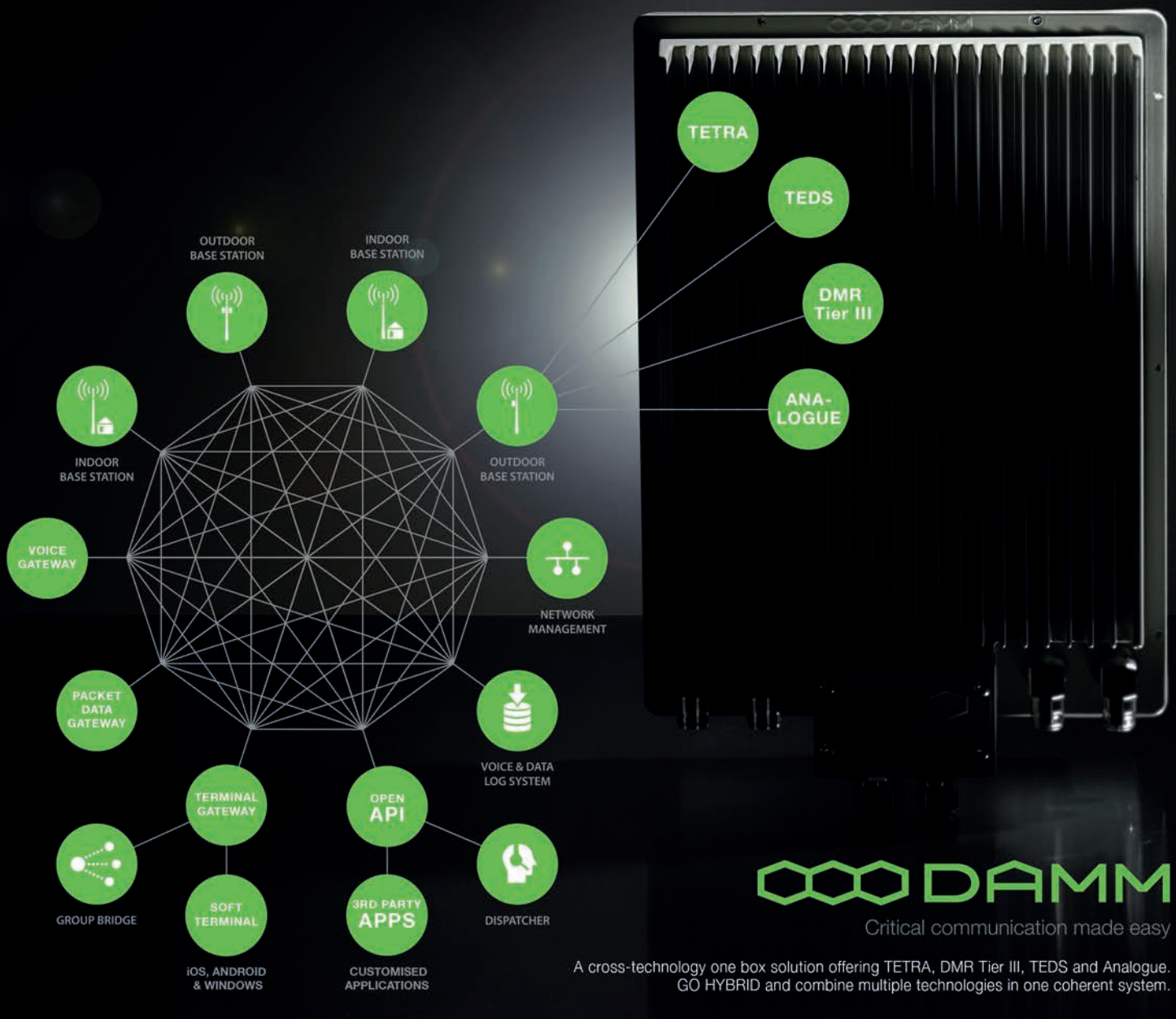
JANUARY/FEBRUARY 2016
Volume 20
Number 5

southern african wireless COMMUNICATIONS

For communications professionals in southern Africa

- What's coming up for satellite in Africa
- Critical comms in the mining and energy sectors
- Will towers be needed for future telecoms?



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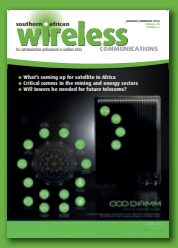

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- Senegal-Cote d'Ivoire,
- Cote d'Ivoire-Sao Tome & Principe.

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2 landlock countries.

Phase 2 project

Phase 2, under construction or planned:

- Extension from Sao Tome & Principe to South Africa
- Canary Islands, Benin & Nigeria, Operational May 2015
- Cameroon, Democratic Republic of Congo, Angola, Namibia

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Tanzanian operators have failed to comply with security regulations

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

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

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

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

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

TCRA director general Dr. Ally Y. Simba said operators are running "unsecure networks" that endanger subscriber information.

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

As well as being warned that they were in breach of the 2011 Electronic and Postal Communications Regulations, the operators were ordered to put in place measures for a secure environment that will prevent spoofed messages and related security threats in their networks.

They were also fined TZS25,000,000, and face the threat of further legal action should they continue to be in non-compliance with the regulations.

Liquid Telecom to build new undersea cable

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

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

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

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

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

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

Telkom launches "biggest" fibre trial in South Africa

Telkom is giving its DSL customers the opportunity to upgrade their copper-based connectivity to a fibre network. South Africa's incumbent telco says that more than 11,000 DSL subscribers living within its fibre footprint will be able to experience the technology at no additional cost.

As part of the trial that began at the beginning of February 2016, customers can choose to migrate their copper-based 2, 4 or 8Mbps DSL service to an equivalent fibre-based service. During the two-month trial they will be able to test the 10Mbps and 20Mbps line options.

At the end of the period, customers can decide which fibre package to adopt, or they can return to their original DSL service although their line will have been permanently upgraded to fibre.

Telkom consumer MD Attila Vitai believes the unique trial offer is a "win-win" for customers.

"Our installation teams are working to secure installations within seven to ten days from order," he said. "Telkom has the largest fibre network in the country, and we want to take this high-performing technology into our customers' homes, businesses and schools."

Emcom deploys DMR for Swaziland police

South Africa-based PMR solutions specialist Emcom Wireless has completed a multi-million rand digital mobile radio (DMR) network for the Royal Swazi Police Service (RSPS).

"[We worked] closely with various stakeholders from the police and government in designing, developing and deploying this system in a way that works best for the unique operations of the Swazi Police Services," said Emcom sales director Tony Sipho Sibanda.

He added that one of the reasons DMR was chosen by the RSPS was because it offered a quicker return on investment compared to other and more traditional technologies.

While Sibanda was unable to give details of all the equipment used for the network, when Emcom was originally awarded the RSPS contract in March 2015 it said it would implement a Tait DMR Tier III system.

During a handover ceremony held at Hlatikulu in southern Swaziland in early February 2016, senior members of the police service were given a field demonstration of DMR's capabilities, such as its clear voice quality and secure SMS feature.

Mr. Mabuza, head of the RSPS' research and planning unit, said: "We particularly like the fact that we will be able to use the trunking features to host multiple talk groups, prioritise calls, and make use of GPS features."

He added that GPS will enable the monitoring of officer locations in real time, as well as the secure management of incidents from a new command and control centre in Mbabane.

Mabuza also said the new DMR system will help run operations smoothly when Swaziland hosts the 36th annual SADC Summit in August.

Emcom Wireless' Tony Sipho Sibanda (right) with Mr. Mabuza, head of the RSPS' research and planning unit.

Millicom ramps up its operations in both Zanzibar and Tanzania

Millicom has announced a "comprehensive" network modernisation plan for Zanzibar Telecom (Zantel). The move follows its purchase of Etisalat's 85 per cent holding in the telco last year *(see Wireless Business, May-Jun 2015)*.

The company said it will support "significant growth and expansion" of its operations in the country.

Speaking in December during the first board meeting since the buyout, Millicom's Africa division CEO Cynthia Gordon said the aim was to increase coverage, improve connectivity, and make Zantel the market leader with the "most innovative services". Among the plans for this year, Zantel will introduce Zanzibar's first LTE network, and launch extended 3G services, improved mobile financial services, as well as new customer offers such as nationwide roaming.

Gordon said Millicom is also keen to strengthen its partnership with the government which retains its 15 per cent stake in Zantel. "We can't emphasise enough how important our partnership with the Zanzibar government is and, through that, our commitment to the people."

Tigo Tanzania GM Diego Gutierrez said the launch of 4G in Tanzania will lead to more "tailor-made" digital services.

In a separate development, Millicom has launched LTE in Tanzania. It says the 4G services offered by its Tigo brand are around five times faster than the 3G technology currently available in the country.

Tigo Tanzania currently has around 10m subscribers. GM Diego Gutierrez said they will continue to be offered more "innovative and tailor-made" digital services.

Earlier last year, Tigo announced an increased annual investment of USD120m per year on infrastructure improvement and expansion. The company claims this is 20 per cent higher than its annual spend in the past three years.

SpeedCast and Gazprom supporting energy clients

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

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

It also says that with the uplink based in Germany, customers will be able to land their traffic directly into Europe and take advantage of high-speed interconnection throughout that continent. Furthermore, SpeedCast reckons Germany's "excellent" standards of infrastructure and advanced data laws will ensure the highest levels of security.

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

ITC Global delivers remote comms to offshore vessels

ITC Global has been awarded two multi-million dollar contracts, each spanning three years, to provide remote offshore comms to five floating production storage and offloading (FPSO) vessels based in Africa.

ITC specialises in providing satcoms to remote and harsh environments. With these latest deals, service will be delivered to several major European-based oil and gas companies, including Italy's Eni and Saipem.

The FPSOs, operating in Angola, Congo and Equatorial Guinea, are each outfitted with two C-band stabilised antennas, delivering between 4 and 10Mbps to the vessels.

ITC says the custom engineered solution was designed to enable increased automation at the remote site thereby reducing the number of remote workers required on each vessel at one time.

With certified field technicians based in strategic locations throughout the region, the company adds that it utilised its local presence to ensure fast installation and commissioning of each FPSO for the customer's African operations.

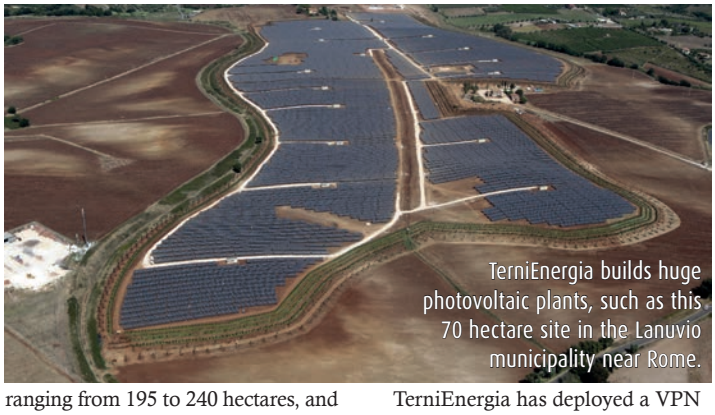
In August 2015, ITC was acquired by Panasonic Corp. of North America, and now operates as an independent unit of Panasonic Avionics.

Energy and communications both powered from space

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

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

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



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

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

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

"The quality and flexibility of our satellite network will drive efficiencies between TerniEnergia's plants," says Avanti COO Matthew O'Connor. "This will increase their ability to supply energy throughout some of the remotest regions in South Africa."

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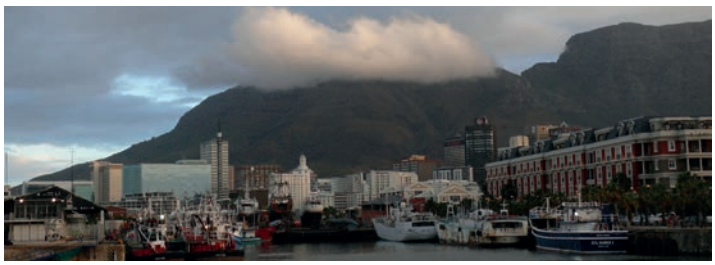
Cape Town reaches new heights with 400G trial

ADVA Optical Networking has successfully conducted a trial to transmit data rates of 200, 300 and 400Gbps over Cape Town's metro network. The test was also one of the first field demos of DP-8QAM to achieve interim capacity of 300Gbps.

The trial made use of the city's existing WDM infrastructure which stretches over more than 100km across the entire metropolitan area.

The meshed network is built on ADVA's *FSP 3000* modular optical networking platform. This was combined with its *CloudConnect* technology to connect the townships of Nyanga and Mitchells Plain.

To achieve the high capacity, the demonstrators created a two-wavelength super-channel. ADVA says data rates were then switched between 200, 300 and 400Gbps to show how capacity can be automatically adjusted according to the network's shifting traffic and transmission quality requirements.



The demo combined ADVA's *CloudConnect* 400Gbps technology with the existing WDM infrastructure that covers Cape Town's entire metropolitan area.

The company adds that successfully transmitting a 300Gbps channel at a modulation rate of just DP-8QAM is a "significant milestone". It claims this format can handle lower signal-to-noise ratios for increased reliability, yet optimised fibre utilisation.

ADVA says using existing optical infrastructure to transmit such high speeds shows customers how much potential lies in their deployed networks.

It believes the Cape Town trial demonstrates that backbone networks can be made to work even more efficiently so that future bandwidth demand can be met without the need for significant investment.

DigitalRoute simplifies BSS for Vodacom

Vodacom is continuing to transform its BSS infrastructure in South Africa with the help of Sweden-based DigitalRoute.

The two companies have been working together since 2014 and recently agreed to extend their partnership for a further three years.

Vodacom is driving the transformation of its entire BSS infrastructure using DigitalRoute's *MediationZone* data integration and management platform. This is helping the operator to cut opex and achieve IT self-sufficiency. DigitalRoute says its technology is also enabling the cellco to launch new service offerings with reduced time to market, and providing revenue monitoring indicators.

The BSS transformation project covers all of Vodacom's lines of business which see around 50 million packet data network gateway events and up to 60 million CDRs a day. These are sourced from 25 data streams drawn from elements across the operator's entire network and are all processed by *MediationZone*.

Keith Kriel, manager of mediation application development at Vodacom, says: "The advantages of DigitalRoute continue to be significant. Today, we have fewer systems and databases to maintain. The architecture has been simplified and we continue to become more efficient."

MTN aims to boost its enterprise appeal

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

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

The partners will initially target business customers. This will include services to multinational companies in each other's footprint, collaboration in M2M, and new digital products aimed at the B2B segment.

Both operators will also discuss how to engage effectively in international wholesale, devices and network/IT procurement. They may also work on new initiatives, such as mobile money or Big Data projects, and collaborate on commercial and marketing strategies.

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

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

MTN says multinationals benefit from transactions occurring in real time, and the elimination of the risks and administrative overheads associated with cash transactions. It adds that they also gain from a reduction in the costs associated with formal banking.

Camusat and Eutelsat to help connect remote areas

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

Camusat and Eutelsat have teamed-up to provide mobile operators with turn-key solutions to help them extend their networks into remote areas in Africa.

The two firms say they will draw upon their respective expertise of connectivity markets. Eutelsat says it can deliver satellite coverage across the continent, while Paris-based Camusat specialises in telecom infrastructure deployment. This includes building, providing electrical power, and maintaining towers for mobile networks via more than 1,000 employees in Africa.

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

■ Eutelsat has signed a three-year deal with the Broadcasting Authority of Zimbabwe (BAZ) for Ku-band capacity on *EUTELSAT 3B*. It will be used to deliver 12 free-to-view channels to a nationwide network of 48 DTT transmitters so that viewers in the country can benefit from improved picture quality and programme choice.

The service is currently being tested and is due to launch during 1Q16. BAZ is working with Zimbabwe's national signal carrier Transmedia, state broadcaster ZBC, and Huawei for sourcing digital equipment. Huawei will also uplink the digital multiplex from BAZ's teleport in Harare to *EUTELSAT 3B*.

Solarkiosk helps bring internet to villages

Solarkiosk and SES Techcom Services have teamed-up to deliver high-quality connectivity to communities around the world.

Germany-based Solarkiosk is a global energy and business gateway provider to underserved communities. Under its agreement with SES Techcom, the company will use satellite connectivity to provide internet access to underserved areas, initially in Africa.

This will be done via Solarkiosk's *E-HUBB* structures which use solar technology to provide electricity to all systems, including the satellite dish. The company says *E-HUBB* can then enable a wide range of connectivity services to the local community.

The two partners say this the first of many steps to deliver off-grid connected solar infrastructure solutions for communities worldwide, targeting individual users, businesses, schools, medical centres and farms.

One of the new Solarkiosk *E-HUBB*s in the Awassa region of Ethiopia.

Prior to its agreement with SES, Solarkiosk had already deployed several *E-HUBB*s in Ethiopia. They include two kiosks in the villages of Belela and Mero Qebado which are in the country's southern Awassa region. The *E-HUBB*s were manufactured locally in Addis Ababa and are run by local women who were trained by Solarkiosk.

The Ethiopian *E-HUBB*s are part of the *EKOCENTER powered by SOLARKIOSK* project which is run as a partnership in several countries with Coca Cola *(see News, Nov-Dec 2013)*.

ACE begins next phase of cable construction

The second phase of expanding the Africa Coast to Europe (ACE) submarine cable system has now started. It will extend the network 5,000km from São Tomé and Príncipe to South Africa.

The development of the second phase was originally announced last year *(see News, May-Jun 2015)*. When it is completed by the end of 2016, ACE will cover a total distance of 17,000km, enabling access to high-speed internet services for up to 25 countries.

As well as São Tomé and Príncipe and South Africa, phase II will connect DRC, Congo-Brazzaville, Angola and Namibia. An extension to Cameroon is also included.

According to the consortium behind the cable, ACE uses the "most advanced" high-speed broadband fibre optic technology which allows capacity to be increased as needed without additional submarine work being required. Overall capacity will be boosted to 12.8Tbps using 100Gbps WDM technology which supports high-capacity networks.

The consortium has invested around USD700m in the construction of the cable, which includes USD250m from the Orange Group and its subsidiaries.

WatchAfrica debuts mobile IPTV and VoD

African media and content specialist WatchAfrica has teamed up with VAS and payment company net-m to launch what's claimed to be the continent's first mobile IPTV and video on demand (VoD) service.

It uses net-m's *Anyscreen* platform which supports the streaming of multiple channels onto smartphones, tablets and set-top boxes. *Anyscreen* is also compatible with net-m's mobile payment technology which means anybody with a smartphone in Africa will be able to pay for content.

"We believe that as one of the highest growth regions for mobile entertainment, Africa is deserving of a tailored mobile IPTV and VOD solution," said Carsten Müller, SVP B2O and media at net-m. "We also know that with the low credit card penetration and high smartphone usage in Africa, the traditional forms of payment offered by many other VoD services wouldn't appeal to consumers."

Much of the launch content will be delivered by AfricaXP, an independent creator and distributor of custom designed channels and themed VoD content for local audiences.

WatchAfrica will also launch with Aflix, an African content service similar to Netflix, a range of news services including Kenya's K24, and TV10, the first private TV channel from Rwanda with direct access to social networks.

Orange and ENGIE aim to increase power in Africa


ENGIE's deputy CEO and COO Isabelle Kocher signs the partnership deal with Orange Group CEO Stéphane Richard.

Orange will work with ENGIE on two projects to expand the rural electricity grid and optimise the energy supplied to its telecoms infrastructure in Africa.

France-based energy specialist ENGIE says it currently supplies 760MW of power across the continent. As part of its aim to become one of Africa's major energy leaders by 2025, it has created a dedicated business unit with around a hundred employees and has a number of projects planned.

Under this latest initiative, ENGIE says it will combine its experience in renewable energy production, aggregation and maintenance, with Orange's expertise as a telecoms carrier.

Working together, the two companies will trial a range of domestic power supply solutions for rural populations that could then be marketed by the telecoms operator.

These solutions could include, for example, individual solar kits and small-scale local electricity networks. The service could then be billed via mobile using *Orange Money*.

The partners say the trials will allow them to validate the technical solutions, sales and distribution models, and economic feasibility of the service before making it available on a larger scale.

Orange and ENGIE say they are keen to play their roles as "socially responsible" players on the continent. Citing figures from a 2014 BearingPoint study, they say around 90 per cent of the rural population in sub-Saharan Africa has no access to the electricity grid.

OGE aims to power every off-grid household in Africa – News, p10.

VAST introduces first open access Wi-Fi network

VAST Networks claims it has launched South Africa's first truly open access Wi-Fi network. The company continues to grow and says it currently offers thousands of hotspots throughout the country.

VAST was originally formed as WirelessCo in 2014 by Dimension Data, owner of Internet Solutions, and Multichoice, owner of MWEB *(see Wireless Business, Sep-Oct 2014)*. Dimension Data's MEA chairman Andile Ngcaba serves as its board chair, while Intelsat's former VP of Africa, Grant Marais, is CEO.

As an open-access wireless network infrastructure provider, VAST says it is delivering carrier-grade Wi-Fi in Southern Africa. The company also claims it is the largest mobile data reseller across three GSM networks.

VAST now offers more than 2,200 hotspots across South Africa using infrastructure inherited from MWEB.

According to Marais: "We are the only platform that offers ISPs and mobile operators a platform that creates a virtual representation of their network."

Over the coming years, VAST plans to expand by firstly consolidating the networks it inherited through Internet Solutions and MWEB, and then grow into public spaces where there is high Wi-Fi demand, such as schools.

Since launching last November, the company says it now offers internet access at more than 2,200 locations around South Africa, including transport hubs, shopping centres, hotels, hospitals and restaurants. These are provided using infrastructure inherited from the AlwaysOn and MWEB networks.

OGE aims to power all off-grid households

Electranova Capital US, the energy clean-tech venture capital fund managed by Idinvest Partners and sponsored by EDF, is financing Off Grid Electric's (OGE) mission to supply power to every off-grid household across the continent.

Electranova has withheld the exact value of the investment. But OGE plans to use the funding to enter new African markets as well as scale up its current partnership with the Tanzanian government to power a million homes by 2017.

Headquartered in Arusha in Tanzania, OGE says its *M-POWER* distributed solar energy system can provide high-quality electricity to off-grid areas at an affordable price. The firm's website states: "For the same amount our customers already spend on kerosene or candles, we provide clean energy with 25 times more light and additional energy appliances like TVs and radios."

It adds that customers can buy their electricity using mobile money services such as *M-PESA* which allows them to control how and when they pay.

As well as its modular hardware systems that combine innovations from the electric vehicle industry and large-scale solar, OGE has also developed a proprietary software platform. It says this enables it to provide an "efficient and personalised" service for customers using mobile apps and two-way SMS.

Electranova reckons OGE's value proposition for customers is "huge" because it requires no initial outlay, and delivers a service that goes far beyond electricity to include, for example, mobile phone charging.

The firm's Matthieu Bonamy adds: "Africa is already experiencing a technological 'leapfrog' in the energy sector very similar to the telecom sector. The market has passed a tipping point and is expanding quickly but, as of today, 1.5bn people do not have access to grid electricity."

Enterprises now "just a cross-connect away" from consuming global cloud resources

In what's described as a "significant shift" in the adoption of cloud to deliver IT services more effectively, Internet Solutions (IS) has connected South African data centre operator Teraco.

According to IS, the deployment of its *CloudConnect* platform at Teraco's facilities gives clients a secure and speedy connection as well as a single point of access to cloud services. The company reckons that by partnering with Teraco to extend the reach of its connectivity solutions to more clients, it will benefit business, the economy, and all of South Africa.

According to Teraco, clients are now "just a cross-connect away" from consuming global cloud resources. The company says its new service provides MPLS VPN connectivity to Google, Amazon Web Services, *Dimension Data Cloud*, and Microsoft's *Azure* and *Office 365* via new direct interconnections in London and Frankfurt.

"Connectivity is a pre-requisite for ICT services and solutions to work effectively," says Teraco CEO Lex van Wyk. "This is an exciting opportunity, providing further choice in interconnection at Teraco, keeping content local and making business easier and more effective."

Teraco CEO Lex van Wyk claims the new service will keep content local and make business easier.

Airtel using Tap2Bill

Content providers and retailers across Africa can now utilise Airtel's billing infrastructure to invoice and charge their customers. By deploying IMImobile's *Tap2Bill* billing platform, Airtel claims its customers have access to services and content that were previously unavailable. The operator says *Tap2Bill* will enable content producers and merchants on the continent to share and benefit from its scale, market and technology. It claims this will help them grow their businesses across Africa without the need to invest in costly billing and payment capabilities. The new service will be available via a secure merchant portal.

WhatsApp free on Tigo

Tigo is offering free *WhatsApp* messaging services to its 10 million users in Tanzania. "This of course, is for customers with data enabled devices," said GM Diego Gutierrez. "We want to encourage our non-smartphone user customers to acquire highly discounted smartphones sold in Tigo shops to be able to enjoy this new offer." He added that the new service will be available on *iPhone*, *Blackberry*, *Android* and Nokia *Symbian60* phones.

Fast Wi-Fi for Celeno

Celeno Communications will supply video grade Wi-Fi chips to help Altech UEC deliver a range of high-end 802.11ac capabilities to HD gateways and set-top boxes. Altech UEC specialises in developing digital technology for the converged broadcast and broadband industries in Africa. It says the use of the chips will enable it to offer Wi-Fi networking that delivers reliable throughput as well as the high QoS needed for data and HD video distribution across the home to multiple portable devices.

ITU preserves spectrum for satellite use

Delegates at WRC-15 acknowledged the global importance of satellite services. Around 3,300 participants, representing 162 out of the ITU's 193 member states, attended the month-long conference held in Geneva in November. © ITU/D. WOLDU

C-band threat averted as delegates at WRC-15 agree satellite technology is central to the future of worldwide connectivity.

The satellite industry has breathed a sigh of relief as delegates at the ITU's World Radiocommunication Conference 2015 (WRC-15) have agreed to preserve spectrum that is primarily used for satcoms.

Held every three to four years, WRC reviews the international regulatory framework for radio communications and revises it as needed. The most controversial item on the agenda for 2015 was the possible re-assignment of C-band spectrum. Terrestrial wireless operators had been lobbying for additional frequencies in C-band that include the 3.4GHz to 4.2GHz spectrum used for satellite receive/downlinks.

Naturally, the satellite industry opposed this. In rallying its supporters earlier last year, the Global VSAT Forum (GVF) said operation of IMT in the C-band could cause "excessive" levels of interference, and might preclude future use by broadcasters and many other industries that depend on satellite services supported by C-band.

At WRC-15 which was held in Geneva during November, representatives from the world's governments overwhelmingly agreed that satellite provides vital and irreplaceable services.

Among the key decisions made during the conference, delegates reconfirmed the need to protect critical fixed-satellite service (FSS) services throughout the world using C-band. But the lower 200MHz of the C-band downlink frequencies (3400-3600MHz) were identified for IMT in ITU Region 1 (EMEA) and Region 2 (Americas). In Region 3 (APAC), some countries will sign a footnote allowing potential IMT use of 200MHz, although the vast majority of the region will continue using this band for satellite.

Anywhere that IMT is deployed, it will be subject to adherence to strict protection requirements with neighbouring countries. WRC-15 declined to consider a proposal for IMT systems in the C-band uplink frequencies (5925-6425MHz).

Other bands

In order to address an apparent imbalance in Ku-band spectrum, WRC-15 identified additional frequencies for FSS systems between 10-17GHz. A downlink allocation in 13.4-13.65GHz in Region 1 was approved, while an allocation in 14.5-14.8GHz was agreed in several countries around the world.

Conference delegates avoided identification of L-band spectrum – which is used by mobile satellite service (MSS) operators around the world – for IMT. Instead, they identified 1427-1518MHz for IMT, and asked the ITU-R to determine the technical measures to ensure compatibility with MSS operations in the adjacent band (1518-1559MHz).

Several agenda items were adopted for future conferences that will spur growth in the satellite industry. This includes discussions at the next WRC to be held in 2019 for additional FSS spectrum in 51.4-52.4GHz, and additional satellite spectrum in 37.5-39.5GHz which will be addressed at WRC-23. It was also decided that no globally harmonised bands for FSS, MSS and broadcast satellite service in C-, Ku- or Ka-bands would be included as an agenda item at WRC-19.

In a joint statement, a coalition of associations representing the satellite industry said: "WRC-15 has been a turning point in the global recognition of the value of satellite services for the future… These decisions provide the stability necessary for the entire satellite industry to fully leverage its strengths in support of the vision expressed by the WRC delegates."

Despite campaigning for the use of C-band spectrum for terrestrial mobile broadband, the GSM Association welcomed the decisions taken at the conference. John Giusti, the association's chief regulatory officer, believes global harmonisation of spectrum bands through the WRC process is key to driving the economies of scale needed to deliver low-cost, ubiquitous mobile broadband around the world.

"The GSMA applauds the strong support from governments in all regions for the global harmonisation of 200MHz of the C-band to meet capacity requirements in urban areas," said Giusti. "We are also pleased by the decision to globally harmonise the L-band [which] provides an ideal blend of coverage and capacity capabilities."

What's next for satellite in Africa? Feature pp18-20.

Critical Communication made easy

DAMM is a world-leading provider of Critical Radio and broadband Communication solutions to industrial, commercial and public safety customers. The DAMM TetraFlex® system is 100% IP based. It offers the most rugged, reliable and easily scalable communication system available for mission critical communication. The full package from DAMM includes infrastructure, built-in applications as well as soft terminals.

A Cross-technology one-box solution
DAMM's latest innovation, the new BS422 outdoor base station, is a cross-technology one-box solution offering TETRA, DMR Tier III, TEDS and Analogue in one integrated system. With the new BS422 Outdoor Base Station you can work across technologies and be more flexible than ever. Simply choose the technology to match your current needs – and scale anytime to meet changing voice and data demands with a simple click. Additionally the BS422 offers improved synchronisation, improved redundancy, high power and an extended frequency range.

Need to Go Hybrid?
The BS422 allows hybrid usage combining multiple technologies in one coherent system with full integration. This can be done in a more permanent network setup, where several technologies, for example TETRA and TEDS are combined in one system to meet the need of voice and data communication.

Need to migrate from Analogue?
The unique BS422 enables easy migration from Analogue to digital. Same hardware, same software – simply upgrade to digital with one click. Combine multiple technologies in one system and secure a smooth, efficient migration with the use of existing Analogue radios in an Analogue/TETRA setup.

Need the flexibility to scale in coverage and capacity?
The open decentralized architecture, based on a true IP backbone, makes DAMM TetraFlex® easy to scale. You can not only scale freely in coverage, but also in redundancy and number of carriers.

The DAMM TetraFlex® Product portfolio
The DAMM TetraFlex® System comes complete with outdoor or indoor base stations used in any combination and now even across technologies.

DAMM offers built-in applications including Network Management, Dispatcher, Voice & Data Log System and Group Bridge giving you full control and allowing you to manage your assets and improve performance. With the TetraFlex® Client you can use your tablet or smartphone to benefit from coverage extension, as well as data capacity for videos and pictures. The complete range includes Android, iOS and Windows, offering communication operating through WiFi, LTE(4G) or other technologies.

The DAMM TetraFlex® Concept
The DAMM decentralised infrastructure means the network design is a 100% IP-based architecture with distributed intelligence. This gives full flexibility in site and capacity expansions, meeting the constantly changing needs of the industry. Each site can stand alone with the full TETRA feature set. DAMM TetraFlex® offers integrated solutions with a true IP backbone, and boasts features that are ideal for mission critical communications, such as scalability, redundancy and remote management.

Trusted by industry leaders worldwide
Hundreds of successful companies worldwide have put their trust in DAMM´s TetraFlex® system, and are now enjoying the benefits of staying agile in a changing and highly competitive market. Let's help you think big, start small and scale fast.

Contact damm.dk to learn more

New company structure for MTN

The MTN Group has reviewed its operating structure in a bid to strengthen business oversight, leadership, governance and regulatory compliance across all its operations in Africa and The Middle East.

The group will re-implement its previous reporting structure and cover three regions: West and Central Africa (WECA); South and East Africa (SEA); and Middle East and North Africa (MENA). A number of senior management changes have been made to support the restructure.

The group has created a new position of chief operating officer and has appointed Jyoti Desai to it.

Among them, Jyoti Desai has assumed the new position of group COO, and MTN says a replacement for her previous role of group chief technology and information officer will be announced soon. In the meantime, the company is still searching for a new CEO following the resignation of Sifiso Dabengwa last year in the wake of the multi-billion dollar fine it was hit with by the Nigerian Communications Commission last year.

The penalty relates to MTN Nigeria's late disconnection of 5.1 million improperly registered subscribers in August and September 2015 *(see Wireless Business, Nov-Dec 2015)*. The commission originally issued a fine of one trillion, forty billion naira (around USD5.2bn), but in early December this was reduced to NGN674bn (around USD3.4bn).

On 24 February 2016, MTN Nigeria made an agreed and without prejudice good faith payment of NGN50bn (USD250m) to the Nigerian Government on the basis that this will be applied towards an eventual settlement.

In an effort to achieve an amicable settlement, the operator has also agreed to withdraw the matter from the Federal High Court in Lagos.

Altech Autopage to sell mobile subscriber bases following closure

South Africa's Competition Tribunal has approved the disposal of Altech Autopage's post-paid GSM subscriber bases to Cell C, MTN and Vodacom.

Autopage was responsible for selling phone contracts on South Africa's mobile networks. But towards the end of last year, its parent company Altron announced that it planned to shut down Autopage and sell off its subscriber bases to local operators for ZAR1.5bn.

Altron said its decision was based on various factors, but mainly because of the impact of the ongoing mobile termination rate reductions, in addition to continued industry and consumer deflationary pressures.

The Competition Tribunal's approval is subject to certain conditions pertaining to those Altech Autopage employees affected by the disposal.

In the meantime, Cell C has scotched rumours that its Autopage subscriber base has been acquired by GloCell Retail which is owned by Seventy2 Telecommunications. The operator says that it has in fact appointed GloCell as an official agent to service customers being transferred from Autopage, following approval by Altech.

Established in 2011, the GloCell Group supplies network products and services to thousands of channel partners. It is also expected to take over and rebrand many of Autopage's stores nationally from March 2016.

■ Telkom has reportedly cancelled its discussions with Oger Telecom to acquire Cell C after failing to agree a price. Telkom spokesperson Jacqui O'Sullivan told *Bloomberg*: "It has become clear that there is a difference between the parties on the assessment of value of the proposed transaction."

Nokia now controls Alcatel-Lucent

Nokia has completed its acquisition of Alcatel-Lucent. In January, the Finnish company said it had gained control after buying nearly 80 per cent of Alcatel-Lucent's outstanding shares through a public exchange offer.

Nokia first announced plans of the merger last year in a deal which, at the time, valued Alcatel-Lucent at EUR15.6bn *(see Wireless Business, Mar-Apr 2015)*.

Nokia Corporation – the name given to the merged entity – has now assembled its new leadership team and board of directors.

Rajeev Suri remains president and CEO while Risto Siilasmaa continues as chairman. Olivier Piou has been elected vice chairman.

Suri also chairs the group leadership team which, amongst others, includes: Samih Elhage as president of mobile networks; Basil Alwan as president of IP/optical networks; Ramzi Haidamus as president, Nokia technologies; Ashish Chowdhary as chief customer operations officer; and Marc Rouanne as chief innovation and operating officer.

SkyVision to use ABS-3A

SkyVision will support DTH services across sub-Saharan Africa using capacity on *ABS-3A*. Under the terms of the deal, it will help deliver two new Ku-band-based video platforms covering free-to-air channels and pay TV markets, including Francophone countries and South Africa.

SkyVision operates more than ten satellite platforms, a network of high-capacity fibre via its gateways in Africa, Europe, North America and the Middle East, as well as multiple POPs in Africa. It will connect this global hybrid system to the internet backbone via *ABS-3A*.

INVESTMENTS, MERGERS & ACQUISITIONS

Date	Buyer	Seller	Item	Price	Notes
22/12/15	O3b Networks	Various investors	Finance package	USD358m	Package comprises $184m in a covered COFACE bond, along with $143m in equity & $31m in debt. O3b is using the funds to purchase eight new satellites & launch four of them.
29/12/15	SpeedCast International	NewCom International	Company	NA	Satcoms provider NewCom specialises in the South & Central American regions. SpeedCast says the acquisition will strengthen its capabilities to serve & support its customers globally, including in the South American market where it did not previously have a direct presence.
3/2/16	Amadeus & MTN	Travelstart	Investment	USD40m	Sweden-based Travelstart claims to be Africa's leading online travel agency & operates in the continent from Cape Town. Plans to grow into new markets & also develop a strategic partnership with MTN to leverage its mobile network.
4/2/16	Cisco	Jasper Technologies	Company	USD1.4bn	Cisco says proposed acquisition will mean it can offer a complete IoT service solution that is interoperable across devices, & works with IoT service providers, application developers & an ecosystem of partners.
8/2/16	Orange	Millicom	Tigo DRC	USD160m	CEO Mauricio Ramos says proceeds from the sale will strengthen Millicom's balance sheet, enable it to reinvest in existing Latin American & African markets, thus improving earnings & cash flow, & reducing leverage.

The company claims this will enable "superior" distribution services of special events, news and DTH channels from Asia and Europe to Africa.

RSCC capacity to help Castor grow

Castor Networks will provide satcoms services in Africa using capacity on the Russian Satellite Communications Company's (RSCC) *Express-AM8*.

Under the terms of the contract, the European service provider will use two transponders. The company says it will utilise the new capacity to enable the continued expansion of its business in the maritime industry, and support existing contracts with private mining and energy companies on the continent.

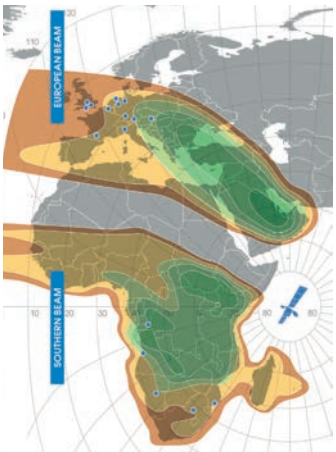
In order to ensure the highest quality and reliability of services provided via *Express-AM8*, RSCC says Castor has installed a nine metre antenna at its teleport based in Burum, Netherlands. Castor plans to continue upgrading its ground-based facilities to support the operation of its teleport with the RSCC fleet. RSCC will also use the teleport to provide services through its other satellites.

More space for Sat-Space

Sat-Space Africa has doubled the amount of leased capacity it uses on Gazprom Space Systems' (GSS) *Yamal-402* satellite. The capacity will allow the company and its customers to expand their capabilities to provide high-quality internet access on the continent.

Sat-Space Africa will use *Yamal-402*'s southern beam which covers sub-Sahara Africa, as well as a steerable beam pointed over Angola, Congo, DRC, Namibia, Tanzania, Zambia and neighbouring countries.

With offices in Mauritius and Windhoek, Sat-Space Africa offers IP connectivity solutions using fibre, satellite and other wireless networking technologies.



Sat-Space Africa will use *Yamal-402*'s southern and steerable beams.

Opengear opens up across SSA

Opengear is aiming to boost its operations in Africa following the signing of a distribution agreement with AxizWorkgroup. The contract covers the US-based vendor's entire product portfolio of critical infrastructure management solutions.

AxizWorkgroup offers various services to a community of more than 4,000 resellers across Southern Africa. It has five branches across the region along with additional branches in Namibia, Zambia, Botswana, Mozambique and Zimbabwe.

Under its agreement with Opengear, the company will provide a range of services including first line support, training and certification, stock holding and financing of solutions.

Opengear has also signed an OEM representative agreement with NetXcom Holdings. Describing itself as a "specialist go-to-market company", NetXcom focuses on networking, communication, specialised construction and alternative energy solutions for the continent.

NEW APPOINTMENTS

Date	Name	New employer	New position	Previous employer	Previous position
12/11/15	Amr Karim El-Leithy	Nokia Corporation	Head of Middle East & Africa	Alcatel-Lucent	President, Middle East, Turkey & Africa
11/1/16	Jon Eddy	VimpelCom	Head of emerging markets	dtac	CEO
13/1/16	Scott Jackson	Infinera	VP, subsea business group	4-D Security Solutions	CTO
15/1/16	Scott Willis	Zinwave	CEO	Goodman Networks	EVP & chief sales & marketing executive
19/1/16	Patrick Joggerst	GENBAND	EVP of global sales & marketing	GENBAND	CMO
2/1/16	Nick Watson	Ruckus Wireless	VP EMEA	VP EMEA	HP Networking
2/1/16	Jacques Kerrest	Intelsat	EVP & CFO	DPC Data Inc.	President
2/2/16	Ross Spearman	Tait Communications	CTO	Ericsson US	VP & CTO
10/2/16	Charlotte Thomsen	Danimex Communication	CEO	Danimex Communication	Deputy CEO
17/2/16	James Bayhack	CM Telecom	Country manager, South Africa	mBlox	Head of MEA region

LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
3/12/15	IDT Corporation	US	1Q16	USD	390.6	13.0	0.19	Compared to 1Q15, consolidated revenue decreased 5.4% while consolidated adjusted EBITDA increased 24.6%. Plans to launch new version of *Boss Revolution* app during 2Q16.
10/2/16	Millicom	Luxembourg	4Q15	USD	1,677	551	(0.33)	African revenue grew 13.4% to $258m. EBITDA was $17m after $26m of restructuring & one-off items. Subscriber increases came from Tanzania (close to 450,000) while Chad returned to growth after two negative quarters.
17/2/16	Eutelsat	France	1H16	EUR	774.4	600.3	1.09	Revenue & EBITDA are up 7.1% & 7.3% respectively. Recently launched *8 West B* for MENA region, *115 West B* for Americas, & *36C* for Russia and sub-Saharan Africa are expected to help the company achieve its full year objectives.
22/2/16	Intelsat	Luxembourg	4Q15	USD	571.3*	443.5*	0.55*	*Preliminary results. Net income expected to be $49.1m, prior to the effect of any impairments, for the three months ended 31 December 2015. This compares to $16.2m for the same period in 2014. EBITDA for 4Q14 was $462m.

UNLOCKING INTERNET ACCESS BY BRINGING MOBILE BROADBAND TO EVERYONE

More than 50% of the world's population still lack internet access. But, in South Africa, mobile subscription penetration has already passed the 100 percent mark and the country first introduced 4G LTE back in 2012. Despite this early start, an October, 2015 report on the Mobile Economy in Sub-Saharan Africa, issued by GSMA, the global association representing mobile operators, noted: "In the technology-leading markets such as Angola, South Africa and Zimbabwe, 4G will account for around one fifth of total connections by 2020." That being said, the GSMA also forecast that: "South Africa will account for more than half of new 4G connections over the next five years, reflecting an established 4G ecosystem and continued investment in infrastructure rollout by operators."

While LTE network coverage and subscriptions will continue to grow, LTE is not the only mobile broadband option available to unlock internet access for the more than 50% of South African households that still go without, according to May, 2015 data from StatsSA, 3G technology, known as WCDMA (for Wideband Code-Division Multiple Access) is another, complementary option. According to the GSMA report, the principal drivers of 3G uptake are the fact that network coverage is expanding, device prices are falling, and the technology is still being launched in new markets.

So, how can mobile operators leverage the reach, maturity and increasing affordability of today's 3G technology to deliver mobile broadband for everyone, while continuing to invest in their LTE rollouts? And, of course, how can operators increase this mobile broadband access and coverage cost-efficiently in an era when mobile broadband demand is growing at a faster rate than associated revenues.

It boils down to three key focus areas: optimizing the performance of the current mobile network infrastructure; efficiently scaling these improvements throughout the network;

Henrik Linnet, Head of Practice, Mobile Broadband, Ericsson sub-Saharan Africa

and looking for innovative ways to expand mobile broadband coverage by leveraging existing assets.

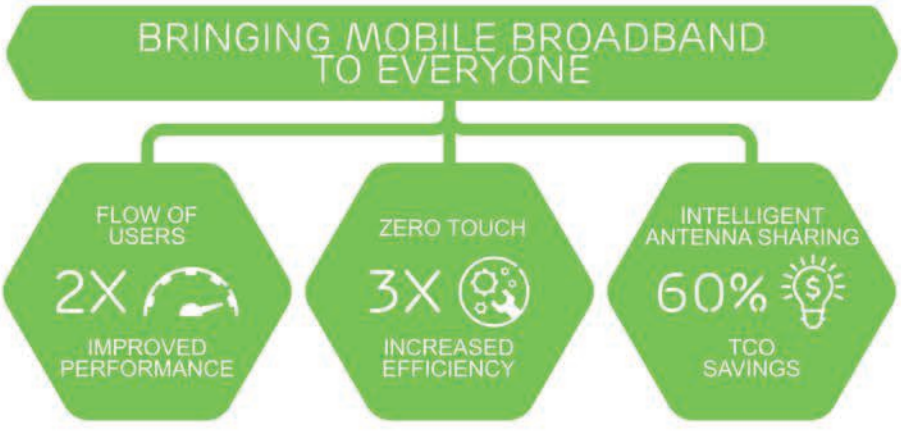
To optimize network performance in a WCDMA coverage area, so that it can satisfy demand from a growing number of smartphone users, mobile operators can use an approach called "flow of users". Essentially, this amounts to organizing the flow of network traffic to optimize the balance between overall user count and individual user experience, through a combination of software features and network settings enabled on the current network infrastructure. Using this systematic approach with mobile operators, Ericsson has been able to double mobile broadband downlink throughput and increase data uplink throughput by up to 200% while improving the quality of voice services, even in highly dense urban areas. And, these performance improvements are achieved with no additional hardware requirements.

Efficiently enabling these performance improvements throughout the network then becomes a case of industrializing the flow of users approach, and applying it to cell sites throughout the network. By doing this, the network becomes self-optimizing, introducing a "zero touch" period into the network. This zero touch period minimizes the requirements for the operator to configure and tune the network, thereby reducing associated operating costs, while still realizing optimal network performance and user experience.

Having upped the network performance and efficiency to address more users in a given 3G coverage area, the next logical step is to look at ways to expand the existing mobile broadband coverage footprint. In 2014, population coverage of WCMDA/HSPA networks in Sub-Saharan Africa was just above 25 percent, compared to global population coverage of around 65 percent. On the other hand, coverage of GSM networks – which support basic mobile telephony services such as voice, SMS and low-speed data – sits at around 70 percent. Today, there are hundreds of thousands of legacy GSM sites worldwide. Multi-standard mobile networks and software-enabled upgrades have already lowered the mobile broadband introduction threshold on legacy GSM sites. Now, a new concept, called Intelligent Antenna Sharing, enables operators to re-use their existing GSM installed base equipment for WCDMA. So, operators re-farming all or part of their GSM spectrum for WCDMA can re-use their antennas, site power, transport and microwave to achieve up to 60% savings in their total cost of ownership compared to building a conventional 3G site.

LTE networks will continue to roll out in South Africa, and across the continent. LTE technology will evolve to become part of future 5G networks. By optimizing the performance, efficiency and reach of their 3G mobile broadband coverage in areas where LTE is not available, operators can complement their LTE rollouts with WCDMA to bring mobile broadband to everyone.

www.ericsson.com/spotlight/networks



Improving the performance and efficiency of 3G WCDMA networks can enable mobile operators to give more people access to the internet.

ERICSSON

Full potential of mission-critical LTE now 'unlocked' for public safety

Nokia Networks has unveiled a portfolio of products for an end-to-end public safety network using LTE. It says its fully featured public safety LTE voice and data communications solutions are 3GPP compliant, including QoS, high availability, mobility, security and resilient IP connectivity.

MANUFACTURER:
Nokia Networks

PRODUCT:
Public safety LTE network

MORE INFORMATION:
www.nokia.com

The network is built on a wide variety of Nokia products which include its: RAN; EPC; VoLTE platform; IMS; *Core in a Box*; management solutions; self-organising networks; and *Liquid* technology.

At its heart is the vendor's LTE *Network in a Box*, or *NIB*. This offers standard authorised IP connectivity and can be installed in a vehicle, such as an ambulance or a fire truck, to create what's claimed to be a reliable 4G network in minutes in areas without cellular coverage.

Nokia says the *NIB*'s computing capabilities enable the integration of new applications at the edge of the mobile network. These include push-to-talk, group calls and messaging, location tracking, as well as advanced broadband functionalities such as situational awareness and real-time video streaming.

The firm says the entire infrastructure provides end-to-end security for public safety applications, protecting

devices and networks. It adds that the solution is supported by a "comprehensive" partner portfolio including devices, applications, and interworking functions for legacy systems such as TETRA and P25.

Hytera DMR handsets support RFID

Hytera has expanded its portfolio of critical comms devices with the *PD4* series. The new line-up includes two compact handsets, the *PD405* and the *PD415*, which both support conventional DMR as well as analogue radio.

MANUFACTURER: Hytera

PRODUCT: PD4 series

MORE INFORMATION:
www.hytera-mobilfunk.com

One of the key features of the series is an RFID reader module which is integrated into the *PD415* as standard. The radios can then be used in Hytera's *Patrol* system, enabling users such as security guards to scan distributed checkpoints in a building and send their current location to a control room where their positions are monitored in real-time on a digital map.

As well as the *PD415*, the *Patrol* system includes management software, RFID identity cards, and RFID check points. The radio itself also has an open application programming interface for RFID-based third-party developments .

Both the *PD405* and the *PD415* support mixed analogue and digital channel operation, pre-programmed text message transmission, and feature TDMA direct mode which

allows up to two simultaneous calls, even without repeaters. The *PD404* is dust- and waterproof according to IP55, while the *PD415* is IP54 rated.

JMA unveils high power remote for DAS

JMA Wireless has introduced the high-power *UltraWatt* remote unit to its *Teko* distributed antenna system (DAS). It reckons the new unit has a 390W peak power capability, and is ideal for supporting multi-operator, multi-technology applications that serve large, high-capacity environments.

Unlike other offerings currently in the marketplace, JMA says the *UltraWatt*'s EVM (error vector magnitude) performance is 256 QAM ready, and claims it provides robust coverage and capacity with one of the smallest footprints in the industry. It claims the unit represents the best performing high-power remote in the industry with EVM below one per cent.

MANUFACTURER:
JMA Wireless

PRODUCT: UltraWatt

MORE INFORMATION:
www.jmawireless.com

JMA adds that the *UltraWatt* leverages advanced amplifier techniques that enable the handling of average power versus peak power considerations, thereby optimising for peak to average ratio results.

Ensuring complete control of M2M and IoT services

Starhome Mach says its new M2M portfolio provides operators, system integrators and service providers with new ways to globalise the Internet of Things (IoT), and differentiate service levels on an individual device level basis.

According to the mobile inter-carrier services specialist, IoT/M2M visibility and control is a key requirement that many operators are lacking today. The firm reckons its new OSS/BSS software empowers operators to identify inbound devices and take appropriate action. This ranges from offering the host differentiated service for the device, to steering it away from the network if it is poorly configured or has no commercial value.

Starhome Mach says it provides further differentiation of services with multiple coverage and technology choices. For example, providers can decide upon SIM localisation or optimised roaming routes depending on the enterprise cost profile and quality requirements.

The company provides mechanisms which its claims not only limit risk but also maximise margins for the operator and enhance the service provided to both machines and people.

MANUFACTURER:
Starhome Mach

PRODUCT:
M2M/IoT portfolio

MORE INFORMATION:
www.starhomemach.com

Point-to-multipoint platform for challenging RF areas

Cambium Networks has launched a 900MHz version of its flagship *PMP 450* point-to-multipoint wireless platform. It says the new *PMP 450i* access point allows for deeper frequency propagation to suit the needs of rural broadband deployments, SCADA and sensor data backhaul, and even video surveillance applications.

According to Cambium, the propagation characteristics of 900MHz frequencies "outperform" many others and are ideal for connecting subscribers and sensors that are difficult to reach. It says the *PMP 450i* has the same capacity as its other *PMP 450* radios, and provides the infrastructure needed to deploy networks in non-line-of-sight and remote environments.

Cambium says users of its *PMP 100* systems can now upgrade and unlock 900MHz capacity with the *PMP 450* platform. "We expect to achieve three to four times the amount of available bandwidth in the same channel size, even in the same noisy and interference-prone environments," claims the firm.

The *450i* is said to offer 100Mbps subscriber capacity in a 20MHz channel. It is 802.3at compatible, includes an auxiliary port, and customers can re-use the 30 VDC power supplies common to the *PMP 100*.

MANUFACTURER: Cambium Networks

PRODUCT: PMP 450i

MORE INFORMATION: www.cambiumnetworks.com

Ka-band antenna aims to flatten costs

C-COM Satellite Systems is planning to launch a new COTM (comms-on-the-move) flat panel antenna. It says the *iNetVu inMotion* leverages the broadband speeds offered by high throughput satellites (HTS) in Ka-band to provide low-cost, always-on connectivity into a moving vehicle.

The Canada-based company says COTM antennas are traditionally "expensive, elaborate and difficult to support". It says most are available mainly in Ku-band, and are equipped with pricey, high-powered transmitters that deliver limited amounts of bandwidth.

C-COM hopes its new antenna will open up land-based COTM markets such as buses, trains, military vehicles and many others that require broadband internet via satellite while on the move.

The *iNetVu inMotion* will use next-generation HTS which are capable of delivering significant amounts of bandwidth at a fraction of the price. C-COM claims it will cost significantly less than a Ku-band COTM antenna and deliver significantly more bandwidth to users such as governments, broadcasters, oil and gas companies, first responders, etc.

Full production of the *iNetVu inMotion* antenna system is expected to begin in 2Q16 following type approvals on Ka-band services for use of the system across the globe.

MANUFACTURER: C-COM

PRODUCT: iNetVu inMotion

MORE INFORMATION: www.c-comsat.com

Access point and backhaul in a single unit

Proxim Wireless has combined a WLAN access point with a carrier class wireless point-to-point backhaul radio and integrated them into a single ruggedised enclosure for outdoor deployments.

The *ORiNOCO QB-9100* features Proxim's *ORiNOCO* 2.4GHz AP and *Tsunami Quickbridge* 5GHz PTP backhaul radio. The company says combining the two functions into a single unit is designed to reduce hardware footprint, capital outlay, and recurring site rental costs.

QB-9100 products can all be centrally managed using *ProximVision Advanced*, Proxim's hybrid controller-network management system. The firm says this gives network administrators "great" flexibility and control of individual units in hetnet environments. It enables rapid deployments by automating configuration processes, exhaustive software-based device configuration capabilities, and easy upgradability.

With its very high throughput 866Mbps data rate, jumbo frame support, and IEEE 1588v2 synchronisation, Proxim says the *QB-9100* products provide all the necessary features and capacity for backhauling small cells. Moreover, the integrated 802.11n AP enables the offload of data to Wi-Fi.

MANUFACTURER: Proxim Wireless

PRODUCT: ORiNOCO QB-9100

MORE INFORMATION: www.proxim.com

ALSO LOOK OUT FOR

Perpetual power using energy harvested from RF signals

A UK company has launched what's claimed to be revolutionary new technology that turns RF waves into usable electricity to charge low-power devices.

'Freevolt' was developed by an international team from Drayson Technologies and Imperial College, London. It harnesses the unused wireless energy generated by transmission signals on mobile, Wi-Fi and broadcast networks.

Paul Drayson, CEO and chairman of Drayson Technologies, says Freevolt solves the problem of harvesting usable energy from a small RF signal. "Companies have been researching how to harvest energy from Wi-Fi, cellular and broadcast networks for many years. But it is difficult because there is only a small amount of energy to harvest and achieving the right level of rectifying efficiency has been the issue – until now."

The Freevolt harvester comprises a multi-band antenna and rectifier which is said to be capable of absorbing energy from multiple RF bands at almost any orientation. It's claimed the small, lightweight design is scalable and suitable for a range of uses, such as low-energy devices in the Internet of Things which can be perpetually powered.

Drayson will be the first company to market the patent-pending technology which is now commercially available for license to the international developer and business communities.

The first commercial application of Freevolt is the *CleanSpace Tag*, a totally portable personal air pollution sensor that was co-developed with the PA Consulting Group. The idea behind *CleanSpace* is to create a crowd-sourced network of personal air sensors, initially across the UK before expanding to major cities across the world. The aim is to start a social movement where people can connect and work together to reduce air pollution.

Rocket power

OneWeb and Airbus Defence and Space have set up a new joint company to design and build 900 satellites as part of an ambitious mission to eliminate the digital divide by 2019.

With a host of satellite launches scheduled for 2016 and beyond, RAHIEL NASIR looks at what's on the horizon for Africa.

2016 will prove to be a milestone year for Intelsat as it has now launched the first satellite to use *EpicNG*, its much vaunted platform for high-throughput satellites (HTS). *Intelsat 29e* went up on 27 January. While it is aimed at the Americas and the North Atlantic region, it will be followed during the second half of 2016 by *Intelsat 33e* and *Intelsat 36*, as well as *Intelsat 35e* in 2017. All three will cover Africa.

Located at 60°E, *IS-33e* will offer C-band coverage for sub-Saharan Africa and spot beams, Ku-band multi-spot and transatlantic beams, and a Ka-band beam. It will also serve Europe, the Middle East and Asia. *IS-36* will feature Ku- and C-band transponders, and will be co-located with *IS-20* at 68.5°E, Intelsat's premier DTH neighbourhood in Africa. *IS-35e* goes up to 325.5°E next year from where it will offer Ku- and C-band spot beams for the continent.

Space age platforms

EpicNG is designed to use C-, Ku- and Ka-bands, wide and spot beams, as well as frequency reuse technology to provide a variety of customer benefits. The platform is fully integrated with Intelsat's existing fleet and global *IntelsatOne* terrestrial network. The company reckons it provides "unprecedented adaptability" for a customer's network configuration and topology, allowing them to leverage installed hardware and to operate mixed spectrum networks.

One of *EpicNG*'s features is an all-digital payload design that was initially developed by Boeing for use on the US Department of Defense's Wideband Global SATCOM satellites. Intelsat says it allows connectivity in any bandwidth increment from any beam to any beam, and means independent frequency selection of the uplink and downlink.

The company goes on to claim that *EpicNG* will provide three to five times more capacity per satellite than its traditional fleet. It adds that the expected 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.

Gilat Satellite Networks (GSN) is also aiming to break new ground in the market with its own platform. Using software-defined networking, the company says its distributed *X-Architecture* offers a single system for satellite operators and service providers to address the growing demands of HTS.

According to the company, the programmable cloud-based architecture supports networks of any size, and uses traditional wide beam and high-throughput satellites to deliver managed services in hosted or virtual business models.

GSN says *X-Architecture* has been built to support dynamic on-demand services, and features unique cloud bandwidth management capabilities which allow both mobility and VNO services over spot beam satellites.

The firm adds that flexibility is enabled by a distributed architecture which separates data centre functions from baseband elements. It claims the network is easily controlled by *TotalNMS*, its global, unified and centralised network management system.

Not one to be left behind, Eutelsat is also developing a software-based system. It says *Quantum* will be the first universal satellite to repeatedly adjust to business requirements and be able to operate in any geographic region in the world.

The company claims its programme represents a first in the commercial satellite industry by enabling the complete electronic synthesis of 'receive' and 'transmit' coverages in Ku-band, including on-board jamming detection and mitigation.

Using *Quantum*, clients will be able to actively define the performance and flexibility they need. Eutelsat says it will give them access to premium capacity through footprint shaping and steering, power, and frequency band pairing. The first *Quantum* class satellite will be manufactured by Airbus Defence and Space (ADS) and is expected to launch in 2018.

Meanwhile last August, Eutelsat launched its 38th satellite in the shape of *EUTELSAT 8 West B*. Two months later, the spacecraft entered commercial service and is now already said to be broadcasting TV channels to more than 52 million homes in North Africa and the Middle East.

Equipped with 42 Ku- and 20 C-band transponders, *EUTELSAT 8 West B* is co-located with a constellation of satellites operated by Eutelsat and Nilesat at the 7/8° W neighbourhood.

Eutelsat says it completed a "seamless" overnight upgrade of more than 210 television channels onto the new satellite from two of its satellites located at 7/8° W. *EUTELSAT 8 West A* and *EUTELSAT 8 West C* have now been relocated, enabling the company to further optimise its fleet.

Going electric

Looking further ahead, Eutelsat's next step in its broadband strategy for Africa includes a new-generation HTS from Thales Alenia Space (TAS). To be launched in 2019, the all-electric spacecraft will be the first to use Thales' new *Spacebus NEO* platform.

Eutelsat says the baseline mission will be to provide 75Gbps of capacity across a network of 65 spot beams that together provide "quasi-complete" coverage of sub-Saharan Africa. It says the satellite will address consumer and enterprise broadband services using dishes from around 75cm. It will also be used for community networks connected to Wi-Fi hotspots, mobile backhauling and rural connectivity.

Eutelsat's African broadband business, including sales, will now be managed by a newly created London-based affiliate.

According to TAS, *Spacebus NEO* offers a fully modular platform with "a smart Ka-HTS payload for unrivalled flexibility and maximum throughput". It adds that the all-electric version of the platform combines high efficiency and light weight, and will also mean that Eutelsat benefits from more cost-effective launch options.

The all-electric *NEO* is currently capable of carrying payloads weighing more than 1,400kg, and with power exceeding 16kW. During the coming months, Eutelsat has the option to upscale the satellite to significantly increase overall throughput and service areas. Starting this year, TAS says *NEO* will be able to handle payloads up to 2,000kg, with "record power" of 20kW.

Following last year's launch of *ABS-3A* – one of the world's first satellites to use an all-electric propulsion system – ABS is now finalising plans for *ABS-2A*. It is expected to lift-off on a SpaceX *Falcon 9* rocket in the coming months, and like *ABS-3A* it has been built using Boeing's all-electric *702SP* platform.

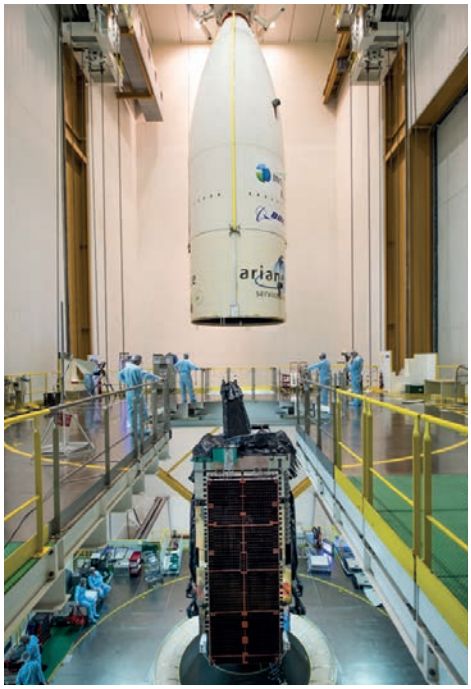
ABS-2A will be co-located with *ABS-2* at 75°E from where it will serve Africa, the Middle East, South and South East Asia, and Russia. It is designed with 48 transponders and five dedicated high powered Ku-band beams, and ABS says it is suitable for DTH services, VSAT operators, as well as maritime and mobility solutions.

Yahsat continues its preparations for the launch of its third satellite which is scheduled for the final quarter of 2016. The UAE-based firm says the Ka-band *Al Yah 3* will bring additional connectivity into 18 African countries for consumers and enterprises. The spacecraft is currently being manufactured by Orbital Sciences Corporation using its *GEOStar-3* platform and hybrid electric propulsion system. Arianespace has been awarded the launch contract.

Last November, Yahsat announced it had signed an agreement with Hughes Network Services for the delivery of its *JUPITER* system and related network operations services in support of its expansion across Africa in 2017. Hughes will supply gateways and broadband terminals together with its OSS and BSS solutions as turnkey outsourced managed services.

Yahsat CCO David Murphy said the partnership signifies a "major milestone" for the successful rollout of services from *Al Yah 3*: "Our long-term relationship with Hughes Network Systems will allow Yahsat to better address evolving market requirements in Africa, from broadband access to mobile backhaul for telcos and ISPs. Moreover, as the new Ka-band coverage becomes live, the *JUPITER* platform will ensure consistency and smooth transition across the respective countries."

New satellite-based internet provider OneWeb reckons it will "fully bridge" the digital divide by 2019 with its innovative system of low Earth orbit satellites *(see News, May-Jun 2015)*. It has now joined forces with Airbus Defence and Space to create the OneWeb Satellites company. Under their joint venture, the two partners will design and build 900 satellites for OneWeb as well as spacecraft for other future constellations marketed by ADS.



The payload fairing being positioned over *Intelsat 29e* which is integrated to the top of an *Ariane 5* launcher. It went on to a successful launch on 27 January 2016, and is the first of Intelsat's satellites to use the revolutionary *EpicNG* HTS platform.

OneWeb Satellites will undertake all design activities for the entire OneWeb fleet. The manufacture of the first 10 prototypes will take place at a newly set-up production line at ADS' factory in Tolouse, France, with mass production of the operational satellites planned for North America.

Each satellite will weigh less than 150kg and operate at an altitude of somewhere between 99 to 1,200 miles. They will be launched by Arianespace and Virgin Galactic starting from 2018, and reach their orbital positions using electrical propulsion.

Other birds to watch for

The Russian Satellite Communications Company (RSCC) added two more orbiters to its fleet with the launch of *Express-AMU1* and *Express-AM8*. Of the 13 spacecraft it now operates under its own name, six have dedicated footprints over Africa.

Express-AMU1 was launched to 36°E from the Baikonur Cosmodrome on 25 December 2015. Following the successful completion of in-orbit tests, it is expected to enter commercial service in February. It carries a Ku- and Ka-band payload aimed at developing broadcasting and broadband services in sub-Saharan Africa and the European part of the Russian Federation.

Eutelsat is leasing transponders on *Express-AMU1* to provide follow-on and expansion capacity for *EUTELSAT 36A*. It will commercialise its services on the Russian spacecraft under the name *EUTELSAT 36C*.

Express-AM8 went live at the start of December following its launch two months earlier. Orbiting at 14°W, it features fixed C-band beams for Africa and the Americas, plus fixed Ku-band beams for Africa, Europe and the Middle East. The new satellite will support broadcasting, data and internet access, corporate and agency-owned communications networks, as well as communications services for maritime and other users in the mobility sector.

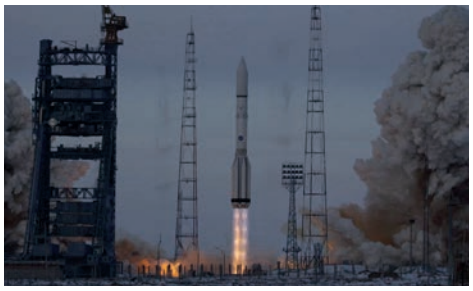
On 10 November 2015, Arabsat launched *Arabsat-6B (BADR-7)*, the first of the sixth generation of satellites in its fleet. From its orbital location at 26°E, *BADR-7* will provide telecoms and DTH broadcast services for the Middle East, Africa and Central Asia. It is fitted with 27 Ku-band transponders and offers multiple Ka-band spot beams. The operator now has six spacecraft in orbit and all of them cover Africa.

Luxembourg-based satellite operator Fibersat has already signed up to use Ka-band capacity on Arabsat's next-generation satellites to provide extensive coverage over the continent using an innovative new system. The company is planning to launch its *Fibersat-1* HTS payload in 2018. This will use beams that are smaller than conventional geo satellites but are claimed to be capable of

delivering up to 100 times more bandwidth. Fibersat claims its optimised payload design will enable satellite services to be offered at the cost of fibre throughout Africa.

For Arabsat, the deal means it will be able to expand its coverage across the region. Speaking last year, CEO Khalid Balkheyour said: "This cooperation with Fibersat will position Arabsat as a major service provider to the growing markets of sub-Saharan Africa, with a portfolio of broadband and telecom services. By employing an innovative payload design in Ka-band, Arabsat will have blanket coverage over the MEA region."

Thai satellite operator Thaicom is planning to launch its second satellite for Africa. *THAICOM 8* will be located at 78.5°E and will also provide services to Thailand and India via a Ku-band payload comprised of 24 transponders. It is being built by Orbital ATK and will be launched from a SpaceX *Falcon 9* rocket later this year. *THAICOM 6* – also known as *AFRICOM 1* – was launched in 2014 and offers C-band capacity to the continent.



Clockwise from top left: RSCC's *Express-AMU1* is rolled out to the launch pad at Baikonur; after leaving Earth in 2011, *AMOS-5* is now lost in space; Thales Alenia Space says its all-electric *Spacebus NEO* platform will be able to handle payloads with record power of 20kW; *Al Yah 3* will bring connectivity to 18 more African countries for Yahsat.

What happened to AMOS-5?

As well as satellites going up, Africa was hit by the tragic news of a satellite going down. At around 06.00 GMT on 21 November 2015, Spacecom lost all communications and signals from *AMOS-5* which covered the continent from 17°E. In the days that followed, the company said it was working around the clock to re-establish links.

But in documents that have been filed with the Tel-Aviv Stock Exchange over the last few weeks, Spacecom said *AMOS-5* had suffered an "absolute failure" and was now a "total loss". The operator has filed an insurance claim for around USD158m which it believes will be paid, hopefully during the first quarter of this year.

AMOS-5 was built around the *Express-1000H* platform by Russia's Information Satellite Systems (ISS)-Reshetnev Company. It was launched in 2011, and had an expected lifespan of 15 years.

In mid-December, ISS-Reshetnev issued a press statement which said that it had set up a commission, headed by its deputy general director for quality Yuriy Maximov, to search for possible causes of the failure.

According to the telemetry data that *AMOS-5* had been sending until the moment it failed, ISS-Reshetnev said there were no signs of troubles and that all systems were running nominally.

It added that while the satellite remains at its assigned orbital position as seen from the ground, it has completely lost power and its further operation is therefore not possible.

The statement continued: "The most likely cause is the total failure of its onboard electric supply system or the 100V cable network bus. Or it is also possible that the satellite failed due to the external exposure of a critical element of the power supply system or the onboard 100V cable network bus to high-energy cosmic ray particles. Among other possible causes are the problems in the satellite's tracking, telemetry and command system or its payload."

ISS-Reshetnev's commission continued its investigations into the root causes of the malfunction, and its assessments included data analysis received from Thales Alenia Space which built *AMOS-5*'s payload, tracking, telemetry and command system. The Russian manufacturer was due to submit a report to Spacecom at the end of last year but the details of this have not been made public, and are unlikely to be.

In the meantime, Spacecom told *AMOS-5* customers that it would work with them to restore their services and negotiate deals on their behalf to switch to other satellites operators. For instance, the company has extended an existing framework agreement it has with Eutelsat for the cross-commercialisation of Ku-band capacity on *EUTELSAT 16A* which is positioned at 16°E.

SpeedCast International said it was able to restore most of its customers' links within 48 hours after the loss of *AMOS-5*. It migrated users to MEASAT's *AFRICASAT-1a* and Intelsat's *10-02*. German operator CETel said it was also standing by to offer contingency services in Africa with available capacity on various satellites from Arabsat, Intelsat, SES or ABS.

According to local press reports, Spacecom said the total loss of *AMOS-5* will have a "negligible effect" on its equity. The company remains on track to launch *AMOS-6 (see News, Sep-Oct 2015)* this year although it is now expected to go up in May instead of around March as originally planned.

AMOS-6 has not been developed by ISS-Reshetnev. Instead, it has been built by Israel Aerospace Industries which was also responsible for the three remaining satellites Spacecom currently has in orbit. ■

In 2014, a SpaceX *Falcon 9* was used to launch *AFRICOM 1*, Thaicom's first satellite for Africa. The vehicle will also be used for its second, *THAICOM 8*, as well as ABS's *ABS-2A*, both later this year.

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Welcome to the middle of nowhere

TETRA is helping to keep workers safe at the Namdeb Diamond Corporation, a joint venture between the Namibian Government and De Beers.

How PMR technologies are playing a unique role in providing mission-critical communications for remote operations in the mining and energy industries.

Certain industrial sectors have unique communication requirements that cannot be met using conventional technologies, and they therefore require a more specialised approach This is certainly true of companies operating in mining, utilities, as well as oil and gas. Working in remote locations, often in extreme climates, together with constant exposure to hazardous environments, is usually the norm in these industries. What's more, any downtime caused by a communication failure is likely to cost. Big time.

Critical communication technologies therefore have a crucial role to play in the mining, utilities and energy sectors, and South Africa-based Altech Alcom Matomo (AAM) is one company that can offer expertise in this area.

As an example, it recently announced the completion of a digital communications network rollout for the Namdeb Diamond Corporation, a joint venture between the Namibian Government and De Beers. The heart of the company's excavation activities are along Namibia's south west coast, while its main land-based operations are in Oranjemund, as well as in satellite mines near Lüderitz and along the Orange River.

Namdeb employs around 1,600 people and states that safety is its number one priority. As a testament to its "Zero Harm" policy, the company says it has continuously retained its Occupational Health and Safety Audit Standard and ISO 14001:2004 certifications.

In an effort to further enhance safety and security at its mines, Namdeb implemented an integrated digital communications network from Altech Alcom Matomo, a division of Altech Radio Holdings. AAM says it was chosen for the network upgrade because of its "proven" track record of implementing similar solutions in the public and private sectors. With safety and reliability as key components of the tender request, the firm claims it "met and exceeded" those expectations with the deployment of Motorola's TETRA 8.1 platform.

"Namdeb's two principal safety concerns are the mineworkers themselves and the rough diamonds recovered from the mining operations," said AAM MD Brett Nash. "A reliable communications system will enable Namdeb's mineworkers to be in touch with the central control system should they find themselves in a dangerous predicament."

Other than the planned analogue-to-digital migration, Namdeb also required an integrated radio network to ensure effective and secure inter-communication between personnel, departments, and mining areas. AAM's solution here centred on 13 remote TETRA sites spread throughout the mine. In addition, the network consists of one central switching office, two microwave link sites, three emergency control centres, one network control centre, and 1,500 two-way radio users.

The digital network and two-way handsets connecting users have proven to be reliable in an environment that is severe, dusty and corrosive. Jan Sutherland, Namdeb's project manager, strategic projects, said: "Since the nature of the terrain and mining conditions determine the quality of the communications network required, we had to be particularly strategic in our approach, ensuring the equipment rolled out would be both sufficiently durable and resilient."

Sutherland added that nearly 70 per cent of the project was implemented as a 'green site' with solar power supplying electricity to the microwave and TETRA transceiver equipment.

Namdeb's first sites went live in May 2014, and the project was completed in its entirety in December 2014. Around ten months later, AAM said a network performance report revealed system availability of 99.999 per cent, with nearly one million calls made during one month alone.

Emcom powers Eskom

Eskom is South Africa's primary electricity supplier and is responsible for around 95 per cent of the country's electricity requirements – claimed to be more than half of the power generated in the whole of the continent. The company handles the generation, transmission and distribution of electricity from its 24 power

stations with a combined nominal capacity of 40,585 megawatts, and more than 16,442 miles of transmission lines.

The maintenance and repair of this huge electricity transmission network requires an efficient communications system capable of covering the vast areas supplied with power, allowing for rapid deployment of repair crews when required. Eskom has its own radio infrastructure, made up of a conventional all-informed radio network that covers the country. The network is divided into seven regions and each one has a central control point to which all repeaters in a region are connected via various bearers. However, all job dispatching was being carried out via voice communications. There was no vehicle-location system in use which would have allowed a service unit closest to the job site to be dispatched.

With a modified Tait-based radio system, South African power company Eskom now has a more efficient comms network that enables rapid deployment of repair crews.

As a result, Eskom deployed its *SMK* platform, a mobile data system that was specifically developed for it by the R&D division of Emcom Africa. The system is made up of a combination Mobile Data Terminal (MDT)/enhanced control head, a radio controller/modem, and a GPS unit fitted to Tait mobile radios which have specially modified firmware. Emcom is Tait's exclusive distributor in South Africa, and the two companies have been strategic partners for many years.

Eskom's existing radio communications infrastructure was used without modification except for the addition of modem arrays at the control points. The Tait mobile radios it had been using were retro-fitted with the data equipment as required, and a number of new mobile radio units were also supplied to make up the 2,000 needed.

The computer-aided dispatch system used by Eskom was linked to the new mobile data system, enabling automatic job allocation and the recording of progress milestones. Vehicle position information was also made available to the company's GIS system, allowing more efficient allocation of technical resources.

After the system was made operational, Eskom reported that voice traffic on its radio network was drastically cut and efficiency of job turnaround increased by some 40 per cent. Misunderstandings between dispatcher and operator have been significantly reduced with the aid of text dispatching, and operator security has increased thanks to a panic facility that is now available should the need arise. A noticeable improvement in customer satisfaction has also been recorded.

VALE gets on track with TETRA

Global mining company VALE says it has a mission to transform natural resources into prosperity and sustainable development. The Brazil-based company has historical ties with Mozambique, and has been contributing to the development of the country's mining industry since 2004 after winning a deal to implement the Moatize Coal Project. In 2012, the Moatize Mine completed its first full year of operation and produced 2,501 million metric tons of metallurgical coal and 1,267 million metric tons of thermal coal.

The town and district of Moatize is in Tete, a huge province in north-western Mozambique. VALE is now investing heavily in the area in order to transport Moatize's output. Working with the government, it is currently building the Nacala Corridor, a new railway system linking Moatize to the Port of Nacala which is said to be the deepest port in Southern Africa.

The 912km-long railway corridor will pass through Mozambican jungle and Malawi before reaching a new maritime terminal at Nacala on the Indian Ocean. VALE says it will be able to carry more than 20 million tons of coal a year.

Given the railway's strategic importance, a control system was needed that would allow security and train speeds to be increased, thereby reducing operating costs for freight transport.

CRITICAL COMMS SPENDING IN OIL & GAS SECTOR FORECAST TO REBOUND IN 2017

Critical communications investment in the global oil and gas sector will reach more than US1bn by 2019, according to IHS.

The research firm defines critical comms as an integration of licensed mobile radio (LMR) terminals, infrastructure, accessories, command and control room technologies and services, and broadband LTE hardware and devices.

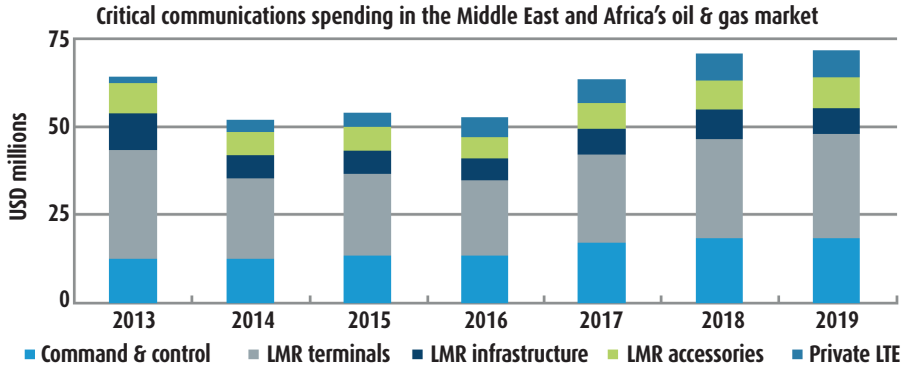
In its *Critical Communications in Oil & Gas – 2015* report published at the end of last year, IHS estimated that revenues for critical comms in the Middle East and Africa's oil and gas sector were around USD54m in 2015. This includes command and control technologies, LMR technologies, and private LTE eNodeBs and devices.

The company expects MEA's total market to grow at a CAGR of seven per cent over the next few years. It says command and control and LMR terminals are the technologies that make up the biggest portion of revenues, together accounting for more than 65 per cent of the region's market.

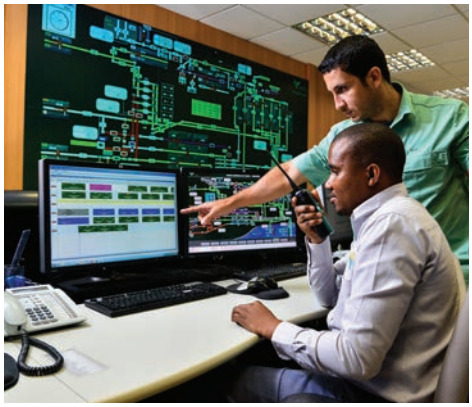
IHS believes the overall global market will fluctuate between 2015 and 2019, as revenues are heavily dependent on capex spending, and oil and gas projects. It points out that 2014 and 2015 were "tough" years for the critical comms market in the oil and gas sector, especially with the slump in oil prices.

However, while investment in the sector continues to vary over the forecast period, IHS predicts a "strong rebound" for 2017 and beyond as capex picks up and stalled projects are restarted. The analyst says many oil and gas facilities will be in need of more modern communications as upgrades to these technologies were pushed out to save costs.

It adds that other trends – such as the transition to digital protocols, broadband network deployments and leasing equipment – are also changing the marketplace.



Because investment in the region was quite high during the economic recovery from 2011-2013, IHS says 2014 saw some reduction in purchases. But it predicts investment will pick up next year.



Teltronic's *CeCo-TRANS* system is used by control centre operators at Nacala Port in Mozambique. The TETRA app displays train fleet positions in real time.

The control system had to be supported by a robust and reliable communications platform. VALE therefore chose TETRA to provide voice and data communications. As a system based on radio technology, the use of TETRA means less wayside equipment is needed for the network which, given the characteristics of the environment, would have been difficult to deploy and expensive to maintain.

Spain-based Teltronic (which was acquired by Sepura last year) is providing the TETRA system based on its *NEBULA* infrastructure. The vendor claims its equipment's total Ethernet IP architecture provides high flexibility in the solution design, as well as easy management and maintenance.

The infrastructure part is composed of a central node which controls more than 50 TETRA base stations installed along the entire rail route. The backbone network used for the base stations is based on microwave links. Teltronic says mobile 10W coverage is 99.6 per cent, while overlapping mobile 10W coverage is 90.2 per cent.

The company also points out that each TETRA base station has been integrated within a special cabinet ready to support extreme environmental conditions. Additionally, in order to provide a higher level of network availability, a satcoms system has been installed as a backup to TETRA.

One of the first challenges Teltronic had to overcome was to work closely with Siemens, the rail system developer. VALE says an integrated solution was required, and engineers from Teltronic and Siemens therefore had to work together to carry out a coordinated project. The railway's Positive Train Control (PTC) signalling system being provided by Siemens will use the TETRA network to communicate details about wayside and mobile parts, and hence monitor and control train actions.

The PTC uses train-to-ground communication to transmit vital information regarding locomotive movements. The signalling application uses GPS and speed sensors to locate the train relative to an on-board track database. This equipment continuously monitors speed and location against the benchmark of limits and movements set by authorities. By predicting braking distance, the system warns the crew of potential safe movement violations. If no action is taken, brakes are activated automatically.

Teltronic says the on-board TETRA equipment provided has been designed following the recommendations of several signalling systems manufacturers. It features an Ethernet link to be connected to the vital on-board computer which then establishes data transmission sessions with the object controllers and interlockings distributed along the tracks.

Apart from managing signalling data, a second range of on-board TETRA equipment supplied for the Nacala Corridor will be used by train drivers to enable communication with the three operators at the control centre at Nacala Port. The equipment will be used to manage: voice communications between drivers and the control centre operators; data sent from the derailment sensors to the wayside application of the control centre to the train; and data sent from the wheel-bearing temperature supervision system to the wayside application of the control centre to the train.

The user interface at the control centre is based on Teltronic's *CeCo-TRANS* system. This is designed for the railway environment and allows displaying and interaction with trains by means of a synoptic line display. The application enables operators to view train fleet positions in real time.

All Moatize Mine and Nacala Port workers, together with maintenance staff working along the line, have been supplied with portable terminals so that they remain in communication with the control centre operators and other users.

DMR in the pipeline for Sasol

In 2002, the South African and Mozambican Governments agreed to build a natural gas transmission pipeline connecting both countries The pipeline stretches 865km, linking the Pande and Temane gas fields in north east Mozambique to Sasol's processing plant in Secunda in South Africa's Mpumalanga province. Fifty per cent of it is owned by Sasol, while the remainder is equally owned by South Africa and Mozambique.

Given South Africa's rising energy demands, the partners agreed to build another pipeline that would run parallel to the first one. In 2013, the contract to build the initial 125km of the new pipeline was awarded to Sasol's local construction partners. There was no cellular coverage in the remote part of Mozambique they would be working in, and it was soon realised that a reliable communication system throughout this first stretch of pipeline was of the utmost importance. Without this, any help needed in the event of an emergency was literally hours away.

Hytera has been working with Sasol since 2006 and has already deployed TETRA at the company's facilities elsewhere in the region. The vendor was approached to come up with a solution for the pipeline project and chose DMR.

Hytera said this offers reliable, wide coverage digital radio communications that could be used with an easily deployed power supply system. It added that after the pipeline was completed, the comms system could either be left in place for Sasol's route maintenance teams, or removed and re-deployed to the next new construction area.

Following an extensive site survey of the proposed route, Hytera and its South African dealer Ace Communications recommended the following system: seven *RD98X* site repeaters; 35 *PD78X* portable radios for use by personnel across the construction area; and 35 *MD78X* mobiles to be mounted in vehicles.

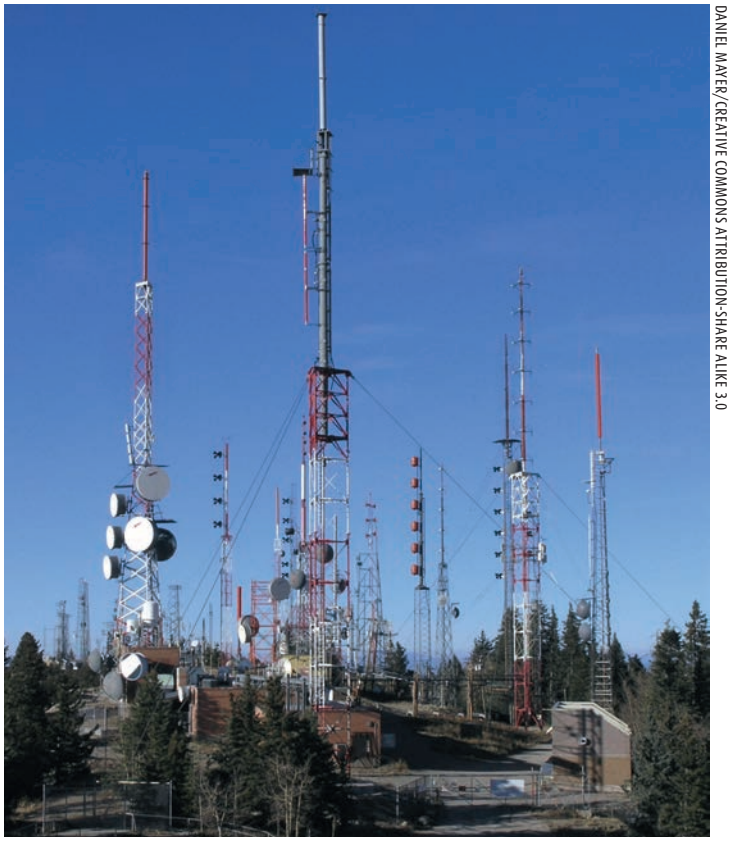
The company said that by carefully selecting and planning the correct positioning of the repeater sites, it developed a solution that enabled the interconnection of all the *RD98X*s via a 5.8GHz IP-microwave link. Yagi antennas are used to provide the straight line of sight needed for each repeater.

The roaming function of Hytera's terminals mean users can either talk locally (in the same repeater site) or throughout the network without having to select their nearest repeater. They can therefore connect to any radio throughout the network.

The vendor adds that the repeater IP-connection and terminal emergency function can interconnect all the subscribers to protect them from wild animal attack or unexpected situations. Furthermore, it says its radios are robust and have a high ingress protection level, making them ideal for the construction environment. ■

An 865km pipeline carries natural gas from Mozambique to South Africa. Teams building a second pipeline alongside it are using a DMR system supplied by Hytera.

Are the towers ready to fall?



DANIEL MAYER/CREATIVE COMMONS ATTRIBUTION-SHARE ALIKE 3.0

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

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

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

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

Benefits of tower sharing

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

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

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

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

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

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

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

Tower infrastructure will become obsolete

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

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

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

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

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

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

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

Alternatives to traditional internet connectivity

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

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

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

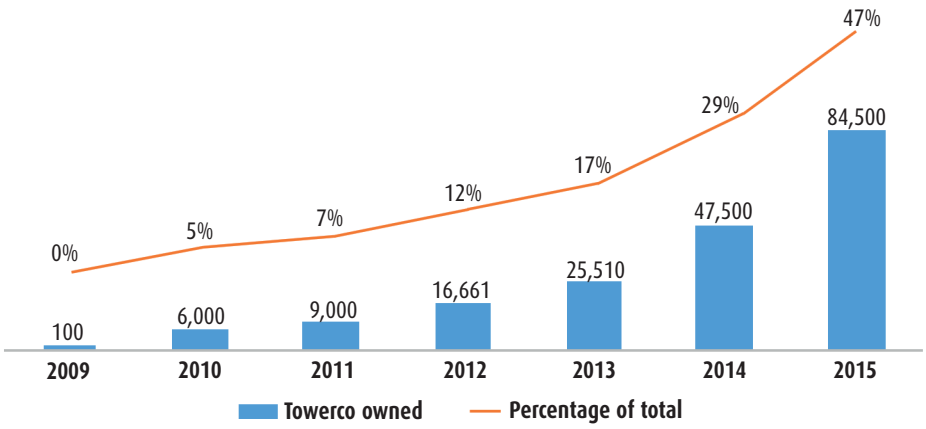
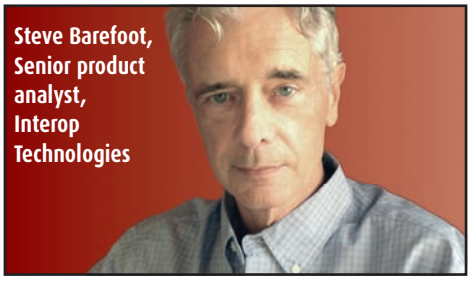


Figure 1: Increase in tower ownership by tower companies in sub-Sahara Africa. (Chart created by Interop Technologies from data in TowerXchange, April 2015 issue).



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

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

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

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

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

The Wireless Broadband Alliance (WBA) and the Dynamic Spectrum Alliance (DSA) will work together to promote and support the development of unlicensed wireless technologies, including TV white space.

The WBA focuses on driving next-generation Wi-Fi and its role in public services such as the IoT, Smart Cities, 5G, etc., while the DSA advocates laws and regulation that will lead to more efficient and effective spectrum utilisation. The organisations plan to combine their efforts to drive forward, innovate, and promote the use of unlicensed wireless technologies at both the technical and regulatory level. They aim to expand the available spectrum as well as co-develop guidelines that ensure interoperability within the ecosystem.

WBA CEO Shrikant Shenwai says the growing appetite for data, both for consumer use and increasingly in voice and IoT deployments, means innovative solutions need to be explored to maximise the efficiency of wireless spectrum use.

WBA CEO Shrikant Shenwai says effective spectrum utilisation is "the oxygen" needed for future innovation.

"The combination of Wi-Fi and other unlicensed wireless technologies require effective spectrum utilisation to provide the oxygen of future innovation," he says. "The work undertaken by the WBA and the DSA will expedite the availability of a new generation of internet access."

The alliances say radio technologies in unlicensed spectrum, such as Bluetooth, Wi-Fi and ZigBee, have been widely adopted over the last 20 years. The DSA adds that the Wi-Fi ecosystem is "invaluable" to connecting the next four billion consumers in emerging markets. It believes the work it will do with the WBA will support governments with their economic growth, and enable a new wave of startups to bring innovations in the unlicensed wireless ecosystem to the top of the agenda.

DMR to sit alongside TETRA in Mongolia

Sepura has made its debut in Mongolia with the Municipality of Ulaanbaatar selecting its critical comms technology for public safety organisations.

The vendor's DMR system will replace the municipality's legacy analogue infrastructure, and is being deployed as part of a major initiative by the city authorities to address and improve risk prevention and disaster management in the capital.

The DMR solution will run alongside an existing TETRA system supplied in 2010 by Teltronic – the Spanish critical comms specialist acquired by Sepura last year.

Global Telecom, Sepura's channel partner in Mongolia, will oversee the migration from analogue to digital communications for the entire municipality. The specialised network integrator will be responsible for the complete installation and deployment of the new system, and will deliver training to the public safety user teams operating in Ulaanbaatar.

With their "crystal-clear" audio, Sepura's radios are expected to perform well in Ulaanbaatar's noisy streets.

Batgerel Chuluunnast, Global Telecom's GM, says: "Sepura radios will be beneficial to users operating in the city's noisy streets thanks to their crystal-clear audio, and will allow clear and uninterrupted communication which is a vital requirement in emergency situations."

With a population of more than 1.3 million people, Ulaanbaatar is Mongolia's largest city. It is the centre of the nation's road network and is connected by rail to both the Trans-Siberian Railway and the Chinese railway system. The Municipality of Ulaanbaatar is independent and not part of any province.

LTE to replace TETRA for UK critical comms

The UK emergency services TETRA network will be replaced by LTE. Mobile operator EE has been selected to provide a resilient national network, giving 300,000 critical emergency workers access to 4G voice and data services for the first time.

Under its GBP1bn Emergency Services Mobile Communications Programme (ESMCP), the British Government wants to ensure that the UK is a 4G pioneer and a world leader in emergency services communications.

EE claims its 4G network will "significantly improve" the efficiency of the emergency services. It says users will gain access to the type of data and applications that have benefited private businesses in recent years, and which have not all been possible using TETRA.

EE's new 4G Emergency Services Network (ESN) will replace the existing TETRA system from mid-2017 as current contracts expire. The company says it has already committed to spend GBP1.5 billion on its network up to 2017, and will increase that investment in order to deliver the ESN.

EE plans to build a new, highly resilient dedicated core network for the emergency services, as well as more than 500 new sites, expanding coverage in rural areas. It will also switch on low frequency 800MHz spectrum on more than 3,800 sites to enhance rural and indoor coverage.

As part of the ESN, the operator says it will implement the capability to support network access priority to the emergency services when required, introduce VoLTE and new LTE voice capabilities including push-to-talk, deploy a fleet of rapid response vehicles to ensure maximum service availability, and use satellite backhaul for the most hard-to-reach areas.

EE is the UK's largest mobile operator and claims to be Europe's first to surpass 10 million 4G customers with LTE coverage that reaches 94 per cent of the UK population. It is currently in the process of being acquired by BT in a deal worth £12.5bn which is expected to close during the first quarter of this year.

Teledensity surpasses 100 per cent in Nepal

The Nepal Telecommunications Authority (NTA) says teledensity in the country is now at 101.4 per cent with mobile subscribers using multiple SIMs.

The country's population stood at 26.49 million in 2011, and, according to the NTA's latest management information systems report, mobile penetration is now at 90.4 per cent. There are 24 million mobile subscribers, two million who use satphones or limited mobile connectivity, as well as around 840,000 fixed line users.

The authority reckons that only around 75 per cent of total subscribers are active, but plans to look into the market to determine the exact number.

Nepal's mobile market is populated by six operators which include Smart Telecom, UTL, Nepal Satellite Telecom and STM Telecom Sanchar. But it is dominated by state-owned Nepal Telecom which has around 12.5 million fixed and mobile users, and Ncell which has roughly 12.3 million mobile customers.

Data penetration has also increased in the country to hit 41.3 per cent by mid-April. Most mobile internet customers use GPRS, EDGE or W-CDMA networks.

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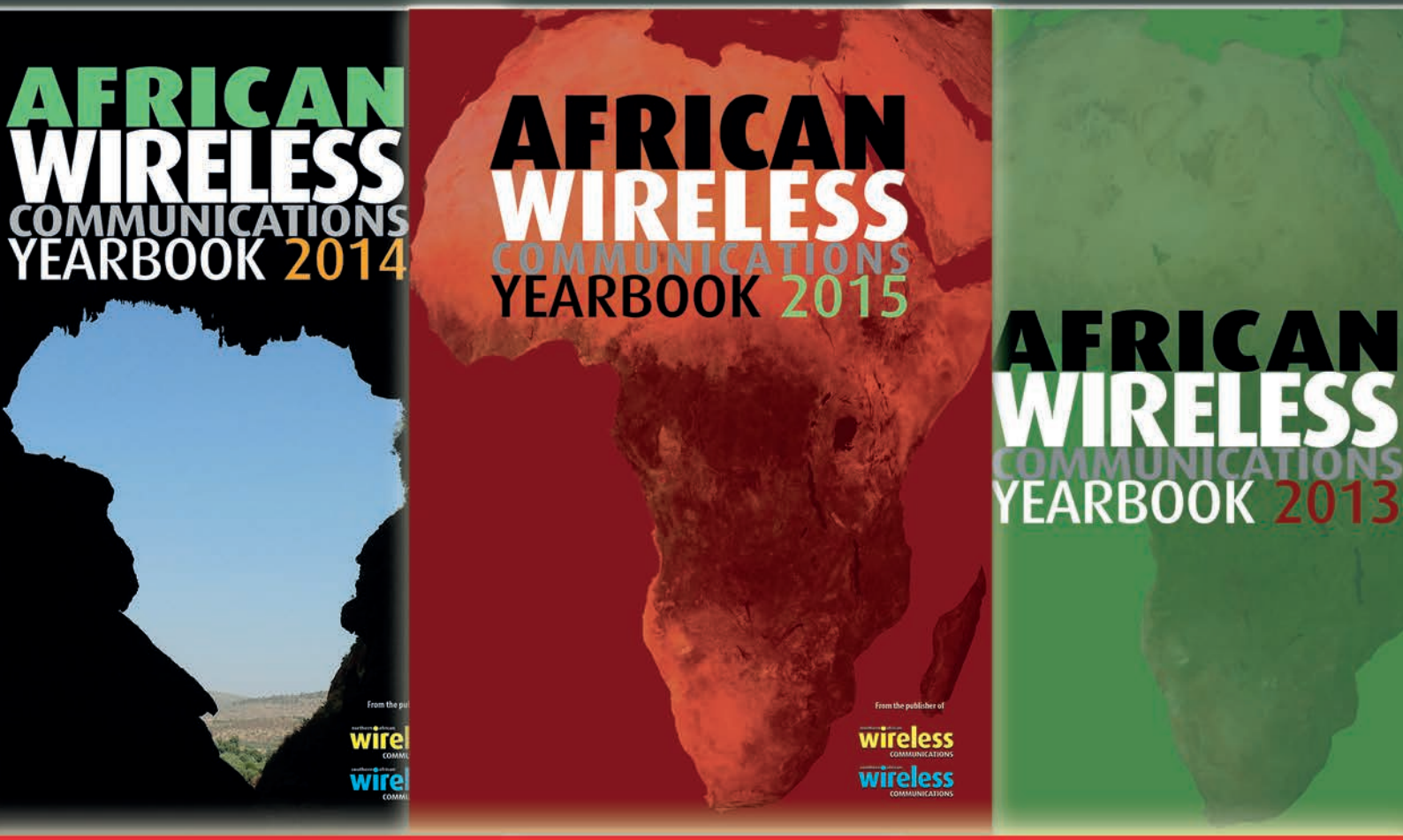

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Drones used for network planning

Nokia Networks has used drones to analyse du's network in Dubai. In a proof of concept conducted at the city's International Stadium, remotely piloted aircraft (RPA) carried smartphones loaded with Ascom's TEMS network testing applications to gather data and provide KPIs.

According to Nokia, using drones for automated testing and analysis is more efficient than traditional manual walk tests as they can cover a desired area more quickly. The company adds that the test data is automatically sent to a central server so that it can be instantly processed for immediate reporting and any necessary actions to improve network performance.

The RPAs were also used for tower inspections where Nokia says they provided unique and detailed panoramic and top-down views of the lattice tower captured in one pass.

Other applications included radio planning and line of sight testing. Here, engineers were quickly able to find out if a frequency used was impacted by trees, if there was sufficient power to cover the distance, what the simulated latency would look like, and what performance over such a connection could be expected.

Nokia points out that the use of RPAs also reduces climb times for technicians, which is especially important when weather conditions make scaling a tower too dangerous. Furthermore, it says drones can help supervise the quality of an installation with remote monitoring via wireless video streaming.

Although Nokia's trial was a proof of concept, this is not the first time drones have been used to test wireless networks. Earlier last year, Nambia's regulator carried out audits of 25 broadcast transmission towers with the help of RPAs and German-based RF specialist LS Telcom.

Nokia says using drones for automated testing and analysis is more efficient than manual tests.

TI Sparkle expands IP backbone with new POP

TI Sparkle, the international services arm of the Telecom Italia Group, has expanded its worldwide IP backbone with a new point of presence in Sweden.

The POP is located in Bromma, western Stockholm, at Telecity's data centre which is claimed to be Sweden's first independent carrier neutral facility. The data centre aims to address the increasing demand for IP transit services coming from the Nordic countries which are said to be experiencing double digit growth in internet traffic.

TI Sparkle says its POP will support major ISPs, OTT players and global content providers that have already established their presence in the area. The company will also provide IP connectivity to Russian service providers who consider Stockholm as one of their main European hubs.

With a global fibre network of around 570,000km, TI Sparkle says it offers a "full range" of connectivity solutions to CSPs and telcos. It says the Stockholm POP will increase its global IP backbone network in Northern Europe, as well as further improve the performance of *Seabone*, its Tier1 IP transit network. According to the operator, *Seabone* is strengthening its regional positioning globally, especially in Africa and Asia where it now leads.

'Wringing every last drop' of Wi-Fi access at hotels

OneAccess Networks will use Passman's application performance management (APM) software in its routers to optimise the delivery of Wi-Fi guest access services for hotel customers across Europe.

Established in 1995, Passman specialises in IP-based services and Wi-Fi guest access in the French hospitality sector. The firm has equipped more than 3,200 hotels, and says its partnership with OneAccess will offer a new level of network visibility and control to hotel guests.

Its software can act upon insights generated by *OneAPM*, OneAccess' proprietary APM software, which operates from inside the router and monitors traffic flows generated by the hotel's customer-facing and administrative applications.

OneAPM's intelligent load balancing and traffic routing capabilities are designed to enable dedicated bandwidth to be assigned to high-priority applications such as customer web-surfing. It's claimed this optimises the available bandwidth and, as a consequence, the user experience.

"The need to apply innovative network management solutions that contain costs and wring every last drop of performance from their connectivity has never been more apparent," says Bertrand Meis, CEO, OneAccess Networks.

Anite to help GrameenPhone fine tune its network

GrameenPhone is using test equipment from Anite to enhance its network.

The operator, which is the largest in Bangladesh and part of Telenor, has deployed Anite's *Nemo* series of products to analyse wireless voice quality and network data. *Invex II* and *Walker Air* will be utilised to benchmark wireless broadband networks, both outdoors and indoors, while the *Xynergy Drive Test* module will be used for automated processing and the centralised online management of collected data.

Invex II is a mobile benchmarking, measurement and optimisation system. Anite claims it combines intuitive software and scalable military-grade hardware designed to create a "superior" benchmarking solution for wireless broadband networks.



The Anite *Invex II* (above) and portable *Walker Air* (right) benchmarking tools.

Walker Air is a portable tool for indoor benchmarking and multi-technology measurements. The *Android*-based system enables extensive synchronised measurements to be performed, and comprises a master tablet and up to seven test terminals connected via Bluetooth. Meanwhile, *Xynergy* is described as a "powerful, scalable, and easy-to-use" web-based enterprise-level platform for analysing drive tests, OSS call trace, small cell/DAS, and network management data.

Siddharth Dash, sales director at Anite's network testing business, says: "With this suite of integrated products, GrameenPhone will be able to efficiently measure the quality of end-user experience, effectively analyse the results, automate data processing, and make it instantly available online. This will enable them to effectively fine-tune the network – all to the benefit of the end-users."

Spectrum refarmed

Vinaphone will use ZTE's help for spectrum refarming, service optimisation, and future network planning in central Vietnam. The MNO, which is the country's third largest, will re-allocate some of its GSM 900MHz frequencies to provide UMTS services, and expand network capacity in the 2100MHz band. It will use ZTE's distributed software-defined radio base stations, unified *MicroTCA* platform, as well as new RRUs, a unified hardware platform and network management system. The project is expected to complete in 2016, involving networks that cover around a third of Vietnam's area and about 20 million users.

'Super Wi-Fi' covers Kabul

The Afghan Wireless Communication Company (AWCC) has launched *Super WiFi* in Kabul City. Subscribers can now use more than 350 hotspots strategically positioned throughout the city to access mobile and fixed high-speed internet access at homes or offices. AWCC is also using the new Wi-Fi network for data offloading. The operator says subscribers can use their 3G bundles to take advantage of faster Wi-Fi services in areas where its 3G Accelerator is available. It adds that they will also benefit from what AWCC calls its "Super Secure" login protocol.

M2M in Indonesia

Indosat and Ericsson have set up the *Device Connection* M2M platform in Indonesia."Our cloud-based M2M service delivers a higher, faster level of support and more agile service for business customers," says Ooredoo Group CEO Dr. Nasser Marafih. "The platform will play a key role in speeding up the implementation of smart city technologies." Indosat is the first member of the Ooredoo Group to launch the platform, with Qatar, Algeria and Tunisia scheduled to follow this year.

"LTE bubbles" connecting US military in the field

SES Government Solutions (SES GS) has demonstrated a cloud-based solution that delivers real-time data using 4G mobile devices and O3b satellites.

During a trial last year for US Government customers, SES combined O3b's satellite broadband connectivity and the field deployable 4G *nanoLTE* system from RIVA Network. It's claimed the setup delivered real-time HD video feeds and image files stored in the cloud to individual remote field team members. The same link also allowed the teams to collect and send raw sensor and video data back to command centres for offsite analysis.

During the demonstration, SES says mobile phones and tablets outside of Wi-Fi range could be used to transport real-time video through the "LTE bubble", and stream the footage without delay over O3b satellites back to a cloud server located in Ashburn, Virginia.

The company says the mission-critical technology is compatible with any smartphone and paves the way for an increased use of mobile devices for military operations. "In essence, each soldier, sailor, airman and marine can be a sensor providing vital information to deployed units through the O3b system," says SES.

It adds that the system can be scaled by adding multiple *nanoLTE* nodes, with ranges up to 22 miles possible depending on the exact network configuration.

SES GS president Pete Hoene says: "The US Government can now integrate smartphones into remote field operations and create a mobile workforce without facing any delays in communication, and with full connectivity all the way back to US-based analysts and decision makers."

Channel layering boosts connectivity at centre

The Convention Centre Dublin (CCD) is now using a 802.11ac Wi-Fi network from Meru to support the high density of mobile devices used in its facilities.

The CCD includes 22 purpose-built meeting rooms, a 2,000-seat auditorium with full theatrical stage and fly tower, and 4,500m^2 of exhibition space. Since opening in 2010, it has hosted more than 1,000 events that have attracted visitors from around the world. Meru says they make extensive use of the internet, email, VoIP and other voice and video applications during concerts, exhibitions, shows, etc.

All this presented a challenge when delivering ultra-high density, high-speed and reliable connections in difficult areas with large numbers of simultaneous users.

Working with its local partner, IT Group, Meru replaced the CCD's existing Cisco WLAN using *AP822* access points and its *Network Manager*. As part of an initial trial, the vendor introduced the centre to its virtual cell technology and unique concept of "channel layering". Meru says that by using only a single channel for coverage, the other channels can be layered to provide capacity for high-density areas.

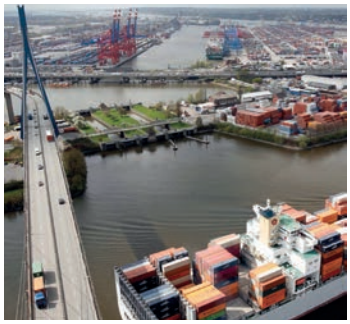
The CCD's unique glass-fronted atrium runs the full height of the building and houses a variety of zones that presented a challenge for the Wi-Fi network.

Port takes the smartROAD to success

The Port of Hamburg in Germany is aiming to become smarter with the implementation of Europe's first *smartROAD* initiative from Cisco.

smartROAD uses an Internet of Everything (IoE) approach with real-time data and analytics to improve resource management, traffic flow, infrastructure condition and environmental management. The port authority is piloting an integrated concept of the IoE for the first time, with various relevant use cases running on a real infrastructure.

For example, structural sensors provide real-time data on the condition of movable infrastructures such as the Kattwyk Lifting Bridge, enabling the technical maintenance department to precisely and predictively plan maintenance and repairs. Sensors are also used to deliver data to improve analysis of the port area's environmental situation.



Hamburg's *smartROAD* proof of concept is a result of a deal signed in 2014.

Other solutions deployed as part of the *smartRoad* proof of concept include smart lighting, and the management and monitoring of all road traffic. All data is processed by analytics software, and findings are made available via a centralised, integrated dashboard.

Cisco says all sensors and systems are connected by a highly secure network infrastructure. The firm says it has also put in place a "comprehensive" security framework for the whole installation that gives visibility into safety and security, and enables the port's management to take actions in real-time.

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