hit USD1bn for the first time in Africa as it announced its results for 2014.

Q4 revenue for the region increased by 13 per cent in local currencies to USD256m. But the company says EBITDA at USD48m declined by 17 per cent year-on-year due to unfavourable currency movements, commercial activities, and USD5m in restructuring charges.

Yearly mobile service revenue was up 10 per cent at USD227m with voice and SMS growing by eight per cent and data by 63 per cent. Earnings from mobile financial services (MFS) also rose 58 per cent to reach USD22m.

Luxembourg-based Millicom says it now has 25.3m subscribers across its six Tigo branded operations in Africa (Chad, DRC, Ghana, Rwanda, Senegal and Tanzania), representing an annual rise of 24 per cent. It added 1.5m new customers in Africa during Q4, mainly driven by DRC and Tanzania.

In his statement for the year, Millicom International's interim CEO Tim Pennington said: "Progress has been made in Q4 but we will continue to manage the cost base aggressively. The group leverage reached 1.9x at the end of the year; our objective remains to reduce it towards the middle of our target range of 1.0-2.0x. We expect to increase revenue in 2015 to between USD7.1bn and USD7.5bn, which will generate an EBITDA of between USD2.20bn and USD2.35bn."

CommScope acquires TE Connectivity

CommScope Holding has agreed to acquire TE Connectivity's telecoms, enterprise and wireless businesses in an all-cash transaction valued at around USD3bn. CommScope hopes the deal will enable it to expand into "attractive" adjacent markets as well as broaden its position as an infrastructure provider.

Headquartered in Switzerland, TE is said to have a "strong presence" in Europe, Middle East, Africa and Asia Pacific. It specialises in fibre optic connectivity for wireless and fixed networks, and reported revenues of around USD1.9bn for its fiscal year that ended last September. These consisted of USD1.1bn from its Telecom division, USD627m from Enterprise, and USD164m from Wireless.

US-based CommScope says it expects to finance the transaction through the use of cash on hand and up to USD3bn of incremental debt. It has received debt financing commitments from J.P. Morgan Securities, BofA Merrill Lynch, Deutsche Bank and Wells Fargo. The deal is expected to close by the end of 2015 subject to approvals and other customary closing conditions.

Teraco buyout backed by Permira

A company backed by global private equity firm Permira has agreed to acquire 100 per cent of Teraco Data Environments in partnership with management.

Permira says its funding will support Teraco's growth plans, including the strengthening of its sales and marketing platform and its expansion into sub-Saharan Africa.

The firm adds: "The market in South Africa is growing rapidly, with only one tenth of data centre facilities outsourced compared with a third in the US and a quarter in Europe. Teraco has built an important strategic position to capture the regional opportunity as a trusted and secure partner with reliable power sources."

The value of the deal has not been disclosed. The transaction is subject to regulatory approval and customary closing conditions, and is expected to complete in Q1 2015.

Established in 2008 following the deregulation of the South African telecoms market, Teraco claims to be the largest provider of carrier neutral data centre services in sub-Saharan Africa. The company operates three facilities which are described as the "most interconnected in the region", with customers connecting directly with each other as well as via NAP Africa's internet exchange point.

Teraco operates three data centres in South Africa including Cape Town, Durban and Johannesburg (pictured).

MTN considering Telkom stake?

The MTN Group is reportedly considering the possibility of buying a majority stake in South Africa's incumbent operator Telkom.

Quoting two unnamed insiders, *Bloomberg* said in mid-February that MTN has held "exploratory discussions in recent months about a possible offer". It added that no final decision has yet been made.

Neither MTN nor Telkom have issued any statements about the matter. But Telkom spokesperson Jacqui O'Sullivan told *Bloomberg*: "Telkom is engaging in discussions with a number of industry players to consider how we, as an industry, could operate more efficiently."

Meanwhile, Vodacom's ZAR7bn (USD652m) acquisition of Neotel

last year (*see Wireless Business, May-Jun 2014*) is currently being scrutinised by the local authorities in South Africa.

Ericsson hit by Africa slowdown

Ericsson has seen a significant dip in sales in the sub-Saharan Africa region, a downturn which contributed to a disappointing 2014 for the manufacturer.

The Swedish multinational reported a drop in full-year sales of 13 per cent in the sub-Saharan region but despite the poor report it reckons there are reasons to be cheerful.

"Sales increased year-on-year on the back of increased spending by customers in key markets," said the firm's annual report. "Lower handset prices is the key driver of mobile data traffic growth. This, together with regulatory quality requirements, drove mobile broadband investments."

Ericsson said its full-year sales declined but recovered in the second half, mainly driven by operators focusing on network traffic and quality management. The company stated that this resulted in continued demand for managed services.

However, a closer look at its annual report revealed that for sub-Saharan Africa, all four quarters of 2014 showed fewer sales than the corresponding quarters in 2013.

Revenues in North America also declined, with year-on-year sales in 2014 down eight per cent compared to the previous year. The region was previously one of the fastest-growing markets for Ericsson, but has slowed down because construction on the latest generation of 4G networks has largely peaked and shifted instead to capacity upgrades.

Ericsson president and CEO Hans Vestberg says the lower sales in North America and Africa were compensated for by growth in the Middle East, Europe and Asia.

Total sales for the year were USD28bn, a slight fall of two per cent. Overall operating income was USD2bn. 2015 may continue to be a relatively tough year for the firm as it forecasts restructuring charges of approximately USD500m.

Ericsson president and CEO Hans Vestberg said the slowdown in sales in sub-Saharan Africa and North America were offset by increases elsewhere: "A sales decline in North America of eight per cent was compensated by growth in the Middle East, Europe and Asia. Operating margin improved in the core business driven by higher share of capacity sales and efficiency enhancements. This was partly offset by currency hedge losses, investments in targeted areas as well as losses related to the modems operations."

Vox sold to Paratus in Namibia

Vox Telecom has concluded the sale of its Namibian operation to Paratus Telecom. The deal, announced at the end of last November, includes all assets and staff. The value of the transaction was not disclosed.

Talks between the two companies started in 2013. Their aim was to combine the "best of breed" voice services offered by Vox Telecom Namibia, with Paratus' established data network and infrastructure.

Paratus Telecom was founded as Internet Technologies Namibia in 2005 and says it was the country's first privately owned telco. In 2012 it was granted a class comprehensive telecoms license following further expansion of its networks which include 4G.

Operators are "living in denial"

Global trends for MNOs show "stagnant" revenues and declining margins, according to Strategy Analytics. The research firm says while many consider developing countries to be growth markets for technology, they are not actually proving to be profitable.

In a recently published report, Strategy Analytics says: "While network operators around the world have spent over USD700bn in infrastructure investment over the past 10 years, revenue growth has been almost flat since 2007. Operators appear to be in denial that the business model has changed, and unwilling to recognise that investment alone does not lead to increased profitability."

The researcher adds that its wireless operator performance benchmarking report indicates that with new capacity and increased competition, ARPU has been steadily declining in every region of the world. It says that this, together with slow revenue growth, has resulted in a steady erosion of margins since 2010 in most regions.

Stratus and Omlis partner for mobile payments security

Omlis will provide its mobile payment solutions using Stratus Technologies' infrastructure solutions. The two firms say they will jointly deliver infrastructure and mobile payments security solutions that are 'always on and always secure' across the global payments ecosystem.

Omlis' CCO John Stuart says: "This partnership enables Stratus and Omlis to reach new markets, protect businesses and individuals from fraud, and deliver a highly compelling commercial proposition to financial institutions, payment service providers, mobile network operators and the whole of the payments ecosystem."

For more than 30 years, Stratus says it has been developing systems to ensure customers' most critical applications and services are never affected by downtime. Its software and platform solutions are said to

NEW APPOINTMENTS

Date	Name	New employer	New position	Previous employer	Previous position
04/11/14	Ashish Chowdhary	Nokia Networks	Chief business officer, customer operations	Nokia Networks	EVP Asia, Middle East & Africa
04/11/14	Igor Leprince	Nokia Networks	Head of global services	Nokia Networks	SVP & head of Middle East and Africa
07/11/14	Jimmy Eisenstein	Eaton Towers	Chairman	Grupo TorreSur	CEO
25/11/14	Giorgio Heiman	Orange	VP Middle East & Africa	Vodafone	Head of global services, emerging markets
11/12/14	Stephen Spengler	Intelsat	Deputy CEO (to become CEO in Apr)	Intelsat	President & CCO
15/12/14	Bernard Najm	Nokia Networks	VP Middle East & Africa	Nokia Networks	Head of 'SKIL' sub-region
12/1/15	Francois Van Zyl	Anam Technologies	Regional director, Africa	Cell C	Managing executive
12/1/15	Debbie Minnaar	MTN Group	GM, products & services	IBM South Africa	GM, strategy & special projects
14/1/15	Jürgen Eynck	DAMM	Director, R&D	Fjord-e-design sales	Authorised officer
15/1/15	John Wibergh	Vodafone	CTO	Ericsson	EVP & head of networks
19/01/15	Peter Hoene	SES Government Solutions	President & CEO	SES	Corporate VP, development
29/1/15	Joe Barrett	GSA	President	VisionComs Ltd	Founder
5/2/15	Suren Sooklal	MTN	Group chief business risk officer	PwC	Group audit engagement partner
10/2/15	Vince Edwards	Sepura	DMR proposals systems engineer	Hytera	System sales engineer
10/2/15	Steve Sarno	Wyless	CFO	Exa Corporation	EVP of finance & chief accounting officer
13/2/15	Gwenn Larsson	Flexenclosure	CMO	Deutsche Telekom	VP of global sales

be similar to that of Omlis' security technology. They are designed to always run in the background to ensure consumers can access their banking details, and financial services organisations can process payments.

Newtec notches up three decades of satellite innovation

2015 marks Newtec's 30th anniversary. The Belgium-based company has already begun the celebrations with the announcement of significant sales growth and expansion into new markets.

Founded in 1985 by two engineers, Jean-Marie Maes and Dirk Breynaert (who is the current CTO), Newtec specialises in designing, developing and manufacturing satcoms equipment and technologies.

The firm has a strong reputation for R&D which it says has resulted in an "extensive" portfolio of innovations, partnerships and standardisations for broadcast, government, defence, IP trunking, consumer and enterprise VSAT.

Over the last several years, Newtec says it has "performed strongly" in its core markets which include DTH and broadcast systems. It cites the consumer and enterprise markets as key drivers for its success in 2014 which saw a 20 per cent sales growth.

The company plans to continue its focus on these areas but also aims to place a stronger emphasis on fast growing markets such as HTS, oil and gas, and cellular backhaul.

IN BRIEF...

The MTN Group and the University of Cape Town Graduate School of Business (GSB) have announced a new partnership to boost sustainable innovation in Africa. MTN will invest ZAR15m over the next three years in the 'Solution Space', an innovation hub at the GSB.

By working together, the two organisations aim to develop mobile apps and programmes for educational, medical and economic empowerment, as well as to promote entrepreneurship and small business growth.

Paul Norman, MTN's chief human resources and corporate affairs officer, says: "We foresee Africa's brightest and most innovative minds collaborating to find new solutions that grow from test environments into new markets."

The initial public offering of shares in the Botswana Telecommunications Corporation Limited (BTCL) has been delayed.

In December, the Ministry of Transport and Communications (MTC) said: "After considering all advice and guidance [from] the Project team, it has been decided that it might be counter-productive to expect the relevant authorities to rush their own processes in our haste [and] to open the IPO this year."

The MTC indicated that it had underestimated "the complexities and the sheer magnitude" of privatising the BTCL. It added that more time was also needed to educate citizen investors about the IPO and how can they participate and benefit from it.

While the ministry was confident of overcoming these challenges by the start of 2015, a new date for the IPO has yet to be announced.

VimpelCom has signed a new USD1bn credit facility with Bank of China and the China Development Bank (CDB). Announced last November, it has a tenure of eight years and is unsecured but guaranteed by VimpelCom Amsterdam B.V. It is in addition to the USD0.5bn credit facility signed with the CDB in December 2012.

The credit will be used to fund capex for the telco's various subsidiaries. The Russian operator's interests in Africa include Telecel in Zimbabwe and Djezzy in Algeria.

The firm says it has been investing in "high-quality" networks across its operations to capture the opportunity from mobile data growth.

IBM will expand its Research – Africa division with a new lab in Johannesburg. It will focus on advancing Big Data, cloud and mobile technologies to support South Africa's national priorities, drive skills development and foster innovation-based economic growth.

As part of a 10-year investment programme through the Department of Trade and Industry and working closely with the Department of Science and Technology, the new research facility will be based at the University of Witwatersrand.

IBM's researchers in South Africa will partner extensively with local universities, research institutions, innovation centres, start-ups and government agencies, thus bolstering the country's emerging innovation ecosystem and helping to develop next generation technology skills.

Cobbett Hill Earth Station will use capacity on MEASAT's *Africasat-1a* to offer VSAT services to customers in Africa. The company says the satellite's pan-African coverage and high throughput will enable it to grow its presence on the continent and reduce cost.

Cobbett Hill is an independent UK based teleport offering a complete range of satcoms services for the corporate, maritime, oil and gas, government and military sectors.

Vodacom has upgraded its billing platform. Under a multimillion dollar deal, it will use Redknee's *Unified* real-time converged billing and charging system.

The vendor says its software provides multi-tenancy capabilities, enabling Vodacom to host its multiple operations in Lesotho, South Africa, Tanzania, etc, from a single, centralised platform.

The cellco hopes the software will help it to launch advanced products, promotions and new service offerings, as well as target new market segments and support its data/LTE growth strategy.

LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
30/10/14	Bharti Airtel	India	2Q14	INR	22,845 (cr)	7,705 (cr)	NA	Africa up 6.4% in local currency terms but USD appreciation depressed growth to 1.9% YoY. India revenues up 12.3% YoY.
30/10/14	Intelsat	Luxembourg	3Q14	USD	608.6	477.8	0.58	Revenues reflect current markets for African services & government businesses; new launches offer future optimism.
30/10/14	Eutelsat	France	3Q14	EUR	357.6	NA	NA	CEO Michel de Rosen: "We are on track to deliver on our full year financial targets."
12/11/14	VimpelCom	Netherlands	3Q14	USD	5.1 (bn)	2.2 (bn)	NA	Net income declined due to one-off costs related to recent re-financing of WIND & unfavourable forex.
13/1/15	Huawei	China	FY14	CNY	287 (bn)	29.4 (bn)	NA	The telecom networking giant became the third-largest smartphone maker last year, & is now said to be the largest telecoms equipment manufacturer in the world.
19/1/15	ZTE	China	FY14	RMB	81.24 (bn)	NA	0.77	Full-year profits almost doubled last year. Has high hopes for its Blade S6 smartphone over the coming 12 months and aims to dent Apple's market share.
5/2/15	Vodafone	UK	3Q14	GBP	10,881	11.9 (bn)	NA	Continued momentum in MEA & APAC despite tougher conditions in South Africa. Group service revenues outside Europe GBP3.06m.
18/2/15	Gilat Satellite Networks	Israel	FY14	USD	235.1	23.4	NA	Is targeting revenues of between USD255m & USD260m this year in growing markets such as HTS, mobility & backhaul.
20/2/15	SES	Luxembourg	FY14	EUR	1,919.1	1,428.0	1.18	Aims to capitalise on future growth with the recent announcements of SES-14, SES-15 & SES-16/GovSat programmes.

PIM Master combines PIM analysing with cable and antenna tests

Anritsu's latest *MW82119B PIM Master* series has been designed to eliminate the need for using multiple instruments to measure a cell site's RF performance. It combines a 40W battery-operated passive intermodulation (PIM) analyser with a 2MHz to 3GHz cable and antenna analyser.

MANUFACTURER: Anritsu Company

PRODUCT: MW82119B PIM Master

MORE INFORMATION: www.anritsu.com

The firm reckons the device is the first to provide tower and maintenance contractors, network installers and wireless service providers with a handheld field PIM analyser with line sweep capability so they can fully certify cell site cable and antenna systems.

It says field users can conduct PIM versus time, swept PIM, distance-to-PIM, return loss, VSWR, cable loss and distance-to-fault measurements. The *MW82119B* also allows all site data to be stored in one location for fast retrieval.

According to Anritsu, the unit is MIL-STD-810G drop test rated and is designed to withstand transportation shock, vibration and harsh outdoor conditions. It has also achieved an IP54 ingress protection rating, certifying its ability to operate without damage after exposure to dust and water spray.

Other features include an outdoor viewable 8.4-inch display and intuitive user interface. The firm adds that new stainless steel lifting rings and a padded soft case make the analyser suited for hoisting during tower-top testing.

SPOT Trace monitors vehicles and other assets

Global Telesat Communications (GTC) says its *SPOT Trace* satellite tracker and *GTCTrack* mapping portal gives users a cost-effective way of monitoring.

MANUFACTURER: Global Telesat Communications

PRODUCT: GTCTrack

MORE INFORMATION: www.globaltelesat.co.uk

their vehicles and other assets.

Unlike some tracking systems that use GSM networks, the company says *SPOT Trace* transmits via the Globalstar satellite network, thus ensuring no loss of coverage throughout most landmasses around the world.

Using a *Google Earth* interface, *GTCTrack* will display a breadcrumb trail of the track points transmitted. It also allows the user to filter the points by specific devices, dates and times, view coordinates with different mapping overlays, and provide past location and movement history reports.

For a fixed annual subscription, GTC says users can view unlimited location data every 2.5, 5, 10, 30 or 60 minutes, as well as receive movement, status, low battery and power-off alerts.

The device itself can be easily concealed and measures just 5.13 x 6.83cms. Battery or line power options are also available. GTC adds that installation is quick and easy, and can be performed by the end-user.

1248 unveils enterprise access point for IoT

M2M specialist 1248 has launched the first ARM-powered, standards-based, 6LoWPAN wireless AP designed for Internet of Things (IoT) applications.

The UK-based firm says *HyperWeave* provides full IP-to-the-edge connectivity from low power IoT devices to corporate and cloud networks. It says that until now, IoT edge devices have connected to the internet using a wide range of "incompatible" protocols.

HyperWeave is a single, common gateway for multiple IoT edge devices and is said to support a combination of networking standards These include: 6LoWPAN over 802.15.4 at 2.4GHz with mesh; CoAP; IPv6 and IPv4; DNS64 and NAT64; LDAP; PoE to enable easy, one-cable deployment; and VLAN support (IEEE 802.1Q).

MANUFACTURER: 1248

PRODUCT: HyperWeave

MORE INFORMATION: http://1248.io

1248 adds that *HyperWeave* supports 802.15.4 link-layer security keys which can be configured via the web and CLIs. MAC address whitelisting and blacklisting can be used to accept or deny access to known end devices.

OBS lets businesses track any machine, anywhere

Orange Business Services (OBS) is offering companies real-time location tracking of their corporate assets anywhere in the world via cellular networks, regardless of the operator.

The company says it has developed an M2M SIM card that can handle connection to any type of cellular network. This is combined with a platform to query remote cards, collect geographic information and display their location on an actual map.

OBS claims the service can remotely query the SIM card in less than a minute. It can be used to determine: the country where the equipment is located and the network/operator to which it is connected; its coordinates; its identity via the SIM card's IMEI; and the network signal level.

The firm says its solution does not require any software development or GPS hardware additions. Moreover, by operating in any area covered by a cellular network, it provides location services both indoors and outdoors.

The new worldwide geolocation service is available in either a turnkey version accessible from OBS' M2M web portal, or an API option that can be further integrated into a customer's IT environment.

MANUFACTURER: Orange Business Services

PRODUCT: M2M geolocation service

MORE INFORMATION: www.orange-business.com

Cummins mobile generators reduce emissions 90 per cent

Cummins Power Generation says its latest mobile generator sets are around four to five per cent more fuel efficient than previous Tier 3 models. It adds that they deliver higher availability and longer running times between service intervals with no increase in overall package size.

MANUFACTURER:
Cummins Power Generation

PRODUCT:
Tier 4 Final certified gensets

MORE INFORMATION:
http://power.cummins.com

The new units are based on Cummins' *QSB7* and *QSL9* engine platforms which are said to have undergone extensive refinements to meet the US Environmental Protection Agency's (EPA) stringent Tier 4 Final regulations. These limit mobile genset emissions to 0.4g per kWh of nitrogen oxides and 0.02g per kWh of particulate matter. The vendor says these levels represent a 90 per cent reduction of the two pollutants from its previous Tier 3 models.

Cummins says it was able to meet the new regulations via a combination of in-cylinder engine improvements, exhaust gas recirculation, selective catalytic reduction (SCR) exhaust after-treatment, and a diesel oxidation catalyst.

As a result, it claims the engines do not require a diesel particulate filter to meet the new air quality standards, and that the simpler SCR-only solution helps reduce service costs.

Fluke tools aid in Wi-Fi deployments

Fluke Networks has introduced a range of new features in its *AirMagnet Survey PRO/Planner* and *AirMagnet WiFi Analyzer PRO* tools to help organisations optimise their migration or co-existence path to the latest 802.11ac standard.

Survey PRO is a wireless design and site survey solution while *WiFi Analyzer PRO* is for mobile auditing and troubleshooting Wi-Fi networks. Fluke says their added 802.11ac functionality will help network engineers effectively phase new wireless infrastructure into existing WLANs without "blindly" performing a one-to-one rip-and-replacement of existing equipment.

MANUFACTURER:
Fluke Networks

PRODUCT:
AirMagnet Wi-Fi tools

MORE INFORMATION:
www.flukenetworks.com

It adds that the *AirMagnet* tools also enable them to solve 802.11ac network issues correctly the first time, which prevents costly repeat visits and minimises user downtime.

Among the new 802.11ac features, *Survey PRO*'s planning capabilities will help wireless installers determine the number of APs needed, location and configuration settings, before they roll out any new infrastructure.

WiFi Analyzer PRO can help to not only predict the capacity readiness of the network for the new influx of 802.11ac APs and clients, but also to identify the root cause of poor connectivity performance for any conversation in the network.

Weightless launches global IoT standard

The Weightless Special Interest Group (SIG) has launched Weightless-N, an open standard for connecting the Internet of Things (IoT).

Weightless-N complements the existing Weightless-W standard, which works with TV white spaces (TVWS), through extension into license-exempt frequency spectrum.

MANUFACTURER:
Weightless SIG

PRODUCT: Weightless-N

MORE INFORMATION:
www.weightless.org

It will typically be deployed in unlicensed spectrum at 800-900MHz, such as 868MHz in Europe and the 900MHz ISM (industrial, scientific and medical) band in the US. It is also designed to work in licensed spectrum around these frequencies.

The SIG says these bands are narrower than TVWS channels which are also subject to regional licensing limitations. It adds that TVWS are not available everywhere, and there are some use cases where the full feature set of Weightless-W is unnecessary.

As a result, the group says it took the decision to develop a variant of the current standard, adding that Weightless-W and Weightless-N will co-exist and offer benefits to developers and users according to their specific use cases.

The SIG says the high cost and power consumption characteristics of traditional connectivity solutions such as cellular hinders the growth of the IoT. It states that its vision is to deliver the wide-area machine connectivity standard that enables the 95 per cent of the IoT opportunity "denied" by such alternatives.

ALSO LOOK OUT FOR

Qualcomm and Nokia test LTE-A three band CA

Qualcomm Technologies and Nokia Networks have completed interoperability testing of LTE-A three-band carrier aggregation, allowing more operators to achieve data rates of up to 300Mbps in their networks.

The companies say 3x carrier aggregation (CA) allows operators to offer data rates of up to 300Mbps using a network of three frequencies – 20MHz, 10MHz and 10MHz. It provides an alternative option for them to reach 40MHz CA, an option that was previously only available to those with at least two bands of 20MHz bandwidth each.

Nokia says by applying CA to more than two bands, operators can turn their investments in 4G spectrum and networks into "marketable" higher data rates.

It's claimed 3x CA is a step towards enabling higher data rates for LTE operators around the world that face fragmented spectrum. This follows the world's first commercial introduction of two-band CA (10MHz + 10MHz) by SK Telecom in South Korea *(see World News, Jun-Jul)*.

The interoperability tests were performed in September at the Nokia Networks' lab in Ulm, Germany, using Nokia's *Flexi Multiradio 10 Base Station and the Qualcomm Snapdragon 810* processor. They involved 3GPP bands 1, 3 and 5 as used by SK Telecom. Although LTE-A CA is standardised within 3GPP, interoperability testing is vital to prove the functionality works using each vendor's software.

Serge Willenegger, VP of product management at Qualcomm Technologies, says: "The completion of these interoperability tests helps expand the scope of Category 6 LTE. Continuing evolution in networks and user device chipsets together is the fundamental enabler for making mobile broadband faster for more subscribers worldwide."

Nokia Networks is introducing 3x CA to commercial networks later this year. The *Snapdragon 810* processor will be available in commercial devices by the first half of 2015.

The new space race

RSCC's *Express-AM6* on the launchpad at the Baikonur Cosmodrome, Kazakhstan in October 2014. It is the first of several satellites for Africa from the well-established Russian operator.

PHOTO © ROSCOSMOS

RAHIEL NASIR takes a look at the latest developments in African satcoms and begins the countdown to some of the key launches to look out for in the coming months.

2015 looks set to be a landmark year for satellite technology, most notably in Africa with the recent launch of Asia Broadcast Satellite's *ABS-3A*. It is one of the world's first to use an all-electric propulsion system which aims to gives operators more affordable launch options as well as the ability to nearly double payload capacity.

ABS-3A has been built by Boeing using the *702SP (Small Platform)*. According to the company, its *702SP* satellites are affordable, lightweight and provide efficient options for movement. It adds that the platform offers up to a total of 48 C- and Ku-band transponders, and nearly 8kW of payload power across the satellite's lifetime.

Boeing has built two pairs of *702SP* satellites under a joint agreement signed in 2012 with ABS and Eutelsat. The firm's patented technology enabled the first of these satellites, *ABS-3A* and *EUTELSAT 115 West B*, to be launched together as a vertically stacked pair on board a SpaceX *Falcon 9* rocket on 1 March 2015.

While *EUTELSAT 115 West B* will be positioned at 114.9°W for expanded capacity across the Americas, *ABS-3A* will orbit at 3°W to serve both sides of the Atlantic for international as well as regional connectivity and services. It features 24 C-band transponders, including three C-band beams to cover Africa, the Middle East and the Americas, along with a global beam. Of its 24 Ku-band transponders, four beams will cover North Africa, the Middle East, South Africa, Europe and the Americas.

ABS-3A will support VSAT services, IP trunking, cellular backhaul, maritime services and TV distribution. Last July, ABS announced that the Arab Satellite Communication Organisation (Arabsat) had signed a multi-transponder deal to use Ku-band capacity for the duration of the spacecraft's 15-year lifetime. Arabsat hopes the payload will provide it with additional growth opportunities to serve customers over the MENA region. Speaking at the time, the firm's CEO and president Khalid Balkheyour said: "Arabsat has put in the market a request for proposals for four new satellites at different orbital locations, and yet we continue to see rapid increase in customer demands for telecommunication and broadcasting services across the region."

In addition to *ABS-3A*, ABS is planning to launch *ABS-2A* during the second half of this year. It also uses Boeing's *702SP* and will be co-located with *ABS-2* at 75°E. Designed with 48 transponders and five dedicated high-powered Ku-band beams, the satellite will serve sub-Saharan Africa, the Gulf Cooperation Council region, South East Asia, Afghanistan, India and Russia.

Satellite: the TV superstar to watch

Eutelsat's plans for Africa this year include *EUTELSAT 8 West B* which it describes as a "powerful new satellite" for North Africa and the Middle East. Built by Thales Alenia Space, it will be equipped with 40 Ku-band transponders designed

primarily to serve the region's DTH markets. The satellite will orbit at 8°W and introduce a C-band mission to this location with 10 operational transponders connected to footprints covering Africa and reaching west to South America.

EUTELSAT 8 West B will join others from Eutelsat and Egyptian operator Nilesat that are already orbiting at the adjacent 7°W position. Eutelsat says the 7/8°W video neighbourhood is one of the "most dynamic in the global satellite TV market", with a rapidly growing audience and channel line-up. It comprises three Eutelsat satellites plus two from Nilesat which broadcasts more than 1,000 TV channels to households from Morocco to the Gulf.

Last September, the two companies strengthened their long-term partnership when it was announced that Nilesat had agreed to take a long-term lease for multiple transponders on *EUTELSAT 8 West B*. Nilesat already leases capacity on *EUTELSAT 8 West C* but will transfer this to the new bird once it enters service.

Eutelsat regularly carries out market research to monitor the number of homes receiving TV channels broadcast by eight of its flagship video neighbourhoods serving North Africa, the Middle East and Europe. As part of its latest *TV Observatory* report released at the start of 2015, it said that all eight continue to experience audience growth, including the 7/8°W neighbourhood shared with Nilesat whose DTH base in MENA grew from 27 million homes in 2010 to 52 million in 2014.

Eutelsat believes the demand for higher quality digital broadcast services further consolidates satellite as the preferred digital infrastructure technology across the region. In earlier research carried out in 2014, it found that out of a population base of 77.1m TV homes across 14 countries (which included Algeria, Egypt, Libya, Morocco and Tunisia, amongst others), 92 per cent favour satellite reception for pay-TV or free-to-air viewing. In 2010, satellite reception accounted for 67 per cent of TV homes in the region, and by 2013 penetration had increased by 25 percentage points. Over the same period, the number of homes receiving analogue terrestrial TV slumped from 18.2m in 2010 to 4.1m in 2013.

PHOTO: BOEING

ABS-3A and *EUTELSAT 115 West B* are vertically stacked together on a Boeing *702SP* satellite platform. They were jointly launched at the start of March and are now the world's first satellites in orbit to use all-electric propulsion systems.

Boosting performance

While Intelsat plans to launch four satellites in 2015, these are mainly aimed at the Americas. Its next orbiters for Africa are due next year. *IS-33e* and *IS-36* are currently under construction, once again by Boeing, and will be Intelsat's first satellites for the continent to use its much talked about *EpicNG* high-performance platform.

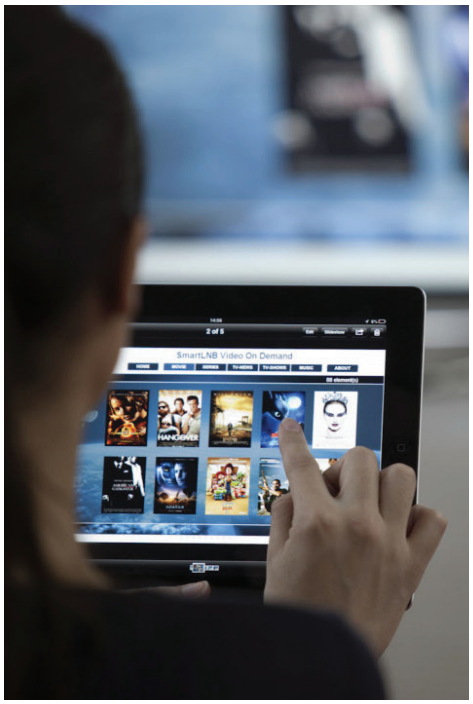
Designed as a complementary overlay to its fixed satellite network, Intelsat says *EpicNG* uses C-, Ku- and Ka-bands, wide and spot beams, as well as frequency re-use technology to provide a variety of customer benefits. The platform will be fully integrated with the company's existing fleet and global *IntelsatOne* terrestrial network.

According to Intelsat, *EpicNG* is based on open architecture and engineered for backwards compatibility. It says this allows broadband, media, mobility and government organisations to realise the cost-efficiency of using existing hardware. It also gives increased control, enabling service providers to offer their end-users customised and differentiated solutions – even defining such service characteristics as speed, hardware and network topology.

Intelsat goes on to claim that *EpicNG* will provide three to five times more capacity per satellite than its traditional fleet. It adds that throughput will vary according to application and satellite, but is expected to be in the range of 25-60Gbps which is typically 10 times more than its traditional fleet.

MultiChoice is often described as Africa's pioneer pay TV provider, having launched the continent's first digital satellite service in 1995. It is aiming to put Intelsat's claims to the test and has already signed a 15-year service agreement for capacity on *IS-36*. When it's launched (which is expected during the second half of 2016) the new satellite will be co-located with *IS-20* at 68.5°E, Intelsat's premier DTH neighbourhood in Africa. MultiChoice has been the anchor customer at this location since 1995.

IS-36 will feature Ku- and C-band transponders; MultiChoice will use the Ku-band payload for its DTH services, while the C-band payload will be used by Intelsat to provide services to other customers using the 68.5°E neighbourhood which also distributes content to South Asia.



Research from Eutelsat reveals that satellite reception accounted for 67 per cent of TV homes in the MENA region in 2010, and that penetration had increased by 25 percentage points by 2013. During the same period, the study found that the number of homes receiving analogue terrestrial TV slumped from 18.2 million to 4.1 million.

MultiChoice is clearly hungry for even more bandwidth. Eutelsat is leasing capacity on *Express-AMU1*, a new Russian Satellite Communication Company (RSCC) satellite that is due to be launched later this year to 36°E. It will commercialise the capacity under the name *EUTELSAT 36C*. Last year, MultiChoice signed an agreement with Eutelsat and will use the entire payload of 15 Ku-band transponders connected to the African service area of *EUTELSAT 36C (see News, Aug-Sep 2014)*.

RSCC describes *Express-AMU1* as a "state-of-the-art" high-capacity satellite with up to 70 transponders, and will use it for Ku- and Ka-band coverage of the European part of the Russian Federation. For Eutelsat, *Express-AMU1* will provide follow-on and expansion capacity for *EUTELSAT 36A*, and will also ensure service continuity and growth for the firm's broadcast markets in sub-Saharan Africa.

While RSCC has been established as a satellite operator since 1967, it did not make its African debut until 2014 with the launch of *Express-AM6* in October. Scheduled to start commercial operations from 53°E on 1 July 2015, *Express-AM6* will provide coverage of Africa, the Middle East, Europe, European Russia, the Urals and Western Siberia.

Built by Russian manufacturer Reshetnev Information Satellite Systems in association with Canadian-based MDA and the Russian Radio Research and Development Institute, *Express-AM6* is based on the *Express-2000* platform. It is equipped to carry 72 C-, Ku-, Ka- and L- band transponders, bringing its combined capacity to more than 2,700MHz.

RSCC plans to launch two more satellites in the coming months. *Express-AM8* will have C- and Ku-band fixed beams covering Africa from 14°W, while *Express-AM7* will orbit at 40°E offering C-band coverage over West and Southern Africa via steerable beams.

December 2014 saw the launch of *ASTRA 2G* from SES. Manufactured by Airbus Defence and Space (ADS) using the *Eurostar E3000* platform, the satellite will orbit at 28.2°/28.5°E with a payload of 62 Ku- and four Ka-band transponders.

"The spacecraft includes the capability to connect West Africa to Europe via Ka-band," said SES CTO Martin Halliwell. "In combination with *ASTRA 2E* and *ASTRA 2F* which were launched in September 2012 and 2013 respectively, *ASTRA 2G* is the culmination of our fleet renewal programme at the 28.2/28.5° orbital arc."

He added that SES' new "state-of-the-art" satellites provide more focused and higher power to broadcast customers, while the Ka-band on board facilitates the delivery of next-generation satellite broadband services as well as intercontinental connectivity between Africa and Europe.

The launch of *ASTRA 2G* also supports the *SATMED* e-health platform that was developed to improve public health in emerging and developing countries, most significantly in isolated areas with poor connectivity. The platform was conceived by SES' TechCom division, and is supported by the Luxembourg Government and 'ESTHER', a pan-European alliance of governments for the networking of health professionals and associations in their fight against AIDS *(also see World News, Jun-Jul 2014).*

While three more SES satellites are presently under construction by ADS, these are destined for Asia and the Americas, and include *SES-12* which will also use an electric propulsion system *(see World News, Nov-Dec 2014).* The next satellite for Africa from the Luxembourg-based operator will be *MonacoSAT* which is due to be launched in the coming months. Based on SES' partnership with SSI-Monaco, it will orbit at 52°E and provide capacity for media, trunking and enterprise services in North Africa, the Middle East, Europe and Central Asia. SES will have the rights to commercialise *MonacoSAT*'s entire payload of 12 Ku-band transponders covering MENA.

Spacecom, the operator of the *AMOS* fleet, has also announced plans to launch a high throughput satellite (HTS) which will use electronic propulsion capabilities to save on weight and cost. It claims *AMOS-6* will be fitted with numerous new technologies such as spot beams that will bring "multiple times" more throughput than traditional satellites, thereby enabling broadcasters and service providers to "re-think business opportunities in providing various data services, including mass market broadband services."

Inmarsat launched *I-5 F2* in February. It is the second of the firm's fifth generation satellites which promise to deliver broadband speeds that are 100 times faster than their predecessors.

Scheduled for lift-off in Q4 2015, *AMOS-6* will be positioned at 4°W to offer 39 Ku-band segments and 24 Ka-band beams for a wide array of services. It will include six HTS Ka-band spot beams over sub-Sahara Africa and Europe, as well as three Ku beams covering the Middle East and Europe.

World's first global Ka-band service

Inmarsat is investing USD1.6bn in *Global Xpress* (*GX*) which it claims will create the first superfast mobile broadband service available worldwide delivered through a single network operator.

Its first *GX* satellite, *Inmarsat-5 F1*, was launched in December 2013 and entered commercial service in July 2014 covering MEA and Asia. *I-5 F2* went up on 1 February 2015 to provide superfast broadband services for the Americas and the Atlantic Ocean. It is currently going through its electrical orbit-raising phase which will take the spacecraft to its final location at 55°W.

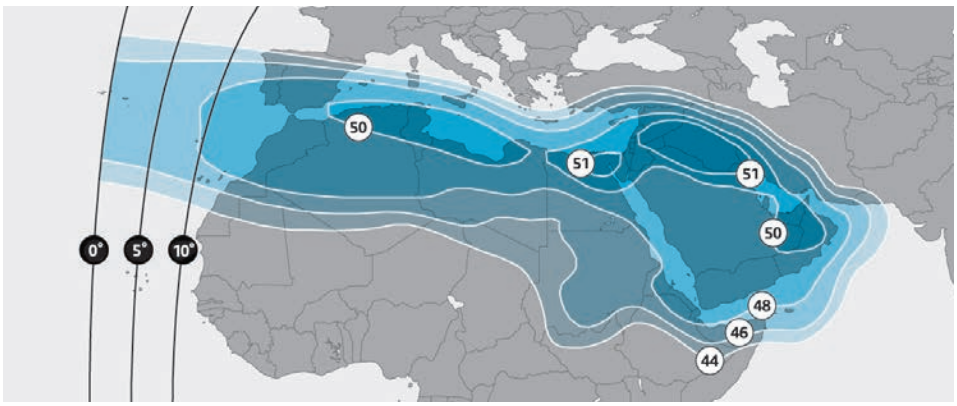
Following the launch of *I-5 F3* which is scheduled for early Q2 2015, Inmarsat is planning to start commercial *GX* services worldwide during the second half of the year. The UK-based company says it will deliver broadband speeds that are more than 100 times faster than its fourth generation (*I-4*) constellation.

All three satellites in the initial *I-5* fleet feature a Ka-band payload while integrating with the company's L-band network. Each one has 89 beams and six steerable high-power spot beams for multi-regional coverage. They operate with a combination of fixed narrow spot beams which Inmarsat says enable them to deliver higher speeds using more compact terminals, plus steerable beams so additional capacity can be directed in real-time to where it's needed.

Inmarsat CEO Rupert Pearce said: "Through *Global Xpress*, the world can move forward from the 'Internet of Everything' to the 'Internet of Everywhere' in which high-speed, reliable and secure connectivity is available anywhere and at any time – even in the most inaccessible regions – for customers on the move or to fixed locations."

Finally, O3b Networks ended 2014 on a high note with news of the successful launch of four more of its satellites. They were sent into medium Earth orbit (8,000km) on 18 December, and mean that the company's initially planned constellation of 12 satellites is now complete. The new spacecraft are currently going through a period of in-orbit testing and are expected to be integrated into the O3b network in early 2015.

O3b's fleet has been fully operational following the launch of its second quartet of satellites last July. It says this added more than 80Gbps of capacity to its network and expanded fleet capacity to over 100Gbps. CEO Steve Collar has previously indicated that in the future O3b intends to increase its in orbit capacity to more than 1Tbps. ■



SES will have the rights to commercialise *MonacoSAT*'s entire payload of 12 Ku-band transponders covering the Middle East and North Africa.

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Angola Cables is building the world's first submarine cable system across the South Atlantic using fibre technology from NEC.
PHOTO: NEC

Finding a route to broadband in Africa

What is the best technology for delivering broadband in Africa – fibre, satellite or wireless? ABDUL MONTAQIM finds out.

Only a small percentage of people in Africa have access to broadband. While moves to connect more consumers and enterprises have been building over the years, what is the most effective method of delivering connectivity to the masses?

The ITU defines broadband as a transmission capacity that is faster than primary rate ISDN with downloads at 1.5 or 2Mbps. This definition acts as a benchmark for many in the industry, although some countries may decide that they want even faster speeds than the ITU's 2Mbps threshold.

Estimates vary as to how many people on the continent actually have access to broadband. And it should be noted that this is not the same as internet access. While around 10 per cent of Africa's 1.1 billion population have some kind of internet access, not all in that 10 per cent have broadband. ITU research suggests that mobile broadband penetration in Africa reached close to 20 per cent in 2014.

Further, the union estimates that the continent only accounts for less than 0.5 per cent of global fixed broadband subscriptions – despite having more than 15 per cent of world's population. And overall broadband penetration has remained low, at 0.4 per cent by the end of 2014.

This extremely low availability and take-up of broadband in Africa presents a huge challenge to politicians, business people and other stakeholders who want to see the continent accelerate its adoption of technology.

And it is also a pre-requisite if African nations are to meet the United Nations' Millennium Development Goals (MDGs), the deadline for which is this year. Broadband connectivity can be regarded as a fundamental part of supporting the UN's clearly stated aims of reducing child mortality, improving maternal health, and universal primary school education (*see 'UN says broadband is 'key to education for all', below*).

Political goals

Speaking on behalf of delegates at a multinational conference a couple of years ago, South Africa's communications minister Dina Pule said Africa must do more to connect citizens to broadband. "It is undeniable and it is very clear that delivering broadband to every citizen on the continent will accelerate the attainment of the

Millennium Development Goals. Our work will also assist us in identifying and closing the skills gap within our countries," she said.

Pule and other stakeholders at the conference – the inaugural ICT Indaba held in Cape Town in 2012– set a target of delivering broadband to 80 per cent of African citizens by 2020.

South Africa is by far and away the most well-connected African nation. It is comparable to most European countries and, in some cases, is even more advanced. But when you look at the continent as a whole ITU stats show that 99 per cent of people remain without broadband.

So given that the continent now has extensive mobile phone coverage, a growing number of fibre networks, and dozens of satellites pointed at it, what's the best way to get more Africans onto the broadband superhighway?

"If the political goal is to get as many people as possible connected to broadband as quickly as possible, then the answer is probably going to be a combination of technologies," says Alan Hadden, president of the Global mobile Suppliers Association (GSA). "Laying fibre is efficient in the major population centres, but if you're trying to connect everybody, wherever they are, then that implies mobility – so you need the mobile networks."

2014: the year of LTE in Africa

Hans Kolmeyer, Nokia Networks head of sales, supports Hadden's view to an extent: "LTE has truly proven itself as a medium term fibre replacement for most requirements. It is significantly quicker and cheaper to roll out, easier to maintain, results in much less disruption, provides sufficient bandwidth, quality of service and is more reliable."

He goes on to point out that while getting sufficient spectrum remains a hurdle, the "medium term battle" for broadband has been won in Africa. "For the long term, the cards may still be open, though 5G is making significant strides. One certain fact is that wireless broadband is here to stay. In Africa, we can label 2014 as the year that kick-started LTE."

LTE has now started to become established in a number of African countries, such as Angola, Côte d'Ivoire, Ghana, Kenya, Namibia, Nigeria, Tanzania, Uganda, and of course South Africa.

Some of the big name operators deploying the networks include MTN (South Africa, Uganda and Zambia); Vodacom (Lesotho and South Africa); and Smile (Nigeria, Tanzania and Uganda). Other mobile network operators rolling out LTE services on the continent include, for example, Algeria Telecom which launched in mid-2014 and Cell C which has plans for South Africa later this year.

While LTE-based broadband is all well and good, MNOs tend to initially cover the more lucrative urban areas and their rollouts are certainly not ubiquitous nor instant.

Arguably, this is where satellite comes in. Dan Zajicek, CEO of Gilat Satcom, says that while it has long been argued that the price of satellite connectivity is sometimes higher than the alternatives, its advantages remain unique: "Satellite has worldwide coverage and reaches even the remote locations; it remains operational regardless of terrestrial infrastructure; and it is durable and reliable."

As broadcasters move to digital platforms, the analogue frequencies which they previously used are freed-up. TV whites spaces (TVWS) are the 'unused' gaps in these frequencies and are being tested as a way of providing cost effective broadband, particularly in remote and rural areas. For example, last year the MyDigitalBridge Foundation worked with Microsoft and said it had successfully trialled the world's biggest TVWS project. Its network in northern Namibia covered a 9,424km² area, offering typical speeds ranging from 5Mbps to 10Mbps with the help of Adaptrum's *ARCS 2.0* TVWS radios (*see News, Sep-Oct 2014*).

Jean Philippe Gillet, Intelsat's VP of EMEA sales, echoes this and says satellite offers the best way to deliver broadband in Africa: "The strength of satellite is its ability to effectively and cost-efficiently cover large areas, providing the means to deliver reliable broadband connectivity to everyone in Africa, regardless of location. Even wireless networks are limited in reach, but satellite expands their reach. Ubiquitous access to broadband is satellite's forte."

He adds that by reducing the capex often required with expansion via terrestrial infrastructure, network operators can concentrate on introducing new connectivity services. "Intelsat's focus on the entire service chain results in a total lower cost of ownership for network operators and telcos, providing the opportunity for profitable revenue growth and a return on their investment."

An even more emphatic endorsement of the technology comes from Spacecom which operates the AMOS fleet. Eyal Copitt, its SVP of sales and marketing in Africa and Asia, says: "Delivering broadband through satellite has major advantages over other technologies. However, the deployment of this is very much bound up in the business decision-making process that each service provider takes to grow its business.

"The most important reasons for using satellites for broadband are time to market (much faster implementation) and cost (no need for deploying large amounts of expensive terrestrial infrastructure)."

Copitt reckons that any service provider ready to move quickly to develop and deepen its market share should choose satellite. "Satellite delivers broadband to everyone, everywhere and on time. For service providers whose customers are developing digital habits more quickly than terrestrial infrastructure can handle, stepping towards satellite is a strategic answer to keep those customers happy.

Spacecom believes Africa's deployment of more fibre is actually good for the satcoms industry. "In our view, as fibre brings additional services to more of the population, and with consumers becoming accustomed to improved and advanced services, overall demand for these services keeps growing," says Copitt.

"In Africa, this includes consumers from all areas of the continent including those only reached by satellite. In other words, demand created by fibre raises up the entire industry in Africa and we believe that fibre is complementary to satellite communications and acts as a business accelerator for us."

Fibre: the "true 4G experience"

"Africans will only be able to get a true 4G broadband experience with fibre," claims Nic Rudnick, CEO of Liquid Telecom "Patterns across the rest of the world show that the only way to enjoy the true internet/broadband experience is through fibre, even if you access through Wi-Fi or LTE/4G or WiMAX."

The development of fibre-based broadband will depend in large part on how the undersea cables – which continue to be laid down and make landfall – are developed. The points at which they land will develop first, with broadband and other services available to all in those areas. But how far inland it all goes depends largely on political will and private investment. At least

Eyal Copitt, SVP of sales for Africa & Asia & marketing, AMOS

"We believe fibre is complementary to satellite communications and acts as a business accelerator for us."


Nic Rudnick, CEO and founder, Liquid Telecom Group

"Patterns across the rest of the world show that the only way to enjoy the true broadband experience is through fibre."

33 countries on the continent currently have ongoing terrestrial fibre optic cable projects.

There are at least 27 locations on the west coast of Africa, and around 20 on the east and north coasts, where the subsea cables have come on land. They include the now well-known systems from ACE, SEACOM, EASsy, amongst others, and will soon include SACS – the South Atlantic Cable System that Angola Cables will build. SACS will be the first submarine cable running under the South Atlantic to directly connect Africa and Latin America. Angola Cables has commissioned technology from NEC as part of the deployment (*see News, p10*).

Another big name submarine fibre system for the continent is WACS (West Africa Cable System). Built by Alcatel-Lucent, WACS became operational in mid-2012 and currently connects 12 locations along its route from South Africa to the UK. It has landing points in Angola, Namibia, DRC, Republic of Congo, Cameroon, Nigeria, Togo, Ghana, Côte d'Ivoire, Cape Verde, Canary Islands and connects Africa to Europe via Portugal.

"Broadband is the big driver here in Africa," says Daniel Jaeger, Alcatel-Lucent's MEA VP. "Access depends very much on where you are. Fixed is a bit of a minority programme in Africa because not many countries have a fixed network infrastructure. South Africa would be one of the exceptions.

"All the fixed networks that are happening in the background that are not visible to the end user, are starting with the submarine cables and then going on to the big, pan-African and national terrestrial backbones.

"Any kind of networks that are needed to get the capacity or the global connectivity that arrives through the submarine landing point, then goes through terrestrial backbones and comes closer to the user before it comes to the access part."

Jaeger's point can perhaps be illustrated by a deployment Alcatel-Lucent carried out for Ooredoo Algeria last year. According to the Qatar-based telco, its 3G mobile network was ranked as the fastest in North Africa in 2014 by the official Network Quality Benchmark. That hasn't come cheap as Ooredoo Algeria has invested more than USD2bn as part of a recent network enhancement programme.

Last December, it announced that Alcatel-Lucent had deployed a 400G optical backbone network to enable high-speed ultra broadband mobile access in Algiers, Constantine, Oran, and some smaller cities. The transport network became fully operational at the end of 2014 and is based on the vendor's DWDM optical technology and platform. It will support data speeds of 400Gbps on each of its 88 wavelengths.

Clearly then, Africa has plenty of technology options when it comes to building broadband networks for all. But Jaeger adds that as well as the technology, there is another important factor to consider: cooperation. "It's an illusion to think that one operator, or one government, or one organisation can bring broadband to the masses. That is important from a funding point of view because it's an expensive exercise to bring broadband to the masses."

Liquid Telecom is not letting money get in the way of its plans. In February 2015, it raised USD150m to extend its broadband networks in Africa, and Rudnick says fibre is being rolled out to bring broadband services to as many people in Africa as possible. But he admits that it's likely that some areas, given the size of the continent and the dispersion of its population in rural areas, will remain far away from Liquid's fibre infrastructure for a long time. Here, satellite can fill the gaps. The technology also continues to play an important role in providing a backup solution.

As for what challenges there are to laying fibre in Africa, Rudnick believes that the way the population is scattered all across the land is the main hurdle to overcome. "In Africa, about 700 million people out of about a billion live outside the urban areas. The dispersion of the population is such that the terrestrial telecommunication infrastructure is today only able to get close enough (about 25km) to about 480 million people.

"Except for satellite, the economics of telecommunication services are based on density of population around focal points, such as a town centre. This means that a mobile operator will find it extremely difficult to finance a new base station in an area where an insufficient number of people dwell or are able to reach daily.

"Moreover, densely populated town centres that are too far away from the nearest telecommunication node, such as another base station or a fibre optic cable node, may not be serviced given that new backhaul infrastructure to connect this new node could be uneconomical.

"Finally, the population that lives too far (i.e. more than 1km) from a focal point, assuming they cannot afford satellite service, may find that the service they receive is of poor quality, due to the weaker wireless signal in their area."

So what is the ultimate solution to connect people in Africa to broadband? Jaeger reiterates the point made earlier by the GSA's Hadden when he says: "It has to be a mix of technology. There is no single technology that can cover it all. In some areas where you have copper, you will have to push this copper as far as you can. For other areas, it's worth investing in fibre. In other areas, you will need to work with LTE, sometimes even 3G still. Satellite is also an option. There are very creative ways of using satellites." ■

UN SAYS BROADBAND IS 'KEY TO EDUCATION FOR ALL'

The UN Broadband Commission for Digital Development says the availability of mobile phones, tablets and e-readers with broadband connectivity is the key to making education available to all.

According to a report by the commission's working group on education and led by UNESCO, a lack of resources remains critical. For instance, it said that if an average of eight children share each classroom computer in OECD nations, teachers in Africa can struggle to share each computer among 150 or more pupils. But with increasingly sophisticated mobile devices now packing more computing power, the commission believes broadband-connected personal wireless devices are the solution.

"Every day, everywhere, women and men are inventing new ways to use broadband, mobile telephones and computers to be empowered, more autonomous and free," said UNESCO director-general Irina Bokova. "We need to tap this inventiveness to improve education, especially for girls and women. But we have a long way to go. Two thirds of illiterate adults are women, and two thirds of the world's out-of-school primary-age children are girls. This is a huge injustice, and a gap that we must fill. The continued expansion of broadband combined with technology can help us make giant strides towards this."

ITU figures show that mobile broadband is the fastest growing technology in human history, and active subscriptions now exceed 2.1bn – three times higher than the 700m fixed broadband connections worldwide. The UN said most of this progress has taken place in the developing world which has accounted for 90 per cent of global net additions for mobile cellular and 82 per cent of global net additions of new internet users since early 2010.

ITU secretary-general Houlin Zhao said: "Mobile broadband gives us the chance to truly bring education to all, regardless of a person's geographical location, linguistic and cultural frameworks, or ready access to infrastructure like schools and transport. Education will drive entrepreneurship, especially among the young – which is why we must strive harder to get affordable broadband networks in place which can deliver educational opportunities to children and adults."

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Orange Money was first launched in Côte d'Ivoire in 2008 and is now present in 13 countries across the region.

Show me the money

Mobile money services have had a far reaching social and economic impact on the continent. But when it comes to delivering the promise of 'banking the unbanked', there is still work to be done, as ALBAN LUHERNE explains.

When mobile money services first launched in Africa around a decade ago, it was hoped that they would provide a way to 'bank the unbanked'. Up to that point, traditional banking models had rendered the provision of banking services to low-income and rural populations uneconomic. With more than 80 per cent of the population in the majority of sub-Saharan markets equipped with a mobile phone, and less than 10 per cent with access to a bank account, the opportunity for operators was clear and expectations to connect the unbanked were set.

Why mobile money?

In developed countries the simple act of paying a utility bill is second nature and simple. Yet in Africa, with so few able to access traditional bank accounts, transactions often require a lengthy queue and sometimes, a long and expensive journey to a physical store to complete.

Using SMS-based interfaces companies such as Orange were able to launch mobile money services through their mobile phones, providing millions of people with the equivalent of a bank account in their hands. Where previously customers would have to seek out a transfer shop, transferring money suddenly became much easier and more accessible, driving financial inclusion for millions.

Initially, the service available through this technology was limited to money transfers. But it rapidly extended to paying utility bills, enabling merchant payments and, in some countries, the capability to receive wages directly into a worker's mobile money account. The social and economic impact has been far-reaching to date with many local regulators including mobile money in their own strategies for economic inclusion.

As a result, these services have expanded dramatically. By December 2013, the sub-Saharan, North African and Middle East regions accounted for 58 per cent of the world's 218 mobile money deployments and 73 per cent of active accounts worldwide. *Orange Money* was launched in Côte d'Ivoire in 2008 and is now present in 13 countries across the region. In 2013, it handled more than EUR2.2bn of transactions and announced its 10 millionth customer in April 2014.

Mobile money challenges: trust, education and regulation

Increased mobile phone ownership, improved network infrastructure and better awareness of the services have contributed to the the continual growth of mobile money services in Africa.

Partnerships with financial institutions present a new opportunity to extend mobile money services to those that already have a bank account. They in turn can use the service with unbanked people which then leads to extending the mobile money ecosystem.

But despite this, there is still work to be done to deliver on the promise of 'banking the unbanked'.

Trust remains a key issue in a society still largely unfamiliar with the concept of 'e-money'. This is one of the reasons that education is hugely important in ensuring the take up of such services and explains why operators have invested so heavily in it. People show interest, and more importantly trust, in a service if they have seen the products demonstrated by a local representative who speaks their dialect, and whom they may even personally know.

And 10 years on from the arrival of mobile money, regulation remains another key issue, especially in emerging markets where legislation can vary in each market. Although the legal requirement for mobile money operators to partner with local financial institutions is well understood, there is not always enough clarity over whether telecoms providers are subject to the same rules as banks.

Another concern is the necessity for customers to provide ID if they wish to use a mobile money service as this could hinder its adoption. In the future, it could be advantageous to allow customers to make micropayments without the need for registration with ID. This could be achieved by making a separate service available that caps the amount that can be spent or held in the account.

The importance of interoperability and partnerships

Interoperability between mobile money providers is still a challenge that stands in the way of mobile money delivering greater economic inclusion. Until recently there has been little debate around the need for rival mobile money services to collaborate.

However in April 2014, the GSMA announced that nine mobile operators had committed to working together as part of the *Mobile Money Interoperability* programme, a global initiative that aims to share best practices, guidelines and regulatory support in the development of services. This is undoubtedly a step in the right direction. By working together, network operators will be able to provide services to a greater proportion of 'the unbanked' population across Africa.

Although regulation and education are concerns, customers also require physical locations to make transactions and it is down to operators to make an extensive retail channel a reality so that as many people as possible can access services. One way of doing this is to build partnerships – whether it be with banks, gas stations or utility companies. Partnerships such as the one Orange has with Total across its footprint aims to extend the retail network and, at the same time, deliver a convenient service whereby customers can access their mobile account to pay for purchases in service stations.

Partnerships with financial institutions will also become a new opportunity to extend mobile money services to those that already have a bank account, who in turn can use the service with unbanked people which then further extends the ecosystem.

In April 2014, Kanny G became Orange Money's 10 millionth customer after opening an account at an outlet in Dakar. Orange marked the occasion by giving her a smartphone with a mobile money credit of CFA100,000 (USD210).

APIs, smartphones and going global

Although mobile money services are already hugely popular in Africa, there is still more to do. Mobile networks on the continent are constantly being upgraded, first with 3G and now increasingly 4G, which all leads to a broader range of mobile money services.

Furthermore, the region is already seeing increased proliferation of smartphones, providing an affordable way for consumers to gain access to more advanced technology. These devices will deliver new ways for customers to access mobile money services through easy to use apps, and new functionality that will improve the customer experience such as GPS location-based services that will make it possible to find the nearest mobile money retailer, for example. Mali and Madagascar are the two first markets where an *Orange Money* application is already available on smartphones.

There is no doubt that the penetration of these services will be greatly assisted by the increasing availability of open APIs provided by mobile money service operators. Opening up APIs will help the creative developer community on the continent to come up with their own innovative ways to use mobile money, allowing the ecosystem to essentially evolve by itself, thereby extending access. In addition, this will allow developers to more easily integrate services into their own applications or websites, such as offering e-commerce integration, increasing the distribution channel even further.

Another area where operators can contribute to enlarging the ecosystem is the addition of international transfer capabilities. Several of the continent's big name cellcos have started to do this, including Orange which introduced remittance services between Côte d'Ivoire, Mali and Senegal in 2013. The service was the first of its kind in Africa, and saw more than EUR20m transferred in the first year between the countries. This is only likely to grow, especially with the potential for the service to become available between developed countries in the future. And that would lead to a technology that was developed for emerging markets would become relevant and useful in developed ones.

Mobile money services have already begun to expand their offering from a basic money transfer and payment service to offer financial services such as savings, credit or insurance solutions, for example.

So has the dream of 'banking the unbanked' in Africa been realised? I believe operators have made a significant contribution to delivering financial inclusion to many in Africa through the provision of mobile money services in the past 10 years. And while there are many hurdles still to overcome, these are surmountable.

As mobile devices and technologies continue to evolve rapidly, so do the opportunities. What remains to be seen is how the industry responds to these challenges and opportunities. I for one expect operators to play an even bigger role in delivering financial inclusion across Africa in the next 10 years. ■

Alban Luherne, Director of Orange Money AMEA, Orange Group

TIDS helping customers monetise IoT

Telecom Italia Digital Solutions (TIDS) has selected Jasper to power M2M services for Italian and international enterprise customers looking to benefit from the vast connected services business opportunity.

TIDS is part of the Telecom Italia Group and was set up last year to help customers with the digital transformation of their businesses. Working with US-based Jasper it aims to provide a turnkey solution that can be easily configured to meet the specialised needs of firms in any industry.

"At Telecom Italia Digital Solutions we're seeing huge thirst among the enterprise community to join the Internet of Things movement and to scale their deployments at will," says Luigi Zabatta, executive director for M2M and IoT services at TIDS.

Jasper claims its cloud-based platform is the only one purpose-built to enable companies to launch, manage and monetise IoT businesses. It says TIDS will be able to offer real-time visibility and control, as well as capabilities such as mobile service management, real-time support diagnostics, billing and business automation.

TIDS executive director Luigi Zabatta says there's a "huge thirst" among businesses to join the Internet of Things movement.

Arqiva launches first nationwide IoT in the UK

Arqiva has launched what's believed to be the UK's first nationwide Internet of Things (IoT) network. The company has partnered with French IoT specialist Sigfox which has already established M2M networks in several other countries.

The two companies first announced their partnership to create a dedicated UK IoT network in May 2014. Their initial commitment was to connect the country's 10 largest cities: Birmingham, Bristol, Edinburgh, Glasgow, Leeds, Leicester, Liverpool, London, Manchester and Sheffield.

In December, sites in each city went live and are now connected to Sigfox's global IoT network. The company is providing key infrastructure, including BSTs and antennas, using license-free 868MHz spectrum. It will also host and operate the back-office IT systems needed to manage the network.

Arqiva has installed a radio mast at each site. These receive signals from the connected 'things' using Sigfox's RAN. The signals are then routed to the Sigfox Connectivity Cloud, enabling users to access and check the data their devices are sending.

Sigfox says its network complements existing high-bandwidth systems by providing economical, energy-efficient, two-way transmission of small quantities of data. It claims that this lowers barriers to wide implementation of M2M solutions, and greatly extends the battery and service life of connected devices.

Arqiva provides much of the infrastructure behind broadcast, satellite and wireless communications in the UK. Its customers include all four MNOs, the emergency services, the BBC, amongst others.

Arqiva supplies most of the UK's telecoms infrastructure. It's installed a mast at each site in the IoT network.

Safer sailing in Oman thanks to state-of-the-art maritime comms network

Qnective Middle East will design, construct and run a new maritime communications network for the Maritime Radio Communications Operations Centre (MROC) in Oman.

Built upon the Global Maritime Distress and Safety System (GMDSS) standard, local authorities will use the network to obtain important data regarding the identity, freight and itinerary of all the vessels in the country's waters. It will benefit around 15,000 local fishing boats in the Arabian Sea and Gulf of Oman, as well as the constant international traffic sailing through the Straits of Hormuz.

Qnective is already working with MROC. It offers a wide range of GMDSS services as well as NAVTEX broadcasts, VHF, MF, HF radio telephony, and Digital Selective Calling across Oman's coastal waters. The service portfolio is complemented by an integrated AIS system which identifies and tracks vessels and further enhances their security.

Austria-based Frequentis, Qnective's strategic partner, will be responsible for supplying and implementing the technical infrastructure for MROC and other maritime facilities.

This includes: the MCS 3020 IP communication system; a tracking and tracing information system; 200 VHF and 22 MF/HF radios; 25 VHF radio direction finders; 25 AIS base stations with ship equipment for 15,000 vessels; two NAVTEX transmitters; plus an INMARSAT-C and a COSPAS-SARSAT groundstation.

Millions sign up for 3G in Pakistan as the rollouts begin

Pakistan's market-leading cellco Mobilink claims it has beaten rivals in achieving the fastest uptake of 3G services. It says a million customers signed up for its services within 90 days of their launch last July.

The operator is using 10MHz to offer its 3G services. It has so far reached 12 cities with more to come as part of its expansion plans and license obligations.

Pakistan's long overdue 3G licenses were finally awarded in early 2014. As well as Mobilink, the other winners included China Mobile subsidiary Zong, Etisalat's Ufone and Norway's Telenor.

The latter ranks number two in Pakistan's market. It has expanded its 3G footprint to cover 45 cities and claims it now runs the largest and fastest-growing 3G network in the country with 1.3 million customers.

"We have a two-fold strategy to aggressively roll out 3G sites in the country," explains Telenor Pakistan CMO Irfan Wahab Khan. "One is to increase the number of 3G sites within a city thus expanding the in-city coverage; and the other is to increase the number of 3G cities across the country. We strongly believe that internet is a facility for the many, not for the selected few."

Both Telenor and Mobilink say that their aim is to expand Pakistan's overall internet ecosystem.

Last August, Ufone launched the *U5* which, at PKR6,000 (USD58), is said to be the country's cheapest quad core 3G enabled smartphone.

Meanwhile Zong, which also won 4G spectrum at 1800MHz, has yet to make any announcements about its network plans.

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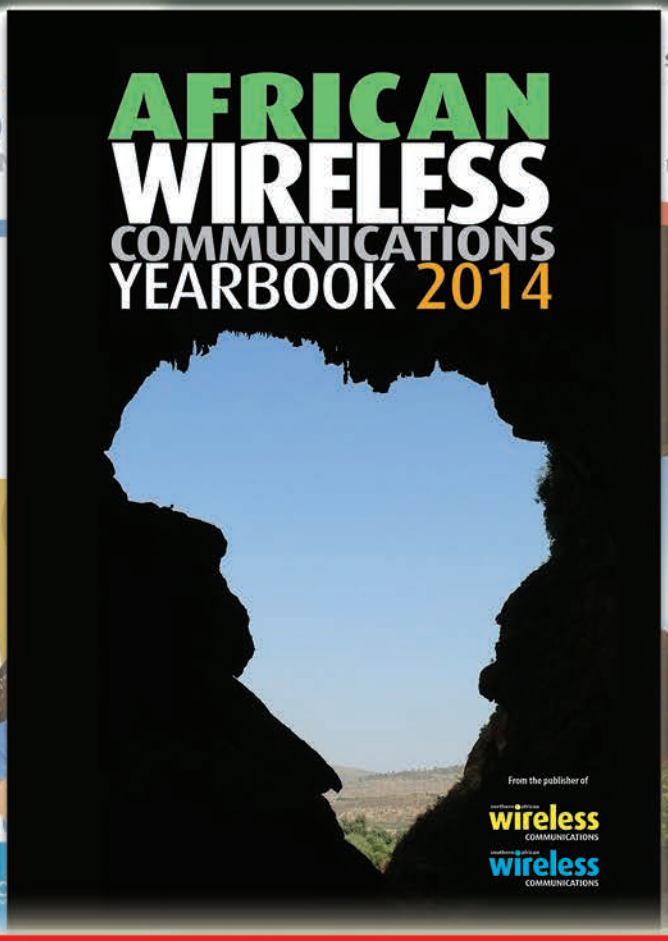

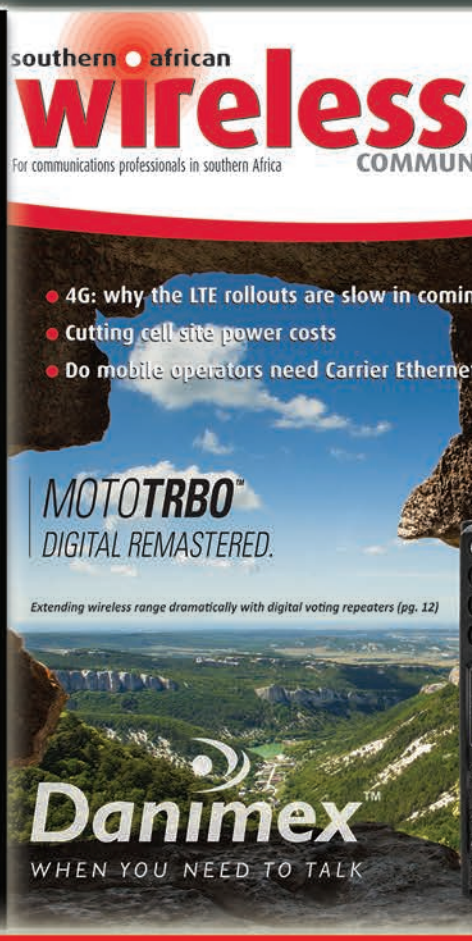

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Queensland rail upgrades to DMR

Australia's largest railway network operator, Queensland Rail, is switching to DMR. The system will provide the vital communications infrastructure for the state-owned company's day-to-day operations in and around Brisbane. It will also play a key role in the safe and efficient operation of the wider Queensland Rail network which spans more than 7,000km of track connecting the city to Cairns, Townsville, Rockhampton, Longreach, Charleville and Mount Isa.

Tait Communications is designing and deploying the new platform. It will upgrade radio communications at around 50 sites using a DMR Tier 3 trunked voice and data solution. This includes one base station per site and a fleet of 1,598 terminals including mobile, portable and fixed desktop devices. Tait says the majority of these will be used in on-track vehicles.

The firm adds that because of the open standards technology upon which all of its products are based, the digital terminals are compatible with Queensland Rail's existing analogue system, Zetron consoles, and location services data.

"This means the solution is 'future flexible' and cost efficient, re-utilising existing assets and reducing the complexity of implementing the new system," says Brett Smythe, general manager for Tait Asia-Pacific.

The DMR system will play a core role in the safe and efficient operation of the wider Queensland Rail network which spans more than 7,000km of track.

Round-the-world solar flight will rely on satcoms

Intelsat and ITC Global will provide ground-to-ground satcoms services to the team attempting the first round-the-world solar flight.

Solar Impulse's round trip will begin and end in Abu Dhabi which has been named as its host city. Its flights will take place from early March to the end of July 2015.

ITC Global specialises in providing satcoms to remote and harsh environments. Working with Intelsat, it will enable Solar Impulse's ground crew and support teams to communicate from anywhere to anyone in the world. Using a 1.8m, quick deploy antenna, the crew will leverage Intelsat's global satellite network for broadcasts, webcasts, email, phone, data and video communications during the 35,000km (22,000 mile) journey which is expected to take around 550 flight hours to complete. Intelsat and ITC Global will also provide a round the clock operations centre support during the trip.

How to optimise network performance

XL Axiata has joined forces with Ericsson and Facebook to create a new methodology to measure and improve end-to-end network performance in Indonesia. The three firms are partnering as part of Internet.org's mission to bring affordable internet access to the two-thirds of the world not yet connected.

In Indonesia, 75 per cent of users are on 2G GSM/EDGE networks, yet the country is said to have the fourth-largest Facebook user base in the world. Working together, the partners developed a framework for evaluating KPIs based on simulated *Facebook* application use cases via a test agent, and correlated these KPIs with network statistics. Through this process, user-impacting issues were identified and addressed throughout the network.

The resultant optimisations are said to have improved app coverage by up to 70 per cent. The number of connections completed within three seconds improved by up to 70 per cent, the time taken to access content also improved up to 70 per cent, and upload time improved by up to 50 per cent.

Internet.org is a campaign group set up by technology companies, non-profit organisations and local communities. It says the work in Indonesia has led to a white paper which could act as a guide on how to improve connectivity.

"With the methodology set forth in this white paper, we have a model for improving network performance that can be applied globally by mobile network operators," says Chris Daniels, VP of Internet.org and Facebook.

The white paper, 'Measuring and improving network performance – an analysis of network and application research, testing and optimization', is available at Internet.org.

Arianespace claims leadership in APAC

Arianespace claims it now dominates Asia-Pacific as the number one satellite launcher.

The firm says that since being founded in 1980, it has launched two-thirds of the commercial geostationary satellites for APAC. It says this represents 80 contracts already signed, including ten more satellites to be launched for Australia, India, Indonesia, Japan and South Korea.

Last September, the company successfully transferred *MEASAT-3b* and *Optus 10* into orbit. Speaking at the time, Arianespace chairman and CEO Stéphane Israël said the launch marked the 100th consecutive successful launch of a geostationary satellite in less than 12 years.

He added: "The Asia-Pacific region [is] where we have always been very successful as shown by our market share which now exceeds 60 per cent."

Earlier in 2014, Intelsat contracted Arianespace to launch *Intelsat-36* during the third quarter of 2016. The satellite will be co-located with *Intelsat-20* at 68.5°E, and will include C- and Ku-band payloads to enable media and content distribution services in South Asia as well as in Africa where pay TV provider MultiChoice has already signed a major capacity deal (*also see this month's feature 'The new space race' on pp 18-20*).

Intelsat-36 will be built by Space Systems/Loral using its *1300* platform. Weighing 3.4 metric tons at launch, it will be injected into geostationary transfer orbit by an *Ariane 5* ECA heavy lift vehicle from French Guyana.

This latest satellite will be the 55th Arianespace has launched for Intelsat as part of a long-standing relationship that goes back three decades.

Tri-band LTE-A service

SK Telecom has claimed another first with the launch of a commercial tri-band LTE-A service. It is said to offer data speeds of up to 300Mbps by aggregating three component carriers in three different frequency bands: 20MHz in 1.8GHz; 10MHz in 800MHz; and 10MHz in 2.1GHz. SK Telecom says the service is four times faster than LTE and 21 times faster than 3G. For instance, at its peak speed, it says tri-band LTE-A allows users to download a 1GB movie in only 28 seconds.

GSAT-16 launched

India's *GSAT-16* has been successfully launched. The satellite left Earth on board an *Ariane 5* rocket from French Guiana on 6 December. Developed by the Indian Space Research Organisation (ISRO), *GSAT-16* aims to further augment communication services across India. It will carry 36 C- and 12-Ku-band transponders, the largest total number of transponders on a communications satellite developed by ISRO. It also has a Ku-band beacon to help ground antennas to accurately point to it. *GSAT-16* will orbit at 55ºE and be co-located with *GSAT-8*, *IRNSS-1A* and *IRNSS-1B*.

PCCW to support TSF

PCCW Global has extended its support for Télécoms Sans Frontières (TSF) for the next three years. This has enabled the NGO to carry out various initiatives in 2014, including a medical education project in Myanmar, and the setup of its first Emergency Response Hub in Africa. PCCW Global, which is part of Hong Kong telco HKT, was the first Asian carrier to support TSF. It says that since 2008, it has given the organisation the ability to respond to 67 global emergencies, and to train hundreds of international NGOs in the use of telecoms and ICT.

Bank Rakyat plans to build its own satellite

Indonesia's largest and oldest bank will use satcoms to increase the performance and reliability of its online banking and internal applications.

Bank Rakyat Indonesia (BRI) was established in 1895 and now claims to provide services to more than 50 million customers. It operates more than 9,800 branches, offices and sites in urban and rural areas, as well as over 100,000 e-channel outlets.

"Many of these outlets cannot be economically reached by terrestrial infrastructure," said the bank. "Therefore, satellite communication for BRI serves both as the primary and backup means of communication."

Currently, BRI is leasing capacity that is equivalent to 23 transponders from nine satellite service providers in Indonesia. But with plans to expand into more rural areas, especially in the remote islands, the company has now commissioned its own satellite.

Last year, it awarded the respective manufacturing and launch contracts for *BRIsat* to Space Systems/Loral and Arianespace. It will be owned and self-operated by BRI and will orbit at 150.5ºE when it's launched around mid-2016, offering 36 x 36MHz C-band and 9 x 72MHz Ku-band transponders.

Bank Rakyat Indonesia operates more than 100,000 e-channel outlets, such as this 'E-banking Hybrid Lounge'.

iSAT helps Es'hailSat commercialise Ka

iSAT has delivered and installed two pilot VSAT terminals for Es'hailSat to enable the commercialisation of the Ka-band payloads on its *Es'hail 1* satellite.

Es'hail 1 was developed by Qatari satellite company Es'hailSat and Eutelsat. It was launched in 2013 to provide services in North Africa, the Middle East and Central Asia, and gives both firms Ka-band capabilities for new business opportunities.

According to UK-based iSat (Integrated Satellite Applications Technologies), while the HD FSS Ka-band market has a variety of suppliers, the frequency area below 29.5GHz is where its expertise lies. Es'hailSat is the first operator to use this spectrum.

iSAT's development of Es'hailSat's equipment involved designing, integrating and testing feeds specific to its satellite's multi-mission Ka-band frequencies with existing reflectors. iSAT says this ensured that performance complied to international standards for antenna side lobe and cross-polar patterns.

It supplied and installed a 1.2m VSAT terminal designed to work with *Es'hail 1*'s 'Mission 4' Ka-band transponders, and a second one that can be used as an uplink for customers using its 'Mission 3' Ka-band payload.

iSAT claims the deployment of its specialised equipment will enable Es'hailSat to offer "superior coverage and secure connectivity" for business and government users across the entire MENA region. It will support applications such as broadband access, enterprise networks, backhauling and other services, using small fixed or mobile antennas.

iSAT's integration of equipment for Es'hailSat also involved sourcing other VSAT system components such as BUCs, LNBs, OMTs, and TRFs.

Cable will link from Europe to South Asia

Orange will build and maintain a new submarine cable that will link France and Singapore. The international consortium behind the 20,000km long Sea-Me-We 5 (South East Asia-Middle East-Western Europe 5) fibre optic cable plans to operate services at the end of 2016.

In its planned configuration, Sea-Me-We 5 will connect Singapore, Indonesia, Malaysia, Thailand, Myanmar, Bangladesh, Sri Lanka, India, Pakistan, Oman, UAE, Yemen, Djibouti, Saudi Arabia, Egypt, Italy and France.

The planned configuration of the 20,000km long Sea-Me-We 5 cable.

Orange says the cable is based on very high-speed 100Gbps technology. It will initially offer a capacity of 24Tbps, but will also benefit from an advanced WDM system that enables capacity to be increased without additional submarine work.

The French operator is also co-owner of three other submarine cables that run between Asia and Europe: Sea-Me-We 3; Sea-Me-We 4; and IMeWe. In addition to providing extra capacity, Orange says Sea-Me-We 5 provides it with an alternative route that "guarantees the protection" of voice and data traffic passing through the other cables in the area.

Moreover, thanks to the inter-connection point in Djibouti, the firm says the cable can open up a new route towards the Indian Ocean to support the booming growth of broadband services on the islands of Réunion and Mayotte.

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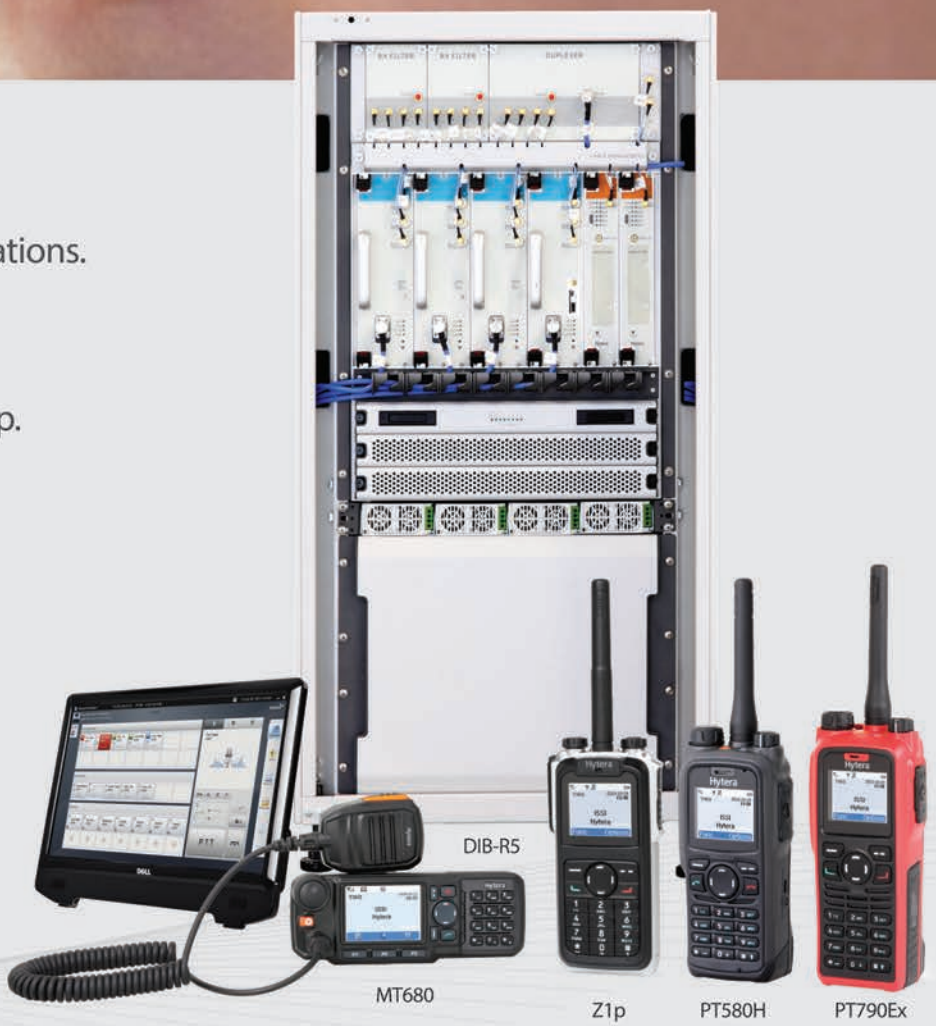

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