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For communications professionals in southern Africa

NOVEMBER/DECEMBER 2016

Volume 21
Number 4

COMMUNICATIONS

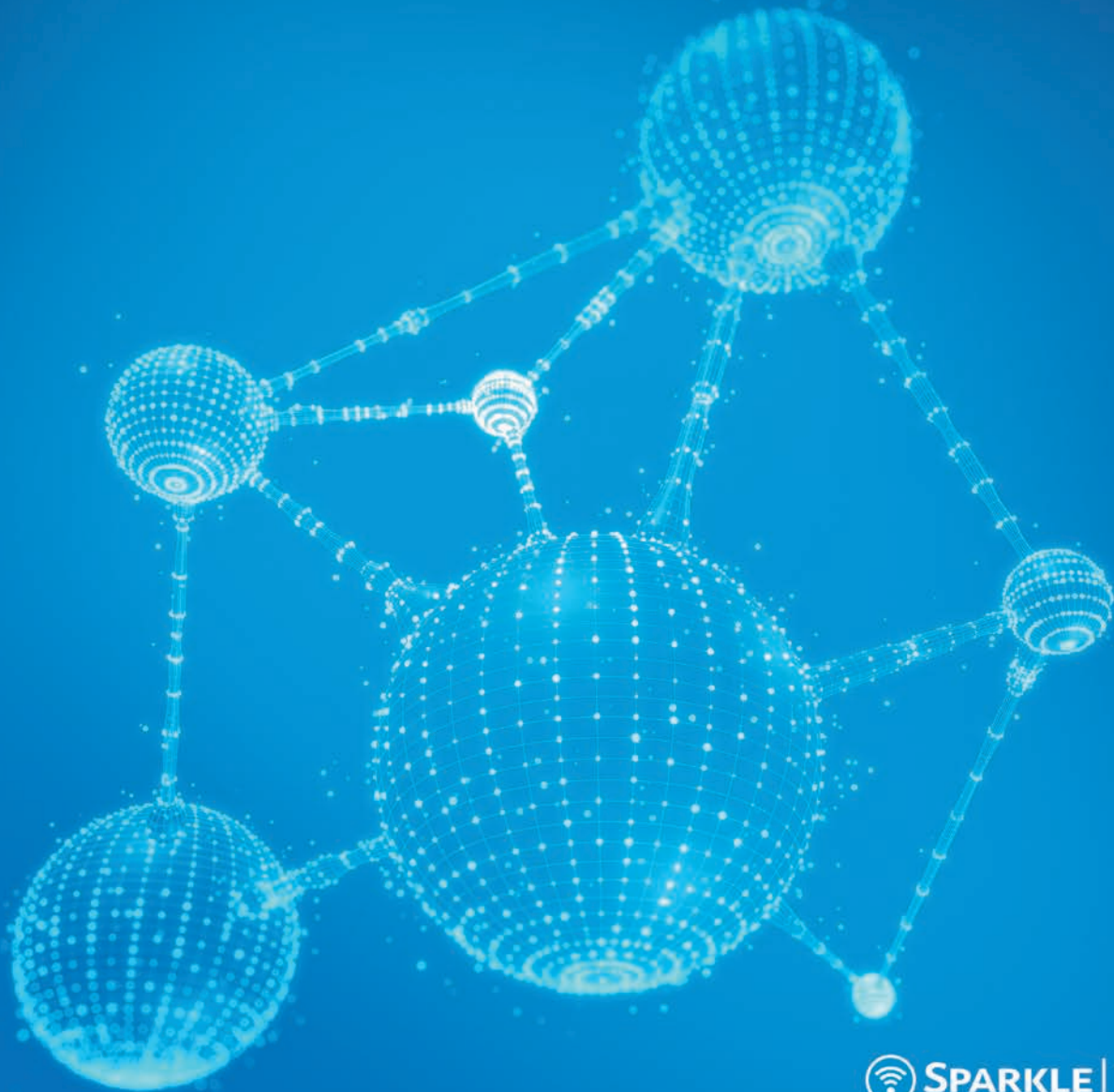
- Is LTE viable for critical communication networks?
- Creating connections for governments and municipalities
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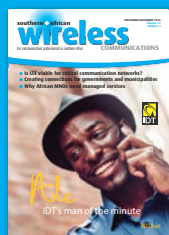
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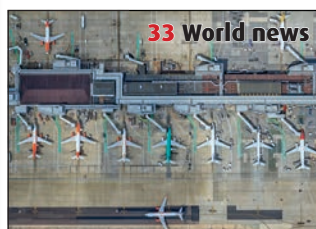
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of control can purchase an annual subscription at the cost of £110. For more information and general enquiries please contact Suzanne Thomas at suzannet@kadiumpublishing.com or call +44 (0) 1932 886 537.

EDITORIAL:

Editorial director: **Rahiel Nasir**
Designer: **Alan McClenaghan**
Contributors: **Richard Hurst**
Richard Ullenius

Editorial enquiries:

Tel: +44 (0) 1932 481729
rahieln@kadiumpublishing.com

Publishing director: **Kathy Moynihan**
+44 (0) 1932 481730

ADVERTISEMENT SALES:

Senior sales executive: **Andy London**
andrewl@kadiumpublishing.com
Tel: +44 (0) 1932 481731

Publishing apprentice: **Jennifer Coates**
jenniferc@kadiumpublishing.com

Production & circulation:

Production: **Suzanne Thomas**
suzannet@kadiumpublishing.com
Tel: +44 (0) 1932 481728

South African office: Kadium Publishing Pty Limited, Unit 2, GSW Building, Techno Park, Gold Street, Northgate East, 7405, South Africa



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The image features the Measat logo in a bold, blue, sans-serif font at the top left. The background is a composite of a stylized world map with Africa highlighted in a darker shade, and a photograph of four African professionals (two men and two women) in white shirts shaking hands and looking upwards with optimism. A blue and orange curved graphic element is in the top left corner.

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LeoSat and Thales in new deal for revolutionary LEO constellation

Thales Alenia Space and LeoSat Enterprises have moved into the second phase of their project to develop a low Earth orbit (LEO) satellite constellation.

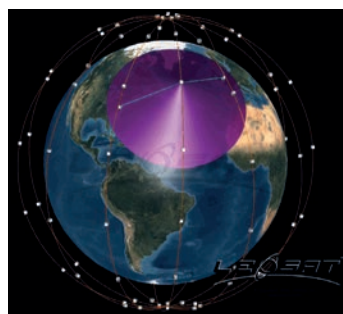
The signing of their phase B contract in September follows the initial stage which resulted in the preliminary definition of the LeoSat constellation (see *News May-Jun 2015*). The companies say this validated the technical feasibility of the system and its compatibility with other Ka-band services.

Phase B concerns the detailed definition of the overall system architecture and performance specifications, including both the ground and space segments. It will finalise the

manufacturing plan, paving the way for the production and deployment of the entire constellation of 78 to 108 high-power Ka-band satellites.

LeoSat CEO Mark Rigolle says: "We have already signed our first customer contract which is a very strong endorsement of our unique solution offering the highest performance of any existing or planned system, including fibre."

The company's programme brings together a range of tried and tested systems for the first time. They include optical inter-satellite links, gigabit class onboard processors, flexible steerable antennas, and RF over printed circuit boards.



LeoSat claims its constellation of up to 108 low Earth orbit satellites will provide the fastest, most secure and widest coverage data network in the world.

Thales adds that following its recent acquisition of RUAG's opto-

electronics business, it now has the ability to provide an in-house solution for the constellation's critical optical inter-satellite link technology, which is key to overall system performance.

LeoSat says its constellation will offer very high-speed broadband, low latency and secure global connectivity.

Through the use of tracking spot beams and specific techniques, it says the system is designed to prevent interference with geostationary and non-geo satellite orbiting systems operating in the same frequency band.

The satellites will use Thales' enhanced *EliteBus* platform which is said to offer higher payload power and mass while optimising launch cost and schedule.

Open access network policy approved in South Africa

All wireless service providers in South Africa will be required to return their previously assigned spectrum under a new framework outlined in a policy whitepaper that has been approved by the Government.

The National Integrated ICT policy paper, which has been in development since 2012, calls for the establishment of a wireless open access network (OAN) that places spectrum previously assigned to wireless operators in a pool.

The paper states: "This will ensure that operators with significant market power do not leverage access to their infrastructure and critical resources to maintain dominance and deny market access to competition."

Following the adoption of the whitepaper, the Independent Communications Authority of South Africa (ICASA) will be required to conduct an industry-wide consultation process to determine the terms and conditions, as well as the timeframe, under which

the currently exclusively/individually assigned high demand spectrum will be returned to the regulator.

Meanwhile in a separate development, ICASA has reportedly been ordered by the North Gauteng High Court to halt its planned LTE spectrum auction. According to *TechCentral*, judge Roland Sutherland "interdicted and prevented" ICASA from implementing the licensing steps and processes referred to in the ITA (invitation to apply).

The regulator was also banned from accepting any bids for the ITA pending an application from Cell C to launch court proceedings against it.

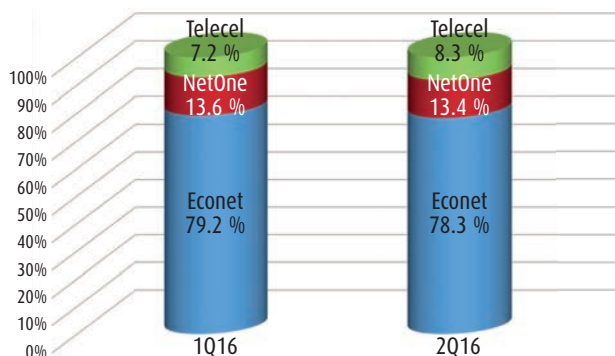
The ruling was handed down after South Africa's Minister of Telecommunications and Postal Services, Siyabonga Cwele, filed an application in August 2016 to block the proposed auction of LTE-suitable spectrum in the 700MHz, 800MHz and 2600MHz bands. The sale was scheduled to take place in March 2017.

POTRAZ seeks lower mobile data rates in Zimbabwe

The Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ) is working with local operators in an effort to lower prices for mobile data services.

According to reports, the country has the third-most expensive data tariffs in Africa, and this is hindering both consumer access and businesses. POTRAZ says it hopes its discussions with the cellcos will lead to the introduction of cheaper data services within the next few months.

The bulk of internet access in Zimbabwe is via mobile networks, with the country of more than 13 million people home to only around 100,000 fixed broadband subscribers at mid-2016. According to statistics



Telecel's market share of data usage increased from 7.2 to 8.6 per cent, whereas Econet and NetOne both saw declines. SOURCE: POTRAZ PERFORMANCE REPORT, SECOND QUARTER 2016

published by the regulator earlier this year, a total of 1.8 million gigabytes of mobile data were consumed in the second quarter of 2016 – a 23 per cent

increase from the 1.5 million gigabytes in the previous quarter. All three mobile operators – Econet Wireless, NetOne and Telecel – experienced

an increased in internet and data utilisation, with Telecel experiencing the largest growth (see chart, left).

The data also showed that mobile penetration rate increased to 97 per cent in 2Q16. However, national traffic declined by 3.6 per cent despite the numerous mobile voice promotions that were available during the quarter.

POTRAZ attributed this in part to declining consumer demand due to economic downturns. It also said the substitution of mobile voice with OTT services also "greatly contributed" to the overall decline in voice traffic.

As a result, total mobile revenues in Zimbabwe for 2Q16 fell by 3.7 per cent to record USD161.5m from USD167.7m recorded in the previous quarter.

Wireless broadband for Malagasy schools, hospitals and rural areas

Madagascar's Ministry of Posts, Telecoms and Digital Development (MPTDN) has announced a project under which wireless broadband infrastructure will be deployed to connect schools and hospitals, while also serving remote and rural areas of the country.

In a press release outlining its plans, the MPTDN said that once the project (which is known simply as 'Wireless Broadband') is complete,

access to the infrastructure may be offered for free, or at least at low cost.

A number of local government departments will be involved with the initiative, including the Ministry of Education, the Ministry of Public Health, and the Ministry of Finance and Budget. A meeting between the MPTDN and the other ministries involved in the project is expected to take place soon, with a view to

identifying areas where network deployment should be prioritised.

In mid-October, Andrew Rugege (*pictured*), ITU regional director of Africa, and Jean-Jacques Massima-Landji, the representative of the ITU for Central Africa and Madagascar, were in the country to help mobilise the funding required for the venture.

Interoperable mobile money service launched across Madagascar – News, p10.



Vodacom DC-HSUPA offers double uplink peak rates

Vodacom has completed the commercial deployment of a Dual-Carrier High-Speed Uplink Packet Access (DC-HSUPA) network solution in South Africa.

DC-HSUPA offers an uplink peak rate that is twice that of single-carrier rates on UMTS networks.

The operator claims a doubled peak rate puts it in a better position to deliver a "superb" mobile internet experience by combining advanced 4G networks with the fastest 3G networks.

It adds that an overall DC-HSUPA deployment not only offers higher uplink data rate services with shorter delays, but also helps balance traffic loads between carriers to improve the uplink capacity of HSPA+ networks.

Vodacom worked with Huawei on the implementation. According to the vendor, two ways are commonly

used to increase UMTS uplink data rate: improving spectral efficiency and increasing uplink spectral bandwidth. It says DC-HSUPA overcomes the one-carrier limitation and enables data to be transmitted over two 5MHz carriers, allowing higher uplink data rate.

Huawei goes on to explain that as an HSPA+ feature introduced in 3GPP Release 9, DC-HSUPA aggregates two continuous carriers to give doubled uplink data rate. Therefore, the uplink peak data can be increased from 5.76Mbps to 11.5 Mbps on UMTS networks by using the technology.

Vodacom was awarded a temporary UMTS licence in June 2004 and deployed its 3G network in December that year. It currently covers 98.3 per cent of South Africa's population via 8,802 3G sites.

Comsol launches Africa's largest IoT network

Comsol has launched what it says is the continent's largest Internet of Things network in South Africa.

The *Comsol IoT* is enabled by Activity's carrier-grade *ThingPark* platform. The operator says it offers broad nationwide coverage, including urban and rural areas, to create an ecosystem that supports the connectivity of millions of devices.

Comsol IoT will be deployed on the back of the operator's ZAR1.5bn open access Layer 2 national network, and will be available for sensor service termination by February 2017 in major cities.

The open architecture, low power wide area network (LPWAN) is claimed to be the "ideal" solution for applications where power-constrained devices are distributed over large geographical areas.

Comsol says sensors and devices used for utility meters or agricultural monitoring, for example, can achieve a battery life of up to 15 years due to the relatively small data sets and transmission rates enabled by its IoT.

It adds that the high costs associated with manual monitoring, replacement of batteries and GPS devices are also no longer factors for organisations wanting to run a smart operation.

Furthermore, because the *Comsol IoT* is an open access, open protocol network, the operator says any IoT applications that are developed will be "seamlessly enabled" to the devices and sensors they are meant to support. It believes this will create a "diverse" ecosystem that will serve to take African IoT to the "next level".

Intracom system supports Comsol's spectrum assets – p10.



Research reveals that watching videos on African mobile networks has doubled.

YouTube will be Africa's top mobile app

Video traffic on mobile networks in Africa has doubled in the last year, increasing from 8.6 to 18.1 per cent, according to research from Sandvine.

For its latest *Global Internet Phenomena* report, the network intelligence specialist gathered data from a selection of its 300-plus communications service provider customers in Africa, Asia-Pacific and the Middle East.

It found that *YouTube* is driving video growth in Africa, and continues to be the top mobile application in both

APAC and the Middle East. Sandvine predicts the rapid growth of video in Africa will make it the top app on the continent within the next 18 months.

The report also reveals that WAP browsing, typically associated with feature phone use, has seen its traffic share cut in half in Africa over the past two years. Sandvine says this is indicative of increasing smartphone adoption in the region.

The vendor believes that the rapid growth of video on mobile networks

in Africa underscores the need for operators to have solutions in place that allow them to measure, monetise, and optimise the real-time entertainment traffic that subscribers value.

Tom Donnelly, Sandvine's COO for sales and global services, says: "These strategies have been extremely successful for our customers in both Asia-Pacific and the Middle East, and has allowed them to provide their subscribers a high quality of experience when using the applications they care about most."



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GIN introduces fully managed satellite service for VNOs

Gondwana International Networks (GIN) has launched *Source*, a fully managed, virtual network satellite operator service.

The pan-African CSP says it has partnered with Intelsat on a “common vision” to bring cost-effective satellite connectivity to Africa. GIN CEO Mathew Welthagen says: “Our collaboration has resulted in the establishment of the first Hughes’ JUPITER hub in Africa. We have over 15 years of hands-on VSAT operational experience, making us well positioned to deliver a new era of services to Africa.”

Source will be rolled out across sub-Saharan Africa. According to Welthagen, it means VSAT operators will be able to focus on service provision and customers rather than on network infrastructure.

As a wholesale VNO platform, *Source* offers two options. *Raw Capacity* provides the operator with full access to a VNO on the JUPITER hub and the ability to architect and manage its own services. Users will typically deploy their own packet shapers, provisioning and billing systems.

The *Managed Services* option is where GIN manages the VNO that

has been contracted to use capacity on the hub. GIN says this enables the creation of bespoke services in a closed dedicated bandwidth pool. It adds that the operator is not required to have in-depth knowledge of VSAT design, and can leverage GIN’s Allot packet shapers and OSS/BSS platforms.

Ground support and network management services will be run from the CSP’s facilities at Hartebeesthoek in South Africa. It’s claimed this will bring “immense” benefits such as African traffic being landed in Africa, lower latency and

secure backhaul. “The location is also a national key point and has multiple levels of security and redundancy,” says Welthagen.

Gondwana adds that regional multinational businesses with branches across multiple territories will benefit from the minimum capacity requirements for designing network failover, and managing ERP data reporting back to head office.

The launch of *Source* follows Yahsat and iDirect recently unveiling their own jointly developed VNO satellite service (see *News*, Sep-Oct 2016).

BoFiNet fibre network boosts rural connectivity

Botswana Fibre Networks (BoFiNet) has inaugurated its 32km Kachikau-Parakarungu fibre network.

Speaking at a ceremony to mark the occasion in mid-October, BoFiNet chairman Ratsela Mooketsi said villages in the region now have the capacity and capability to host high-speed access network stations. He said the project offers the country’s established service providers, such as BTCL, Mascom, Orange, *et al*, a platform to deploy broadband technologies.

“This will greatly assist in the upgrading of existing infrastructure which was becoming obsolete and no longer capable of supporting today’s bandwidth hungry users,” says

Mooketsi. “This upgrade will further enable uptake of high-speed broadband services to these areas as well as enable Government to provide e-services.”

BoFiNet spent around BWP12.8m (USD1.2m) on the civil and cable works, as well as BWP5m (around USD477,000) on the transmission terminal equipment, shelters and power complete to the project. The implementation started in March 2016 and was completed at the end of May 2016.

Before beginning its deployment, BoFiNet claims it carried out a “thorough consultation” with all the communities and stakeholders to assess the environmental impact of the project, and ensure safety of livestock, people and wild animals.

DSA and ICASA to push spectrum sharing

The Dynamic Spectrum Alliance (DSA) is aiming to put spectrum sharing opportunities at the top of the agenda during its 2017 Global Summit that will be held in Cape Town next May.

The event will be co-hosted by the Independent Communications Authority of South Africa in Cape Town. The alliance says ICASA will play a significant role following its discussion paper on the framework for dynamic and opportunistic spectrum management (see p5). The consultation document covers a proposal to authorise license-exempt access to TVWS frequencies.

Paul Garnett (pictured), DSA chairman and also director of affordable access at Microsoft, says: “The spectrum sharing technologies and policies that the [alliance] began promoting almost four years ago are now central to discussions about current and future spectrum access and emerging 5G scenarios.”

The DSA recently welcomed 11 new members including several from Africa. They include Project Isizwe which has been rolling out free public Wi-Fi in South Africa, and C3 which is building a wireless network across Malawi. Other new African members include AirJaldi Networks and Ekovolt.



Sonema will use Comtech EF Data’s network optimisation and management platform to provide connectivity services to 50 countries in Africa.

Sonema reaches for new Heights in Africa

Sonema is aiming to expand its satellite networking capabilities across Africa with the help of Comtech EF Data.

The global VSAT integrator and telecoms service provider will use the vendor’s *Heights* networking hub at its teleport in France. It aims to use the platform to provide enhanced connectivity services on star and mesh network architectures to 50 countries on the continent.

According to Comtech, *Heights* is a scalable networking platform and offers the industry’s highest

throughput and traffic optimisation capabilities. It says the system “cost-effectively” supports multiple business models simultaneously, from traditional full hub ownership to VNO operation within a home network operator configuration.

The company adds that *Heights* also features powerful traffic analytics engine that allows simplified design, implementation, monitor, control and optimisation of networks.

Sonema marketing director Yves Du Sault says his company reviewed

the different satellite networking options available before deciding to team with Comtech EF Data because of its “innovative” approaches to the dynamic and stringent demands of its clients, particularly financial institutions, across Africa.

He adds: “*Heights* delivers on high spectral efficiency, network intelligence, scalability and flexibility; we can leverage those key differentiators to offer enhanced services to customers for whom performance and availability are paramount.”

MTN first to test *Voyager* platform

MTN has become the world's first mobile operator to deploy and test the *Voyager* open optical packet transport platform, after joining the Telecom Infra Project (TIP) earlier this year.

The TIP initiative was launched in February 2016 by Facebook, Deutsche Telekom, EE, Globe Telecom, Intel, Nokia, SK Telecom, amongst others. Their aim is to develop fresh approaches to building and deploying telecoms

network infrastructure, while at the same time reducing costs and accelerating the rollout of internet connectivity.

MTN is part of the Open Optical Packet Transport project group, and worked closely with the TIP community to field-test the *Voyager* next-generation technology in its South African data centres between 14th Avenue in Fairlands and Soccer City in Soweto. The tests were carried out at the end

of October and the operator claims the results showed the highest performance with zero packet loss, and potential for significant overall cost savings.

"We are excited about the possibility of bringing more than 19Tbps of connectivity to the community using open optical networking technology," says MTN Group CTO Navi Naidoo. "Open platforms move away from the vendors' proprietary platforms

which usually come at a huge cost. This means that the roll out of the *Voyager* platform will enable operators to install a network at a lower cost, which in turn will result in cheaper connectivity for customers."

The results of the test were presented at the TIP summit held in the US at the start of November. The next steps are to obtain necessary approvals and explore commercial rollout of the platform.

Namibian telco enters South African market

Windhoek-based Paratus Telecom has entered the South African telecoms market by finalising the acquisition of local connectivity solutions provider Maxwell Technology.

Established in 2007, Maxwell Technology was acquired by Paratus Telecom South Africa in November 2015 for an undisclosed sum.

Schalk Erasmus, COO of Paratus Telecom, believes Maxwell offered a perfect fit. "As an independent provider of last-mile, satellite-based, connectivity and access solutions for their mining and engineering clients in Africa, Maxwell quickly evolved to a full-spectrum, end-to-end connectivity solutions provider to clients from predominantly unserved and under-served areas."

With a presence in more than 22 countries, Paratus says its aim is to be the connectivity solutions facilitator of choice for companies expanding into Africa. The company says it tailors solutions ranging from VSAT, point-to-point wireless, fibre and LTE, and is therefore "well positioned" to address any connectivity requirements.

As well as running networks in Namibia, Paratus also has fully licensed offices in Angola and Zambia, as well as international PoPs in Johannesburg, Portugal and the UK. Through its own networks or via selected partnerships, the firm reckons its partnerships in South Africa allow it to be a connectivity services aggregator and a "one-stop shop" for all managed connectivity services.

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INFRASAT investment



Angola Telecom's business unit,

INFRASAT, says it will invest to improve signal coverage for mobile and fixed telephony operators and provide internet service in the most remote regions of the country. While the company pointed out its turnover of USD27m in 2015, it did not say how much it planned to invest. But as part of efforts to contribute to the development of ICT in Angola, INFRASAT said it aimed to become a satcoms leader in the country.

BoFiNet sets up BOT50



Botswana Fibre Networks (BoFiNet) connected the

National Stadium in Gaborone and the Francistown Sports Complex with Wi-Fi as part of the country's celebrations of 50 years of independence in September. The operator said its *BOT50 HOTSPOT* provides good coverage within the parameters of the stadiums, allowing users to connect to a speed of 2Mbps even when the venues are at full capacity.

Africa-Asia cable links



Omantel Wholesale is interconnecting the *Gulf to Africa (G2A)* and *Silk Road Gateway-1 (SRG-1)* cable systems to deliver ultra-low latency networking between Asia and Africa. *G2A* connects Oman to Somalia via two redundant landing stations in Puntland (Bosaso) and Somaliland (Berbera). Omantel says the system provides onward connectivity to Ethiopia and will connect Kenya, Mogadishu and South Africa in later phases. *SRG-1* connects Oman to Pakistan with onwards connectivity to Afghanistan, China, Iran, Turkmenistan and Tajikistan.

Madagascar mobile money providers join with GSMA

All three mobile money providers in Madagascar are rolling out interoperable mobile money services nationwide.

Airtel Money, *mVola* and *Orange Money* joined forces with the GSMA's *Mobile Money* programme to increase financial inclusion in the country.

The launch makes Madagascar the second market in Africa, following Tanzania, where all mobile money providers are making their services interoperable, allowing transactions to flow seamlessly across their platforms.

The GSMA's chief regulatory officer John Giusti says there are now more mobile money accounts than bank accounts in Madagascar and Tanzania. He adds: "Traditional 'bricks-and-mortar' banking infrastructure tends



The GSMA says interoperable mobile money services will ultimately provide a safer replacement for cash.

to be far from poorer communities. Interoperable money services will therefore deliver significant long-term benefits to citizens, extending the range of digital financial services provided and ultimately serving as a safer and more reliable replacement

for cash as a means of payment in day-to-day transactions."

Under its *Mobile Money* programme, the GSMA is working closely with MNOs and industry stakeholders to drive what it describes as a "robust" mobile money ecosystem. They are doing this by providing tools and insights to help deployments scale, as well as supporting the creation of enabling regulatory environments to expand digital financial inclusion.

The programme is also supporting the efforts of mobile money operators to implement interoperability of mobile money services, and to expand the digital ecosystem by facilitating the integration of third parties to mobile money schemes.

New African fibre project for MER

In a project valued at INS29m (USD7.6m), Israel-based MER Group has been contracted to deploy a 330km long optical fibre communications network in an African country.

MER is a specialist supplier of communications, security, intelligence and cyber solutions. This latest deal, announced in late September, is its third optical fibre project on the continent.

While the company has not named the country it will work in, it says the project is for a new client and

will provide a broadband high-speed internet connection for residents of a West African nation. The estimated timeframe for the deployment of the communications network is approximately six months.

MER Group CEO Nir Lampert says the contract win was "remarkable" given the slowdown in investment in Africa (also see 'Sub-Saharan Africa growth lowest in more than 20 years', p13).

He added: "We are witnessing growing demand for high-speed

communications in Africa and in South America, where we are currently deploying several optical fibre projects. The demand is mostly the result of populations living in [the] periphery needing to connect to high-speed, low-cost and accessible internet.

"For this reason, we are currently bidding for several tenders for optical fibre solutions in these regions, and we believe that our marketing efforts will yield additional projects for the corporation."

Intracom provides world's 'only' system to support Comsol's spectrum assets

Comsol Networks will use terminals and relevant hub site equipment supplied by Intracom Telecom. It will use the latest generation of the vendor's point-to-multipoint wireless system, along with its *uni|MS* network management platform.

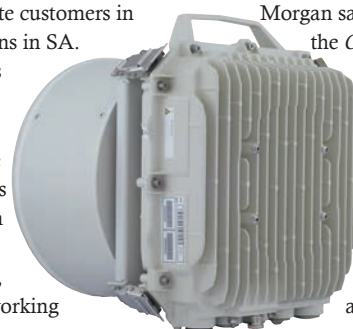
As well as providing B2B wireless services in South Africa, Comsol claims that it offers the country's first and only nationwide open access high-speed carrier grade data network. It says *Fibre Connect* combines the best of fibre and high capacity, licensed band wireless technologies to offer products ranging from 2Mbps up to 1Gbps.

Under a five-year deal worth USD9m, the firm will use Intracom Telecom's *WiBA-OSDR* radio (pictured) at 28GHz. It's claimed this will enable it to offer "superior" open access Layer 2 last-mile connectivity services to its growing number of corporate customers in more than 200 towns in SA.

Intracom says its product is the only one available worldwide to make full use of Comsol's expanded spectrum assets, reaching up to 56MHz channel, and advanced networking

features. It says this will enable the service provider to implement high-calibre services to its subscribers with a committed turnaround time of under seven working days.

Comsol Networks COO Darren Morgan says: "Simply put, the *OSDR* product line offers the highest capacity per base station, allowing us to deliver exactly what the South African market wants: more capacity at a cheaper rate."



MTN subscriber numbers increase

The MTN Group reported a rise in subscribers for the third quarter. Its customer base across its three regions currently stands at 234.7 million, a quarterly increase of 0.9 per cent.

In South Africa, MTN reported a marginal decline in subscribers of 0.5 per cent QoQ to 29.7 million. It said this was a result of a 0.7 per cent decline in the pre-paid subscriber base to 24.5 million, which in turn

was largely due to churn from low revenue-generating customers. But the post-paid subscriber base increased by 0.7 per cent to 5.2 million.

The rest of the South and East Africa (SEA) region – which includes Uganda, Zambia, Rwanda, Botswana (joint venture), Swaziland (joint venture) and South Sudan – saw subscriber numbers increase by one per cent to 23.3 million.

In its troubled market of Nigeria – where MTN has had to pay a billion dollar fine and is also facing allegations of financial impropriety (see *Wireless Business*, Sep-Oct 2016) – the subscriber base grew 2.5 per cent from the previous quarter to reach 60.5 million.

The rest of the operator's West and Central Africa (WECA) region (Ghana, Cameroon, Côte d'Ivoire, Benin, Congo Brazzaville, Liberia,

Guinea Conakry and Guinea Bissau) saw overall subscriber numbers grow by 2.3 per cent to 47.6 million.

Overall, WECA remains the most popular region for MTN with more than 108 million customers, while MENA has 73.6 million and SEA has 52.9 million. The operator's new region classification follows a significant restructuring announced earlier (see *Wireless Business*, Jan-Feb 2016).

Finances shine light on Cell C

A circular published by Blue Label Telecoms in October revealed that Cell C recorded a profit before tax of ZAR2.8m (USD2.07m) for the six months ended 30 June, compared to a loss of almost ZAR1.2bn in the previous corresponding interim period. This is the first time full financial results have been made public by the operator.

Cell C is the third largest of four mobile network operators in South Africa. As at the end of June, its market share based on service revenues for the preceding six months was 12.1 per cent, and 16 per cent based on its total active mobile subscriber base. Of its 12.7 million customers, 10.6 million are pre-paid, 500,000 are post-paid and a million are hybrid. The operator also has 700,000 broadband subscribers and approximately a million MVNO customers.

Blue Label is planning a 45 per cent acquisition of Cell C for ZAR5.5bn. This is part of a recapitalisation proposal for Cell C which was expected to begin in November 2016 (also see *Wireless Business*, Sep-Oct 2016).

Under the restructuring, the management and staff of Cell C will subscribe to 25 per cent of the issued capital and 3C Telecommunications will hold the remaining 30 per cent.

The proposed recapitalisation plans to reduce Cell C's net debt to around ZAR8bn and enable the company to continue to focus on its growth strategy. The results revealed that the company's net debt at the end of 2015 was almost ZAR20bn, up from ZAR14.3bn a year before.

The ACE Africa Coast to Europe (ACE) submarine cable map shows the route from Europe to Africa. The map includes labels for France, Portugal, Canary Islands, Mali, Niger, Senegal, Mauritania, Gambia, Guinea, Guinea Bissau, Sierra Leone, Côte d'Ivoire, Ghana, Benin, Nigeria, Republic of Cameroon, Equatorial Guinea, Gabon, Democratic Republic of Congo, Angola, Namibia, and South Africa. A legend indicates that the solid red line represents the 'In service' cable, and the dashed red line represents the 'Under construction or planned' cable. A list of key milestones is provided: France - Sao Tome & Principe: In service since Dec. 2012; Sao Tome & Principe - S Africa: Target RFS Dec 2017; Upgrade 1 - In service since 30 Sep 2016; Design capacity upgraded to from 5.12T to 12.8T. The bottom of the graphic features a photograph of two smiling African children and the text '... reducing the digital divide in Africa'.

ACE

Africa Coast to Europe (ACE) submarine cable

ACE submarine cable

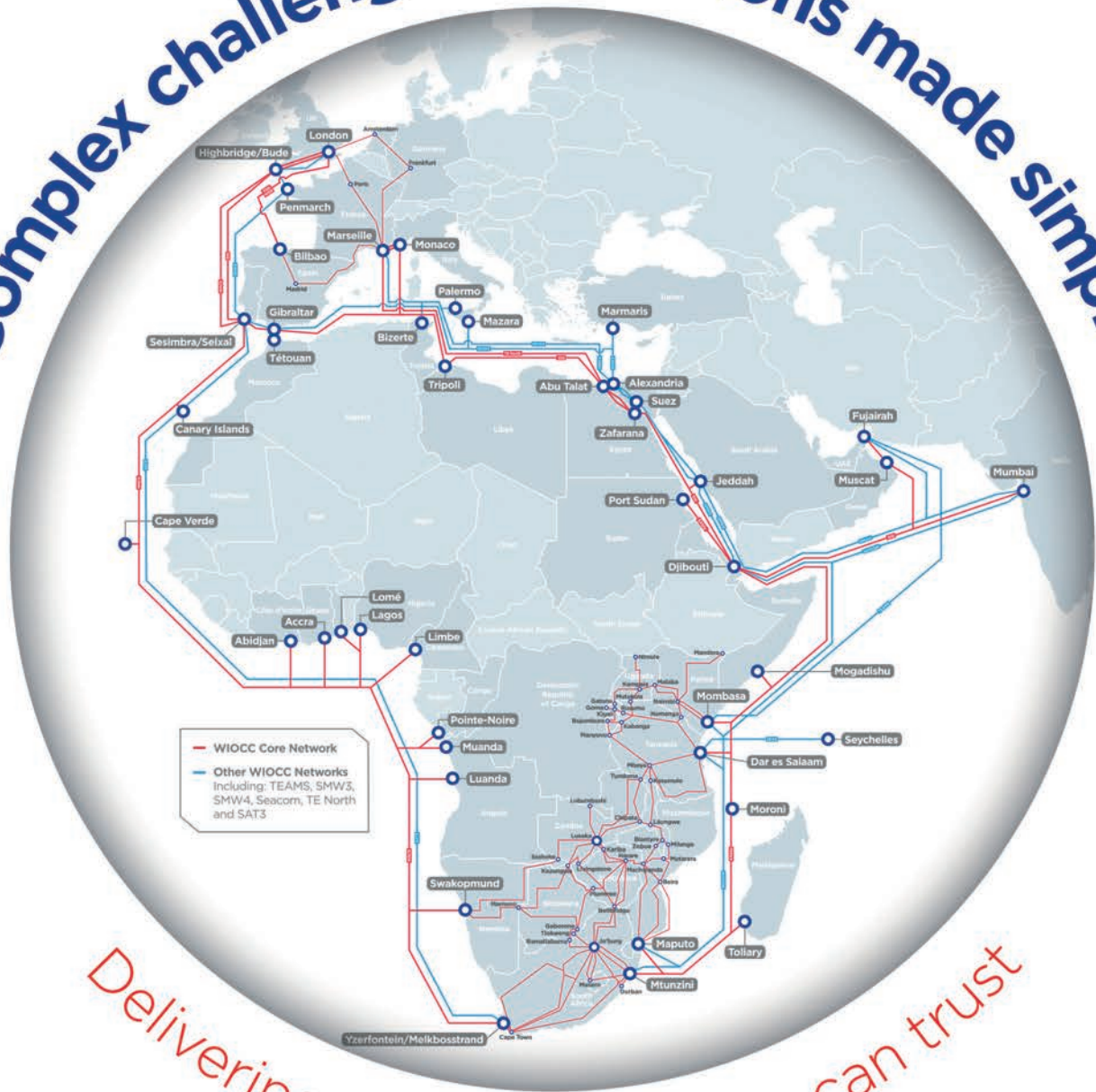
- In service
- - - Under construction or planned

- France - Sao Tome & Principe : In service since Dec. 2012
- Sao Tome & Principe - S Africa: Target RFS Dec 2017
- Upgrade 1 - In service since 30 Sep 2016
- Design capacity upgraded to from 5.12T to 12.8T

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Sub-Saharan Africa growth lowest in more than 20 years

GDP per capita in sub-Saharan Africa will contract for the first time in 22 years, according to the IMF.

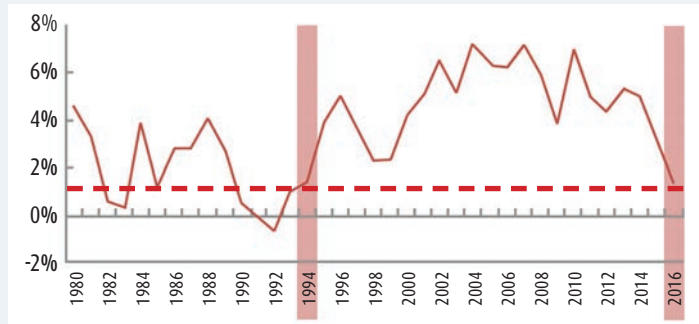
In its latest *Regional Economic Outlook for Sub-Saharan Africa* report published in mid-October, the organisation projects average growth to fall to 1.4 per cent in 2016. It says that's less than half of last year's growth and "far below" the five per cent plus experienced during 2010-14.

Abebe Aemro Selassie, head of the IMF's African department, identifies two main factors behind the sharp slowdown.

"First, the external environment facing many of the region's countries has deteriorated, notably with commodity prices at multi-year lows and financing conditions markedly tighter.

"Second, the policy response in many of the countries most affected by these shocks has been slow and piecemeal, raising uncertainty, deterring private investment and stifling new sources of growth."

The IMF says most commodity exporters are under "severe" economic strain. It points out that this is particularly the case for oil exporters like Angola and Nigeria,



The IMF says real GDP growth in the region is at its lowest level since 1994.

SOURCE: WORLD ECONOMIC OUTLOOK DATABASE

and five of the six countries from the Central African Economic and Monetary Union (CEMAC) whose near-term prospects have "worsened significantly" in recent months despite the modest uptick in oil prices. (The five CEMAC countries include Gabon, CAR, Chad, Republic of the Congo and Equatorial Guinea. Cameroon is the exception.) Repercussions from the initial shock are now spreading beyond the oil-related sectors to the entire economy in these countries, and the slowdown risks becoming deeply entrenched, states the IMF.

It adds that conditions in non-oil commodity exporters also remain

difficult, including in South Africa where output expansion is expected to stall this year. Likewise, growth in the DRC, Ghana, South Africa, Zambia, and Zimbabwe is "decelerating sharply or stuck in low gear", according to the IMF. The challenges for several of these countries have been compounded by an acute drought affecting large parts of eastern and southern Africa.

However, the IMF is more optimistic about non-commodity exporters which represent around half of the countries in the region. It says they continue to perform well with growth levels at four per cent or more, and benefit from lower oil

import prices, improvements in their business environments, and strong infrastructure investment. Countries such as Côte d'Ivoire, Ethiopia, Senegal, and Tanzania are expected to continue to grow at more than six per cent for the next couple of years.

The report shows that overall growth in the region could recover to close to three per cent in 2017 if policy makers take "strong action" in the coming months.

While many of the hardest-hit oil-exporters have taken steps to adjust to the new reality of low commodity prices, Selassie believes their adjustments have generally been too slow and incomplete: "Given the scale and persistent nature of the shock and limited policy buffers, a growth rebound will require a much more sustained adjustment effort, based on a comprehensive and internally consistent set of policies to re-establish macroeconomic stability," he says.

For countries outside monetary unions, the report urges central banks to allow the exchange rate to fully absorb external pressures, and tighten monetary policy where needed to tackle sharp increases in inflation.

SA's first wholly black-owned bank launches mobile platform

South Africa's only wholly black-owned bank has launched its own mobile and

digital payment platform in partnership with WIZZIT International.

Established in 1975, Ubank was primarily set up for mine workers in

the gold and platinum sectors who previously had difficulty accessing financial services. The bank hopes the implementation of its new *Vulindlela*

platform will enable it to move into adjacent markets beyond mining in an effort to boost revenue streams. Wilson Mosigi, its acting managing

NEW APPOINTMENTS

Date	Name	New employer	New position	Previous employer	Previous position
1/9/16	Ahmed Essam	Vodafone International	CEO European cluster	Vodafone Egypt	CEO Vodafone's European cluster includes: Ireland, Portugal, Greece, Romania, Czech Republic, Hungary, Albania & Malta.
12/10/16	Johan Wibergh	NGMN	Chairman	-	The Vodafone Group CTO takes over from Deutsche Telekom's Bruno Jacobfeuerborn as board chairman at the Next Generation Mobile Networks alliance.
13/10/16	Patrick Masambu	ITSO	Director general	CTO	Council chairman. ITSO is THE US-based International Telecommunications Satellite Organization.
24/10/16	David Barrass	Sapura	Interim CEO	Various	Various advisory & executive roles. Takes over from Gordon Watling as CEO who has taken an extended period of absence following medical advice.
24/10/16	Alan Lovell	Sapura	Chairman	Various	Various advisory & executive roles.
24/10/16	Jason Smith	Inmarsat	COO	Rolls-Royce	President of nuclear business.
26/10/16	Börje Ekholm	Ericsson	President & CEO	Patricia Industries	CEO. Will join Ericsson 16 January 2017.
31/10/16	Ralph Mupita	MTN Group	CFO & executive director	Old Mutual Emerging Markets	Chief executive

LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
18/10/16	ADTRAN	US	3Q16	USD	168.89	155.21	0.26	Revenue performance for quarter exceeded expectations with total income increasing 7% YoY. CEO Tom Stanton said: "I am particularly pleased to see our international business grow 42 per cent over the previous quarter."
24/10/16	MTN	South Africa	3Q16	ZAR	52 (bn)	NA	NA	South Africa revenues improved by more than 3.6% QoQ. After reporting a YoY decline in revenue in 1Q & 2Q 2016 of 6.2% & 3.3% respectively, MTN Nigeria's revenue YoY decline was limited to 1.2%.
25/10/16	Bharti Airtel	India	2Q16	INR	24,652 (crore)	9,466 (crore)		Overall revenues up including Africa which reported 3.7% growth YoY on underlying basis (adjusted for divested operating units in Burkina Faso & Sierra Leone, & tower sales).
25/10/16	Millicom	Luxembourg	3Q16	USD	1.6 (bn)	562	NA	Africa businesses delivered 11.2% organic service revenue growth with an EBITDA margin of 28.5%. Overall organic service revenue down 0.2% YoY.
25/10/16	Orange	France	3Q16	EUR	10.3 (bn)	3.6 (bn)		YoY earnings in MEA increased 2.5% to reach EUR1,371m. At the end of September, company had 113.5m mobile customers in the region, including Tigo DRC (3.4m) & Cellcom in Liberia (1.5m), both of which were consolidated in the quarter.
27/10/16	Intelsat	US	3Q16	USD	542.7	396	NA	Earnings declined 7% YoY. Firm says: "Headwinds continue to dominate our financial results, including pricing pressure, reflecting oversupply conditions of wide-beam capacity for certain regions & applications, point-to-point telecoms infrastructure services moving to fibre alternatives, & limited new US government opportunities.
27/10/16	Gemalto	Netherlands	3Q16	EUR	753	NA	NA	Total revenues for quarter 1% lower at constant currency. SIM sales were 11% lower at €152m YoY, compared to (16%) in previous quarter. Improvement came from slightly better conditions in Latin America & Asia. Regulators in some African countries also started to apply stricter subscription registration processes.



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executive, says: "In our 40 years of service to workers, we see this as a quantum leap for the bank to help satisfy customers' needs. Going mobile and digital will drive customer acquisition and retention and open the bank to new markets beyond the confines of brick and mortar branches."

Prior to launching the mobile and digital platform, the bank's system only offered basic and limited services, such as balance enquiries, mini statements, internal transfers and the purchase of network data or airtime. It worked closely with South Africa-based WIZZIT to design a new, bespoke solution.

Vulindlela is said to offer enhanced functionalities, including mobile and internet banking, the ability to purchase additional services, e-wallet services, a branch and ATM locator, forex, calculators and share trading.

"The immediacy and flexibility of *Vulindlela* is a perfect fit for Ubank as it allows us to connect all banking channels with one robust network solution and a consistent customer experience," claims Mike Madonsela, head of channels at Ubank. "This omni-channel approach required an equally agile partner to build and design the platform."

Botswana Power Corporation and Liquid Telecom in joint venture

Botswana will have a new telecoms provider. Under a recently agreed joint venture, the Botswana Power Corporation (BPC) will lease excess fibre from its network to Liquid Telecom, creating a new network which promises extensive reach across the country.

BPC owns and operates an optical fibre cable network that is embedded on some of its high voltage transmission lines. This network will be commercialised for the first time in order to provide network services in Botswana.

BPC's board approved the commercialisation in March 2016 and, following a period of competitive bidding, chose Liquid Telecom as their preferred partner. The joint venture will operate as Liquid Telecom Botswana.

The use of BPC's infrastructure will be granted to Liquid Telecom Botswana under an Indefeasible Right of Use Agreement (IRUA). Rather than taking any rental payments, the capital value of the IRUA will be used to purchase BPC's equity stake, which is 42.5 per cent. Liquid Telecom will be the majority stakeholder in Liquid Telecom Botswana.

LATEST COMPANY RESULTS (CONTINUED)

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
27/10/16	Nokia	Finland	3Q16	EUR	5.95 (bn)	432	-0.02	Net sales for Networks business saw a 12% YoY decrease. In Middle East & Africa, the division's net sales amounted to EUR469M – a 14% rise from 2Q but a 7% decline YoY. The region currently accounts for 9 per cent of net sales for Nokia Networks.
27/10/16	SES	Luxembourg	3Q16	EUR	1,490.1	1,060.9	NA	Reported EBITDA of EUR1,060.9m is 4.1% lower than prior period. Next satellites for Africa include <i>SES-16/GovSat-1</i> , procured by LuxGovSat for government in MENA & due for launch in 2H17 & six O3b orbiters in 2018-19.
27/10/16	ZTE	China	3Q16	RMB	71,564	NA	0.69	YoY growth of 4.44% mainly attributed to sales in 4G system & optical transmission products in domestic & international markets, as well as devices & terminals in domestic market.

Telkom clarifies uncapped LTE fair use policy

Following the launch of its promotional uncapped high-speed wireless broadband packages for ZAR599 (around USD45) per month, Telkom has indicated that a “normal fair usage policy” will apply to the accounts. The South African incumbent said the terms and conditions protect its clients and network infrastructure from the excessive usage of a few users.

It will impose restrictions on what it called “bandwidth-intensive protocols or applications”, such as BitTorrent, application to application traffic, application to server traffic, and news servers. The restrictions include a 50GB threshold, with affected protocols throttled to 128kbps thereafter. Throttling due to cap depletion will occur during peak network periods, from 6pm to 12am.

The telco will also limit the number of uncapped users to 150 per base station to ensure QoS remains high.

Orange and Ericsson partner for 5G

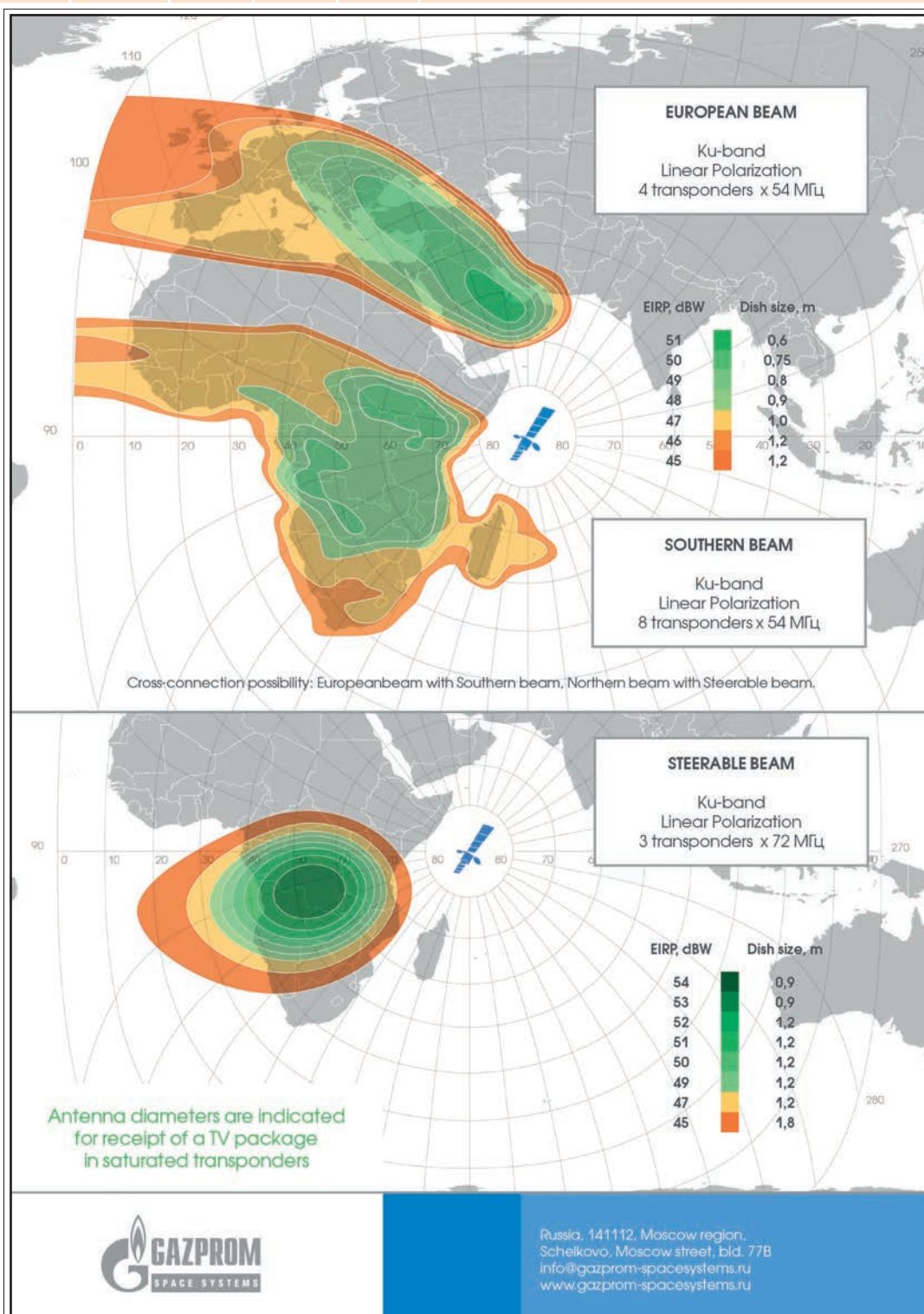
Ericsson and Orange are working on the development and testing of selected 5G use cases based on Orange's network and Ericsson's technology.

The use cases they will evaluate include: wireless multi-gigabits internet access in suburban and rural environments; massive and mission-critical IoT supporting the digital transformation of industry and society; ultra large mobile coverage solutions; and connected cars.

The collaboration will also cover 4G to 5G solutions evolution, including energy and cost efficiencies, and use of SDN and NFV technologies.

“Our ambition is to be prepared for a 5G deployment in 2020,” says Alain Maloberti, SVP, Orange Labs Networks.

The partners say they will enable 5G technology building blocks and pilots across Europe from 2017 onwards.





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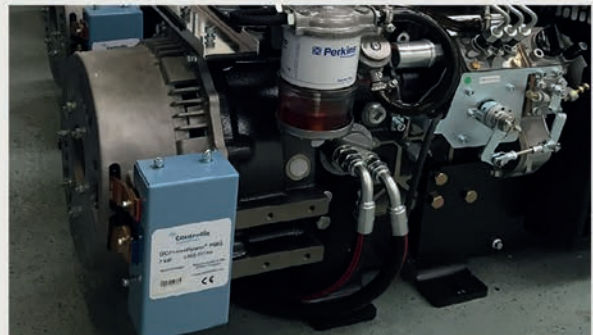


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Codan solves some practical issues for tactical radio users

Codan Radio Communications reckons it has addressed the most important issues for customers –

MANUFACTURER: Codan Radio Communications

PRODUCT: Sentry-HTM

MORE INFORMATION:
www.codanradio.com

reliability, affordability and ease-of-use – with the introduction of the *Sentry-HTM* high frequency software defined radio (SDR).

Based on what the Australian vendor describes as its “proven” *Envoy* HF SDR platform, the *Sentry-HTM* is said to deliver an advanced high-power radio solution with rugged and secure voice and data communications at an “affordable price point”.

Featuring high-power voice and data in a single RF unit, the new radio is equipped with second-generation digital voice, frequency hopping, embedded GPS, 3G ALE, and IP/USB connectivity.

Codan says it is custom-built for mobile and base configurations, thus eliminating the need for an external amplifier and allowing for quick solutions during emergency situations. The firm adds that the system also

features a smart handset and a simplified intuitive menu system with multiple language options.

The new *Sentry-HTM* radio expands Codan’s family of tactical solutions, which now includes the *Sentry-V* (VHF) handheld, *Patrol 2110M* (HF) manpack, and RIOS interoperability for computer, smartphone and radio integration.



PIM analyser addresses real-world challenges

Rohde & Schwarz (R&S) has exclusively added the *PiMPro Tower Series* PIM analyser from CCI

MANUFACTURER: Rohde & Schwarz

PRODUCT: PiMPro Tower Series

MORE INFORMATION:
www.rohde-schwarz.com

(Communication Components Inc.) to its mobile network testing portfolio.

In response to the continually increasing demand for higher data rates, R&S says operators have to increase the spectral efficiency of their networks up to the theoretical limit. However, it warns that the high sensitivity of LTE and LTE-A makes any interference even more noticeable.

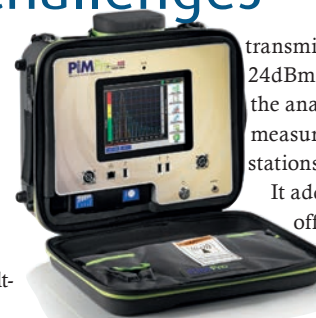
The firm says the *PiMPro* is a “particularly lightweight” instrument which comes in a practical backpack

and is ideal for use on transmitter masts. The device has been designed to perform PIM, return loss, distance-to-PIM, and distance-to-fault measurements without requiring additional hardware, even in difficult-to-access areas.

R&S says its “excellent” measurement sensitivity of -135dBm and ability to reduce two-tone

transmit signals to 24dBm (100mW) make the analyser ideal for measurements on base stations and DAS.

It adds that the *PiMPro* offers two 40W output signals for PIM tests, making it the only instrument of its kind to address “real-world challenges in the field”.



Low PIM connectors for wireless applications

Amphenol RF reckons its new 4.3/10 *Connector Series* offers “excellent”, low PIM performance in a smaller, lighter design.

The connectors and adapters are engineered for the wireless market and are said to be ideal for applications requiring low passive intermodulation.

Amphenol RF says they have the same, robust design as 7/16 connectors but are smaller and up to 40 per cent lighter, allowing for much more dense, lighter weight applications.



The 4.3/10 *Connector Series* are IP-67 compliant to protect against dust and water ingress for outdoor applications, and provide VSWR performance up to 6GHz.

Amphenol says separate electrical and mechanical components yield “very stable” PIM performance regardless of coupling torque, allowing for easier installation. It adds that silver plated contacts and white bronze plated bodies offer a high-degree of conductivity, corrosion resistance and durability.

MANUFACTURER: Amphenol RF

PRODUCT: 4.3-10 Series

MORE INFORMATION:
www.amphenolrf.com

Amdocs offers ‘rapid and secure’ monetisation

Optima is a digital customer management and commerce platform designed to monetise any product or service. According to Amdocs, it allows service providers to quickly enter a new vertical line of business or market.

The new platform is claimed to offer advanced revenue management capabilities to support pre- and post-paid customers and any B2B model, across all channels. It consolidates and expands on Amdocs’ offerings for mid-sized communication businesses, MVNOs and digital enterprises, and is said to introduce a unifying business integration layer together with a “sophisticated” user interface with a common, cloud-based architecture.

For digital enterprises that use subscription-based business models, Amdocs says *Optima* offers support for multi-hierarchy, multi-regional and multi-vertical operations

with flexible engagement models, including SaaS pricing options.

Utilising JBoss technology and pre-defined REST APIs, the platform enables cloud-to-cloud connectivity, and can be easily integrated with third-party enterprise and customer management applications, as well as into social channels.

Amdocs adds that it also delivers intuitive self-service for end customers, thereby enabling digital enterprises to offer better-targeted services and quickly resolve customer issues.

MANUFACTURER: Amdocs

PRODUCT: Optima

MORE INFORMATION:
www.amdocs.com

Drones create 'towers' for meshed broadband network

Rajant Corporation and UgCS reckon they have come up with an easy way of allowing companies and governments to establish a broadband network for their drones.

According to Rajant, industrial users have been looking for a solution that will enable their drones to overcome weak or

non-existent communication networks, bolster flight times, improve security, and scale their fleets. Working in partnership with Latvia-based UgCS, the company has developed the *AirMast Tethered Drone System*. This uses UgCS's ground-based command control software, Rajant's *BreadCrumb* drone module, and a tether system provided by Elistair.

BreadCrumb (pictured) is a light, small-form-factor radio that can be integrated on a single drone or a cluster of drones for fleet management purposes. Capable of handling various payloads, Rajant says its lightweight module integrated on the drone overcomes the obstacles of long distances, flight time and limited functionality.



AirMast uses an intelligent winch system and a cable that powers the drone from the ground, allowing it to stay in the air for extended periods of time without any reliance on batteries.

Meanwhile, UgCS says its software is capable of managing an entire fleet of drones simultaneously, allowing multiple drone operators in the field to connect to a single server.

MANUFACTURER:

Rajant Corporation

PRODUCT: AirMast Tethered Drone System

MORE INFORMATION:

www.rajant.com

Industrial 4G router interconnects via VPN

The *IAP-4G* is a cellular router with integrated VPN functionality to ensure secure networking between different sites. It is also designed to facilitate the integration of external service providers.

Germany-based LANCOM Systems says the device has an integrated multimode LTE modem to offer data rates up to 100Mbps, and is backwards

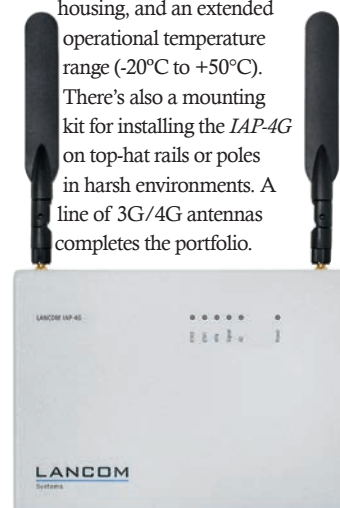
compatible with UMTS, EDGE and GPRS (3G and 2G). Power is supplied optionally by either a mains adapter or PoE (IEEE 802.3af).

Five IPsec VPN channels with hardware acceleration are integrated into the router upon delivery (25 are optional), and LANCOM says the highly secure IPsec connections can be established over any cellular network.

The company says the *IAP-4G* provides up to 16 securely isolated IP contexts with separate routing. This allows IP applications to operate between different networks while managing them on a single central router and, at the same time, keeping the different communication channels securely separated from one another.

Other features include an integrated firewall, an IP50-rated dust-proof metal housing, and an extended operational temperature range (-20°C to +50°C).

There's also a mounting kit for installing the *IAP-4G* on top-hat rails or poles in harsh environments. A line of 3G/4G antennas completes the portfolio.



MANUFACTURER:

LANCOM Systems

PRODUCT: IAP-4G

MORE INFORMATION:

www.lancom-systems.com

Hunting system tracks RF interference

With its new *InterferenceAdvisor*, Viavi Solutions claims that hunting for sources of mobile interference can now take hours rather than days or weeks.

MANUFACTURER:

Viavi Solutions

PRODUCT: InterferenceAdvisor

MORE INFORMATION:

www.viavisolutions.com

InterferenceAdvisor is a fully automated interference location solution. According to Viavi, it is easy to set up and allows one engineer to quickly and easily locate the sources of interference, even in an urban environment.

The system itself uses a lightweight portable omni antenna, and features voice prompts to direct the cell technician to the suspected interference location. Viavi says it gives engineers full spectrum control, and features an automated



interference area indication and navigation guide, as well as a display for detailed interference signal monitoring. All of this can be managed from a Wi-Fi enabled *Android* tablet. There are also built-in accessories to minimise the cabling requirement.

ALSO LOOK OUT FOR

Network Mind aims to control automation

Huawei is developing a system to apply machine learning to achieve intelligent, automated network traffic control through automatic detection and accurate prediction of traffic changes.

According to the firm, *Network Mind* facilitates the management of millions of network elements with millisecond response time, and automatic adaptation and optimisation based on service changes. It says the system will therefore help telcos and enterprises achieve differentiated, self-adaptive control of complex services in ultra-large networks.

At the end of last year, Huawei developed the first *Network Mind* prototype at its Noah's Ark lab. This is now being evaluated in collaboration with operators. It's claimed results of tests on live networks prove that *Network Mind* is highly efficient, flexible and reliable in complex network control.

"It is up to 500 per cent more efficient in realising KPIs (such as task completion and policy generation) than existing control methods using template-based algorithms or heuristic optimisation algorithms," says Huawei.

The firm says its system uses deep learning to enable effective abstract representations, while reinforcement learning supports self-adaptation and self-evolution. These technologies allow networks to learn and upgrade automatically based on real-time Big Data mining, thus realising automated and intelligent control and management.

Huawei claims *Network Mind* is over 50 times more efficient when analysing paths of large optical networks. It says this can cut the time it takes to analyse typical use cases, such as optical network failure prevention, from five hours to as little as six minutes. When network conditions and business models change, *Network Mind* is said to automatically adapt and renew its parameters to minimise impact on existing services.

Delivering voice growth through a unique mix of wholesale & retail

IDT, a world leading carrier of international voice, offers African network operators a unique and innovative way to drive incremental minutes and revenue through its retail arm. In an aggressive marketplace, no other voice carrier can deliver a strategic partnership that offers the stability and opportunity to grow voice and, in some ways, reclaim revenue lost through OTT providers.

The unique 'Africa opportunity' stems from IDT's retail business through its BOSS Revolution brand. This offers communication and financial services, enabling foreign-born customers to stay in touch and share resources with their loved ones around the world.

The African opportunity

BOSS Revolution currently generates more than 15 billion annual minutes globally, 1.25 billion of which terminates through 80+ African direct connects. More than 430,000 Africans based in the US use BOSS Revolution to call home, with other regions of the world generating retail minutes into Africa through the service and the UK spearheading this with double digit growth.

IDT's penetration is so high amongst the foreign-born community in the US that it reaches 1 in 4 of this population. In today's flat and aggressive voice market, operators need to look towards identifying strategic partnerships in order to realise new revenue streams. Because IDT has the reach and access to Africans calling home, it can work together with African network operators to provide preferential rates to its retail customers and grow this base to drive even more volume their way. And at the same time, IDT can trade this retail volume to carry their outbound traffic, creating a uniquely compelling proposition to grow the mutual businesses. The company calls this 'twice the opportunity'.

Ben Hirsch, IDT's chief marketing officer, explains more: "BOSS Revolution is an online portal created for retail stores that delivers our products and services through the retailer into the hands of consumers. What's key about this portal is that it takes cash of the street.

"A number of our foreign-born customers do not necessarily have credit or bank accounts but want to access electronic payments for services. BOSS Revolution not only provides those rich services to them but actually allows them to be consumers in today's marketplace."

BOSS Revolution's core element is 'PIN-less calling'. It took the old-fashioned hard card and



did away with the need for users to enter personal identity numbers, or worry about paying various fees for international communication.

Since it was launched six years ago, Hirsch says BOSS Revolution has delivered on its promise for customers of no pin, no fees, no expiration. And because it has become a trusted brand, he says IDT has been able to launch additional services.

"These include international mobile top-up which allows people to add credit to the pre-paid service of friends and family back home. Because this was a sort of remittance-in-kind service, we realised that we were able to go into other services like money transfer. We have 49 licenses across the United States where we operate as a money transfer provider under the BOSS Revolution brand, enabling customers to send money all over the world, with a growing African customer base using this service to send money back home too."

In addition to pre-paid Visa cards, virtual Visa cards, gift cards, bill payments and a variety of other services, the company continues to grow both BOSS Revolution's telecoms and payment services across a variety of platforms.

While the retailer remains IDT's strongest channel for BOSS Revolution, the company also offers a variety of services across its web portal, in-store kiosks, voice portals, and now through mobile applications as well.

"The BOSS Revolution app has been downloaded over four million times now," says Hirsch. "I am proud to say that we are one of the few apps in the app stores that actually generates hundreds of millions of dollars in revenues,

which is a fantastic place to be. It shows that we continue to provide customers with value across both communication and financial services.

"So BOSS Revolution continues to grow, and our services continue to provide value to customers which really goes back to the proposition of ensuring that they stay in touch and share resources with friends and family back home.

Twice the opportunity

What makes IDT unique in the telecoms space is the ability to transfer the value of those 15 billion proprietary minutes from the foreign-born customers to the international telecoms providers that need to terminate those international minutes.

That's where the company's wholesale division comes in, as Hirsch explains: "It creates value by being able to work with network operators to terminate the retail minutes we generate, which our wholesale team can then trade with to carry their outbound traffic.

"Working with fixed and cellular operators, we're able to combine our retail and wholesale operations to provide a completely unique proposition to help grow the respective businesses – achieving incremental minutes through preferential rates for IDT's retail customers, and increasing revenue even further by dropping dollars, not just minutes, into networks, with the growth we're experiencing from our financial services available through BOSS Revolution too."

Strategic partnerships: the key to growth

In today's voice market, network operators need to shift their thinking towards more strategic partnerships in order to grow. Partnering with a wholesaler that can carry their outbound traffic but also leverage retail volumes into their network is an assured direction they can take. IDT is really the only voice carrier that is uniquely positioned to deliver the volume commitment needed to grow the businesses on both the wholesale and retail side, representing 'twice the opportunity' for an operator to increase their revenues.

The IDT team will be at **AfricaCom, stand B17**, where they will be delighted to talk to African network operators about what BOSS Revolution can do for their business.

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4G or not 4G?

Specialists such as Airbus Space and Defence believe the hybrid network approach is the right way to look at the role of LTE in a PMR environment.

...that is indeed the question. But what are the challenges of using LTE for public safety networks? RAHIEL NASIR discovers there's a long way to go before 4G can replace established PMR technologies such as TETRA.

Over the last few years, LTE has come under increasing focus in the two-way radio industry – could this cellular technology be used by critical comms users in place of more established PMR platforms such as TETRA?

According to Raquel Frisa, LTE and broadband services product manager for Sepura, the international regulation and industry bodies are determined to adopt LTE as the key technology offering complimentary broadband applications to current voice plus data and direct mode operation applications in mission-critical scenarios. “However, we foresee that the first professional deployments – ‘LTE-based’ and compliant with standard PMR functionality – will take more than five years and may not even be deployed until 2025.”

Like many TETRA specialists, Sepura believes hybrid network solutions – a combination of narrowband and broadband technologies – will mean TETRA and LTE will co-exist for several years. But in some parts of the world things are

already changing.

For example, earlier this year in the UK, the government began implementing a GBP1bn programme that will see the TETRA system used by the country's emergency services replaced by an LTE network. It will be provided by EE – the mobile operator that was originally setup as a joint venture between Orange and Deutsche Telekom (T-Mobile) in 2010 and acquired by BT (British Telecom) last year. EE claims its 4G network will “significantly improve” the efficiency of the emergency services by giving them access to the type of data and applications that have benefitted private businesses in recent years, and which have not all been possible using TETRA.

No substitute for TETRA

So does that sound like the death knell for TETRA? Not quite. Motorola Solutions (which, incidentally supplies technology to the UK

emergency services and has been appointed services partner under the new programme) believes PMR will always be the “fail-safe” communication technology when it comes to public safety. Tunde Williams, the company's head of field and solutions marketing for Europe and Africa, says LTE will gradually integrate as an additional technology for public safety agencies. As a result, he reckons one of the biggest challenges for LTE is bridging between the two technologies.

Tunde adds that other challenges vary around the world, and could be issues like government spectrum designation, or integration challenges that are typical for any new technology deployment.

According to the TETRA and Critical Communications Association (TCCA), legal restrictions could severely limit possibilities of using LTE technology for public safety networks. As an example, Tero Pesonen, chairman of the association's critical communications broadband group, says some interpretations of the EU net

neutrality directive prevent using commercial LTE radio access as part of the solution as public safety traffic is not allowed to be prioritised over consumer traffic. He says this would therefore leave field operatives vulnerable in cases of network congestion.

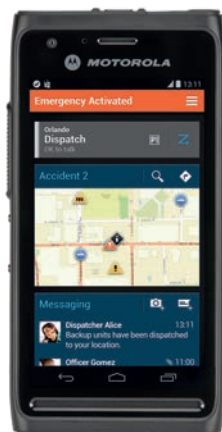
This strikes a chord with Jochen Bösch, head of support and product management at DAMM. He believes that one of the main challenges with using LTE is frequency scarcity, especially where large spectrum is required to support high data throughput. But he adds that in most cases, this is a “nice to have” rather than a “must have”, as TETRA technologies such as TEDS have the same spectral efficiency as LTE and can cover the mission-critical data needs.

Another issue for Bösch is actual network coverage. He says that compared to TETRA, the number of sites required with LTE is at least 10 times higher.

As a result of all these challenges, most experts in the PMR industry expect it to be some time before complete and mature LTE-based solutions become available. Airbus Defence and Space (ADS) adds its voice to the debate with the assumption that it will take around five years for LTE to reach the mission-critical maturity level of



“Maybe LTE becomes successful on a nationwide public safety network. But at its current stage, it will have almost no chance in private industrial segments.”



Motorola Solutions says its *LEX L10* (left) portable combines PMR features with capabilities more often associated with smartphones. It can be used with the *VML750* LTE modem (above) which connects equipment in a vehicle to the public safety LTE network.

today's TETRA and TETRAPOL services.

Kai Schlichtermann, the company's spokesperson for secure land communications, says: “This relatively long period is needed for 3GPP to standardise the needed technology enablers and applications for mission-critical communication. The industry also requires significant time for product implementation and verification. In addition, trialling and piloting activities are needed to make sure that new solutions match well to the requirements of mission-critical users, use cases and operational processes. All this needs to be done before new solutions can be switched to operational use.”

More information needed

In the meantime, Sepura's Frisa says hybrid models based on mobile virtual operations may appear – indeed this is already happening in Finland and Belgium. But she believes it is unlikely that public safety agencies will completely replace existing networks with this model.

According to the TCCA, the LTE technology that is available across commercial networks today is suitable for complementary, non-mission critical data services for public safety users. This is perhaps where the “bridging of technologies” that Motorola's Williams refers to above comes in.

But the TCCA goes on to point out that in order to harvest the benefits of LTE for field operations, the technology needs to become more information centric rather than voice centric. Pesonen says this is probably the most difficult

challenge. So how can LTE integrate with legacy PMR technologies that are already in place?

“A lot can be done to gain synergies when narrowband PMR technologies are run in parallel with LTE, he says. “There are implementations that enable joint subscriber management, and use common transmission and sites. There are even proprietary implementations from a number of companies enabling group linking between TETRA and LTE as well as some terminal products that support both TETRA and commercial LTE.”

However, Pesonen says much more needs to be done in these areas. For instance, he says 3GPP has recently accepted a study item to address the interworking between TETRA/P25 and LTE. This will enable the definition of official standard interfaces for exchanging mobility management and content information such as group and individual calls, as well as short data services.

But as Sepura points out, this feature is at an early stage and it does not expect to see the specification completed until further releases. So until such time as all the challenges have been met, specialists are developing PMR infrastructure that adds LTE radio access as an overlay to existing TETRA.

For example earlier this year, Sepura itself announced that its *eNEBULA* platform is now offered as a hybrid system for mission-critical voice and data, or in some cases as a pure LTE system for broadband data services.

The company says *eNEBULA* is based on multi-manufacturer open standards, offers multi-technology capabilities within a single network, and has been developed according to ETSI and

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MOTOROLA SOLUTIONS



Left: Airbus Defence and Space's standalone *Tactilon Cell* can be used to create a small LTE network. It comprises a base station, terminals, LTE software and an app server for mission-specific apps. All the cell's features comply with 3GPP standards. Right: the recently launched *Dabat* integrates a complete TETRA radio and smartphone in one device. Airbus says it can work on any TETRA network.

3GPP specifications and recommendations for TETRA and LTE radio access. The system allows the sharing of real-time video from urban, mobile and body-worn cameras. Sepura claims it complies with the "most demanding" regulations for military grade equipment, and is built to withstand the "harshest" conditions.

"Our portfolio also includes hybrid solutions for terminals: the *MVC-6000*, a multi-technology vehicular console integrating TETRA and LTE, as well as our *SC20*, which is an LTE-ready TETRA hand portable," says Frisa.

Other TETRA manufacturers are also adding LTE support to their products. For instance, DAMM's Bösch says the technology can be easily integrated as a data backbone supplement via applications and gateways. "Depending on the integration on terminals, users in the future might just be required to wear one terminal for TETRA as well as for LTE coverage. The TCCA is working on a per protocol integration, but as the LTE standard for mission-critical comms is not fully finalised and released, this integration will last several years."

Integrating LTE

Motorola Solutions is a firm advocate of integrating LTE and PMR. Williams says: "We have made 'bridges' that make it possible for PMR products (radios) to communicate with LTE devices (smartphones/tablets/computers). Our *WAVE* product is an application that allows any radio to communicate with any other device, including smartphones, laptops, tablets and computers."

WAVE has been designed to provide a secure PTT platform for group communications. Motorola says it offers the ability to integrate with LMR, cellular, Wi-Fi, etc., making it possible for teams to use secure voice and data services regardless of network, carrier or device.

Meanwhile for Airbus, the hybrid network approach allows the secure and efficient integration of new devices and services with existing narrowband solutions. The company says it is currently working very closely with 3GPP to develop products that are in line with current and future industrial standards.

"Sharing existing TETRA or Tetrapol sites and IP backbones with broadband solutions is a decisive

vehicle for smooth evolution, efficiency and cost savings," says Schlichtermann. "In fact, the hybrid approach means public safety organisations will continue to use TETRA or Tetrapol network for mission-critical voice and short data, and introduce mobile broadband services gradually, utilising and combining different mobile broadband implementation options."

Earlier this year, ADS unveiled a range of products that are said to be able PMR network users to smoothly evolve from narrowband to mission-critical broadband.

The new *Tactilon* suite includes products that have been designed to help end-users to communicate effectively using LTE services. For example, ADS says the new *Dabat* integrates a complete TETRA radio and a rugged smartphone in one device. It features mission-critical functions, touchscreen, and front/back cameras. The vendor says the radio module offers all the functionalities once found only in TETRA devices, and can work on any standard TETRA network.

Some of the other products in the *Tactilon* suite include *Aagnet*, ADS' multimedia communication application for smart devices. While bringing together established PMR services such as PTT and multimedia sharing via broadband, *Aagnet* is also fully compliant with 3GPP standardisation.



"A lot can be done to gain synergies when narrowband PMR technologies are run in parallel with LTE... There are even proprietary implementations."

The company says this enables users to communicate with each other either via a PMR radio or a smart device.

ADS therefore believes the hybrid network approach is the right way to look at the role of LTE in a PMR environment. And Schlichtermann says it will evolve: "LTE will substitute narrowband services entirely to a great extent at some point in the future. But as yet, nobody knows when this will exactly happen or how it will be done."

So will a new breed of PMR spawned by the marriage of LTE and TETRA eventually supersede traditional platforms? To answer this, DAMM's Bösch says you need to differentiate between networks for public safety and those used for mission-critical industrial operations.

"Maybe LTE becomes successful on a nationwide public safety network. But at its current stage, it will have almost no chance in private industrial segments, where TETRA and DMR will continue to be the key solutions for mission-critical as well as business-critical communication. If an LTE standard is finalised, frequencies become available, and markets are asking for LTE base stations, we will evaluate this."

Having said that, DAMM says its *TetraFlex* system already enables customers to integrate any LTE vendor infrastructure to it. They can then utilise TETRA's mature voice capabilities and enhance this with LTE data capacities. Or they can use the systems to extend voice and data communication coverage via a public LTE network using *TetraFlex* soft client apps that can run on many commonly available smartphones.

"With the current uncertainties in the market it is key to have open interfaces and open scalability towards the future, not only on capacity but also on technology," says Bösch. "*TetraFlex* is not just one technology – it integrates TETRA, TEDS, analogue and DMR into one platform, and further technologies can and will be added when the time for them has come. This avoids our clients from investing twice or being kept in a vendor lock, offering a scalability and flexibility exactly according to their needs within the given technical possibilities."

Schlichtermann echoes this view. He believes that the key for manufacturers to succeed in mission-critical communications is to completely

understand the user's requirements. For Motorola Solutions, some of the key considerations here are the customer's budget, availability of spectrum, technology availability and suitability.

"From a technology point of view, the latest releases of LTE coupled with *WAVE 7000* will offer many of the features customers enjoy on an PMR system but not necessarily all," says Williams. "So it really depends on the customer's operations, what they need the technology to do, and a good understanding of 'what's good enough' for their deployment. For some that could be LTE. But many will continue to rely on TETRA for voice, and will deploy LTE for applications requiring high-speed data."

One of Motorola Solutions' key public safety LTE products is the *LEX L10*. Williams says this purpose-built portable broadband device combines the features of the company's rugged first-responder radios with capabilities more often associated with smartphones. "Together with the *VML750* LTE vehicle modem which connects equipment in a vehicle to the public safety LTE network, it facilitates unique applications. It delivers LTE voice services and real-time multimedia with full dynamic resource prioritisation, while ensuring full data security both in the office, on the street and in the vehicle."

End-of-life for TETRA

TCCA's Pesonen says TETRA has been the dominant critical communications standard during this decade, and predicts that it will continue to be so for narrowband spectrum during the 2020s. He adds that as the standardisation of critical features advances in 3GPP, it will be possible to do increasingly more with LTE. "It is expected that 3GPP LTE Release 15 functionality is sufficient to operate critical communication exclusively on LTE in large scale – limited use may be possible already with a smart implementation of Release 13."

However, Pesonen goes on to say that the installed public safety TETRA/Tetrapol networks in many European countries will reach their technical end-of-life by 2030. Which means that those countries will need to have switched to a critical communications broadband service by such time, or will have to re-invest in their current technology.

"This sets the deadline for the narrowband broadband transition window. The starting point is when the LTE implementations meet the requirements and the relevant frequency

spectrum is available. This is expected to happen in the early part of the next decade at larger scale."

Pesonen says that in order for user organisations to move from their current mission-critical TETRA networks to LTE requires a great deal of trust – they need to ensure that they can continue to conduct their duties with, at the very least, the same levels of safety, security and efficiency as before.

"Therefore, it is imperative that LTE with high availability coverage is available with the critical features. Also, as this kind of transition processes tend to be very complicated on the administrative side, the interworking aspects of LTE and legacy

PMR systems need to be solved. Finland is an example of a country that has already made a strategic guideline how to take steps to prepare the transition."

Clearly then, the 'traditional' PMR technologies are here to stay. And as Frisa states, Sepura does not envisage a medium-term replacement of narrowband technologies such as TETRA, P25 or DMR. "We think there will be a decade of co-existence of both narrowband and broadband LTE technologies. And later on, we forecast that there will be a market for them even when the PMR LTE specification is complete." ■

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The Government of Gabon chose wireless systems to support video surveillance for the Africa Cup of Nations.

With sprawling departments, local and central government organisations have broad communication needs. In many cases, only wireless technologies are able to meet their challenges.

When the Government of Gabon needed to secure the Africa Cup of Nations it chose RADWIN's point-to-point (PTP) and point-to-multipoint (PMP) systems for mission-critical video surveillance transmission.

Established in 1997, RADWIN provides a full suite of wireless PTP, PMP and broadband mobility solutions, powering applications such as backhaul, broadband access, private network connectivity, video surveillance transmission as well as wireless broadband in motion for trains, vehicles and vessels.

Gabon and Equatorial Guinea co-hosted the Africa Cup of Nations in 2012, and Gabon has been chosen to host the tournament again next year.

Working with Magal Security Systems, the vendor supplied its 5000 PMP and 2000 PTP wireless systems in the 3.5GHz and 5GHz bands to help secure the games for the Government. RADWIN's systems relayed real-time high definition video from cameras installed within the stadium, the Olympic Village, and surrounding roads back to the central command centre.

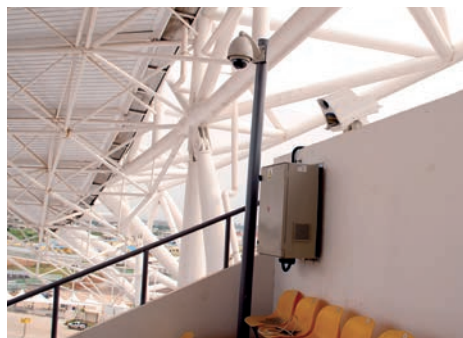
As a result of using the company's wireless surveillance network, the government of Gabon was able to achieve the following results:

- ◆ Ensure the security of athletes and visitors who attended the games
- ◆ Keep the peace during the event which drew crowds in the hundreds of thousands
- ◆ Monitor all areas from one control centre and augment the reach of local police forces
- ◆ Increase detection and response times via live video transmission.

According to RADWIN, its equipment was chosen for a number of reasons. The firm says its systems deliver actionable surveillance information with high image quality in real-time as well as the highest capacity for video streams, enabling positive identification of individuals.

They are also said to offer the flexibility for installers to deploy links in any area where surveillance is needed, and with fast set-up times using wireless technology which eliminates the need to lay cable or dig trenches.

Other USPs for the systems are claimed to include uninterrupted transmission, even in urban zones where there are obstructions to direct line-of-sight; dedicated bandwidth per camera site with RADWIN's 5000 PMP; and an "extremely reliable and robust" network with zero video 'hiccups' or downtime.



In Gabon, RADWIN's point-to-point/multipoint equipment was used to relay real-time HD video from cameras installed within the stadium.

Modernising ICT for African Union

As a large, political, international organisation, the 54-member African Union (AU) handles a huge volume of sensitive data, and holds hundreds of committee and agency meetings per year at its conference centre in Addis Ababa, Ethiopia.

The AU found that it needed a robust solution to streamline its conference operations and protect data from a variety of security threats. Traditional PCs were the backbone of the union's existing system, leaving it vulnerable to hackers, phishing and virus attacks, and data leakage and loss. And at 200W per PC, power costs were prohibitively high based on the large number of computers deployed.

There were also other challenges to overcome. The AU holds more than 600 meetings each year and translates the minutes for all of them into English, French, Arabic and Portuguese. Its system was inflexible and lacked computerised browsing capabilities. So if any changes to minutes or schedules were necessary, it meant significant labour and costs to get the amendment completed at short notice.

Furthermore, AU staff frequently travel and high-ranking officials often work from mobile offices. Information synchronisation, high client/server bandwidth needs, and general inflexibility plagued the union's old system.

The system also required constant upgrades. Maintenance personnel spent most of their time installing and configuring software and hardware and chasing faults. In addition, workers had to deploy



The African Union holds more than 600 meetings each year at its contemporary-looking conference centre and offices in Addis Ababa.

large numbers of PCs for attendees at large meetings on short deadlines. Costs shot through the roof.

In 2013, the union realised it needed a new solution and had to implement it within three weeks in order to meet the deadline for its major annual conference. It chose Huawei's *FusionCloud* desktop platform which offers computing, storage sharing, and resource allocation through cloud data centres. Huawei claims its system enables enhanced information security, conference efficiency, as well as reduced operations and management.

FusionCloud tackled the AU's challenges in several specific areas. All computing and storage resources for the solution were deployed to the AU's central data centre, enabling a seamless connection to the original IT system.

Huawei then installed Wi-Fi hotspots and says it provided the industry's first thin clients customised with Wi-Fi access. Without the integrated cabling of a non-Wi-Fi network, the vendor reckons the office environment is "more orderly". Users can easily access data, such as meeting minutes, through a virtual desktop on workstations equipped with only a monitor, keyboard and mouse.

In terms of security, the *FusionCloud* platform moves computer operating systems and applications to centralised servers in the AU's data centre, protecting data against attack and preventing data leakage from PCs. Thin client security measures, such as authentication and encryption, offer further security.

With centralised storage, Huawei says AU users can now seamlessly shift work locations without interrupting applications. Using mobile devices such as smartphones or tablets to access cloud-based applications and management systems, they can work any time and any where.

Having all resources stored in the data centre means centralised management and flexible resource scheduling is possible. According to Huawei, *FusionCloud*'s unified management model only takes three minutes for the entire process, from VM application to provisioning. It adds that installing software and patches are equally easy in the centralised environment. As a result, quick allocation and on-demand resource utilisation have soared while operations and management costs have dramatically fallen.

The AU has been able to realise several key benefits with the more modern technology. For instance, meeting minutes no longer need to be printed which saves work and money so

employees can focus on other tasks. The low-cost thin clients, configured with a display, keyboard, mouse and USB port, can wirelessly connect to various peripheral devices in central locations. Without all those wires, the conference centre is said to be more organised and comfortable.

The new system also consumes less power. Huawei says a thin client and display use around 70W and generate about 10dB of noise. As a result, there is much less noise while electricity costs are said to be more than 70 per cent lower.

Smart Transportation in Nigeria

Lagos is arguably one of the fastest-growing cities in the world, and is West Africa's leading commercial hub with the region's largest air and seaports. It generates around 25 per cent of national GDP and is also Africa's most populous city with around 20 million inhabitants. The population is expected to reach 40 million by 2030, but the capacity of the city's infrastructure is already very strained, and the roads in particular are in bad condition.

In June 2013, a team of IBM experts completed a month-long *pro bono* consulting assignment for the Lagos State Government to ensure that private traffic and public transportation flows more efficiently in the city.

Working with the Lagos Metropolitan Area Transport Authority – the agency responsible for developing and implementing the state's transportation blueprint – and the Lagos State Ministries of Transportation, Works and Infrastructure, Science and Technology, the IBM team proposed technology-driven strategies to make travel easier.

Located in West Africa's rain forest belt, 20 per cent of Lagos' 3,600km² area is mostly waterways. However, 90 per cent of commuter travel in the state is road-based. City authorities predict a 350 per cent growth in the number of vehicles in the state over the next 25 years, with the population doubling to 40 million by 2030. The potential of both rail and water transport remains largely untapped as they carry less than one percent of overall traffic in the state.

IBM's recommendations included better coordination between the agencies responsible for traffic management, police, fire and medical care. Informing the decisions of these departments would be data gathered and analysed from a variety of sources such as mobile phones, call centres, cameras, and GPS devices. More accurate and up-to-date information can help transport management agencies better manage the city's traffic flow. It will also enable them to wirelessly provide travellers with information such as road and traffic conditions, as well as bus, boat and toll schedules, to help them plan their trips more effectively.

Included among IBM's proposals was a single, integrated e-ticketing system for all modes of transportation (very much like New York City's *Metro Card* or London's *Oyster* card system) and integrated fare management.

The company said the introduction of roadway toll rates based on traffic density would also be helpful for encouraging the use of public transport,



Traffic jams in Lagos are notorious, and city authorities predict a 350 per cent growth in the number of vehicles in the state over the next 25 years.

cleaner air and enhanced revenue. Furthermore, the state was advised to create a single platform for all its traffic and transportation-related data so each agency and mode of transport is integrated, helping passengers interconnect seamlessly.

"Lagos will continue to be a significant patch of Africa's economic success story," said Taiwo Oti, IBM's country GM for West Africa. "An intelligent, interconnected logistics and transportation management system is a crucial must-have for any modern city, and this engagement with IBM's *Smarter Cities Challenge* team will further enhance the state's ability to deploy technology-driven solutions in a timely and strategic manner."

The collaboration between Lagos and IBM was funded by a *Smarter Cities Challenge* grant – one of only around 30 awarded globally for 2013. Launched in 2011, IBM's *Smarter Cities Challenge* is a three-year, 100-city, USD50 million competitive grant programme.

Electrical department recharges network with DMR

Buffalo City Metropolitan Municipality is located in East London, South Africa. Its electrical department is responsible for the maintenance and repair of the electrical reticulation system for East London, Mdantsane, Bhisho and King William's Town areas. Due to the increasing size of the metropolitan area, additional staff and equipment were needed to carry out maintenance work.

The department had been using a mid-band analogue radio system that comprised analogue equipment, repeaters, mobiles, base stations and portables from a variety of vendors. While the system had been in service for many years, it had become difficult to maintain and repair due to the lack of spares available.

Furthermore, the control room was utilising base stations on various channels and the required area of operation was limited. The existing analogue system could not support more users, and was already hampered by too many group conversations as well as individual conversations.

With its expanding workforce, communication and management efficiency was becoming more critical for Buffalo City's electrical department. Its challenge was to find a digital two-way radio system that offered more than just a bunch of new walkie-talkies. What it needed was a control

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**BUFFALO CITY
METROPOLITAN MUNICIPALITY**



Buffalo City Metropolitan Municipality is migrating from analogue radio to digital with the help of Hytera's dispatch system (left) and its wall-mountable RD62X repeaters (right).

room that offered dispatching software as well as recording and GPS functionality.

During 2014 to 2015, local systems integrator M.H. Communications supplied a Hytera DMR conventional network. The system includes an advanced dispatching and tracking solution, along with the vendor's dispatch software, repeaters PD78XG portables and MD78XG mobiles.

Five Hytera RD62X VHF repeaters are linked to eight dispatch systems. The wall-mounted repeater can be easily fitted into the control room and is said to offer a space-saving solution.

Each client using the dispatch system operates individually and communicates to the relevant repeater area. Hytera says the audio link feature in its dispatch system allows the repeaters to be linked as required, allowing communications between areas. It adds that if the link is not required, it can be disconnected to reduce traffic on the repeaters.

According to Hytera, its digital radio solution makes communications possible in places where the electrical department's analogue radio system does not work. Some sites are also equipped with digital and analogue repeaters connected back-to-back in order to communicate with sub-contractors who are still using analogue radios. Two RD62X repeaters are used in such cases, one in digital mode and the other in analogue.

Hytera says this back-to-back solution operating in different modes between the same repeater models enables a smooth upgrade from analogue to digital for the department and also saves costs as during this process the digital radios can communicate with the analogue devices.

The digital solution and dispatch system has greatly improved Buffalo City electrical department's operation efficiency.

Thanks to the DMR conventional multi-sites IP network, all the repeaters create a much larger communications range, ensuring that technicians can communicate throughout the whole area.

Staff are using terminals with GPS which greatly assists the reaction time of technicians and results in cost savings. The company says the dispatch system also enables the organisation to easily see where its technicians are at all times, which avoids unnecessary dispatches and improves work efficiency.

The system's recording and reporting functions are also said to have significantly improved the way the department conducts its daily businesses. For instance, with the platform's short data message feature, address and contact number

details can be sent directly from the dispatcher to the responding technician's radios.

Dean Trollip, technical project manager of the electrical department, says: "The system has allowed us to incorporate all our communications systems, namely our telephone systems and radios system, into one console. [This] allows all staff to deal with all radio and telephone calls on one platform, thereby avoiding using multiple systems separately."

Metro network

Opened in 2010, the Gautrain rail network serves the South African cities of Johannesburg and Pretoria, including O.R. Tambo International Airport. The network connects 10 stations and comprises 80km of track of which 18km are underground.

Working in collaboration with Roodepoort-based Radio Network Solutions (RNS), distributed antenna systems specialist Axell Wireless (now part of Cobham) designed, supplied and implemented a safety radio network system into the complete tunnel and underground station network.

The company says that in underground locations that are heavily used by the public, robust wireless networks are crucial for the provision of continuous communications during emergencies. However, with new standards and regulations changing the public safety network landscape, the technology that is chosen has to continuously evolve to keep pace.

To meet the high reliability requirements of the Gautrain tunnel and station network, RNS deployed a radiating cable (leaky feeder) system. Using this method, the Gautrain system required two fibre optic master sites using Axell's *Optical Master Unit (OMU II)* and 22 remote units.

Each remote unit is placed at an underground station and emergency shafts, and connected through optical fibres. Leaky feeder cables then run from the remotes providing coverage inside the tunnel itself.



The Gautrain network connects 10 stations and comprises 80km of track of which 18km are underground.

According to Axell, the use of these repeaters allows base station coverage to be boosted and extended over great distances to remote locations. As a result, it eliminates the issues associated with continuous communications underground.

The company adds that reliable public safety system must continue performing despite any failures to the system itself. This problem is solved by providing a fully redundant design underground. Each base station is configured to feed several repeaters, and overlapping coverage exists between two adjacent repeaters. If one, the repeater sited next to it will provide ongoing coverage.

Additionally the system has a dual fibre feed to each remote location. This means that, if one master site location fails, or if the fibre optic cable becomes damaged, the remote repeater will switch its feed to the other master site.

As a result, the system has both overlapping and dual fibre optic feed redundancy. It satisfies the requirement for critical resilience, ensuring that there are no coverage black spots for the emergency services which is of vital importance.

As a fully redundant system, the comms network will continue to run through overlapping coverage between stations if any part of the system fails. This comprehensive wireless network meets stringent safety standards, and is underpinned by automatic single level control. This is integrated into the system, so in the event of any failures the signal will still be carried.

Axell says the network is also easy to extend. Providing radio frequency over fibre makes the network flexible to upgrade and offers the ability to add to it when expansion is needed. The company claims its solution is also future-proof with technology that is flexible and adaptable. It says this gives public safety operators the flexibility to specify and change sub-band allocation, and provides an easier path to new standards in the future. ■

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Digital master or back office slave?

Operators need to maintain basic revenue streams while coming up with new digital services. But has this brought them to a tipping point where it is now a must to outsource operations to outside specialists?

As communication service providers connect Africa, do their business models still connect with their operational capabilities? RICHARD ULLENIUS reckons it's time for a re-think.

Wikipedia tells us that Africa is the world's second-largest and second-most populous continent. At about 30.3 million square kilometres, including adjacent islands, it covers six per cent of the Earth's total surface and 20.4 per cent of its total land area.

The continent's massive size alone has presented a connectivity challenge unlike anywhere else in the world. As is well documented, Africa's telecoms service providers are deploying a variety of networks, from satellite to terrestrial, fibre to optical, to reach the population with voice and internet services.

But the intention is to do much more. Delivering new digital services such as video, music, e-health and online education services is important not only to consumers, but to the operators that leverage such services to gain new customers, build revenues and develop competitive advantage.

As a result, Africa has been able to leapfrog technologies and has seen a number of firsts in the telecoms arena. It is home to the first 4.5G network trial (Namibia) and the world's largest Wi-Fi shopping centre deployment (the 130,000m² Mall of Africa in Johannesburg).

Angola Cables is building the southern hemisphere's first subsea fibre optic cable system to link Africa and South America, ultimately stretching to Miami and enabling Africa to connect directly to the United States.

Meanwhile, Facebook will use satellite technology to provide high-speed broadband services to Africa as part of its *Internet.org* initiative to connect the world; and the release of so-called digital dividend spectrum presents opportunities to try new wireless technologies such as TV white space which is being trialled in several countries across the region.

While many connectivity initiatives are under way, can service providers also connect all of the moving parts within their own operations to keep both traditional and new, digital services fit for purpose and operating efficiently? Has the need to maintain basic voice, video and data revenue streams – while coming up with innovative ways to connect the population with new digital services – brought operators to a tipping point where it is now a must to outsource their back-office operations to outside specialists?

More 'heavy lifting' needed

Third-party specialists operating in managed services programmes are not new. For decades, managed services providers (MSPs) have done the heavy lifting of managing internal IT operations for a variety of businesses that wanted to save costs or augment in-house teams with additional staff. But in today's digital services era, managed service providers will be called upon to do much more. They will need to align operations not just for digital services, but also across the entire business model to serve the digital consumer.

MSPs can't follow the old-school managed services model of merely replacing technologies. As well as systems performance improvements, the approach to fully transforming an organisation into a digital operation must also consider improvements designed to impact business outcomes.

With the integration of cloud, data warehouses and various data services, MSPs are transitioning away from selling traditional IT and communication services to telecoms customers. They are evolving to offer a full solution strategy to align internal

teams, processes and operating systems to support the digital transformation journey. And today's MSP need to do all this in ways that internal teams often can't or simply don't have the time to do.

A digital transformation is not just an IT transformation. In reality, it is much more, and requires that a service provider's assets – whether human or an operational system – are aligned to support the digital consumer alongside more traditional operations. While IT transformation requires investments in new systems, the focus for digital transformation needs to be centred on investing in new ways of thinking and strategy.

We know this is true from our own experience. But CSG also conducted a survey with Pipeline Market Research to poll communications service providers worldwide about their ability to transform their businesses for digital services using their existing, in-house resources.

The survey results indicated that providers lack confidence that their BSS and in-house teams are able to support the next-generation of digital services. Respondents stated they would add IT infrastructure and process alignment, customer experience management (CEM), and billing and BSS skills to their existing teams to better support future digital services.

Similarly, the service providers surveyed indicated that “strategic transformation of existing business model, teams or skills to support digital services” was their top organisational worry related to digital transformation. The “technology to support new digital services” was the second highest concern, followed by “processes to support new digital services”.

The sentiment for using third-party managed service providers to augment internal resources and expertise appeared to be very positive. Almost all those surveyed (97 per cent) said they would find value in an external MSP. The majority (68 per cent) said that they currently rely on third parties, while more than half (56 per

cent) are either considering using or increasing the use of third parties in the next 12 months.

Furthermore, the majority of service providers stated that they would recover between 10 and 50 per cent of their existing team's time by using a third party to manage their BSS, and a significant portion (13 per cent) said they would recover more than half of their team's time to focus on innovation.

Multiple vendors, multiple headaches?

Survey results are useful for illustrating sentiments and trends. But can an MSP make a difference when it comes to every day operations?

One of the largest communication service providers in Africa as well as the world, leverages its managed services provider to simplify and streamline its operations and focus its resources on core business lines across wholesale and retail billing.

The operator cannot be named due to confidentiality agreements, but prior to engaging an MSP its wholesale billing architecture was made up of many different software applications. They were each run independently from one another by the different vendors and subcontractors that originally provided or installed the system.

Apart from the inefficiencies this brought about in terms of maintaining and managing these systems, the costs of contracting support services from multiple vendors was escalating at a rate faster than the business was growing. In addition, new government regulatory changes had put tremendous pressure on the operator's profitability.

Looking at business goals holistically led to a new approach designed to consolidate all of these contracts and vendors under a single managed service agreement across wholesale billing. The communication service provider leverages the MSP to manage a variety of complex solutions. These range from billing, routing to ensure the

Richard Ullenius,
Vice president of
managed services,
CSG International



best wholesale rates and deliver the best quality of service, and interconnection for wholesale settlements, to homegrown tools and systems from other third-party provider technologies.

The solution consolidates all the external vendors, contractors and employees into one managed service. Because systems and the teams that support them are now streamlined behind a common purpose, the business outcome for the operator has been a much shorter time to market for new products and services.

What to look for in an MSP

When done properly, an MSP can manage complex customer and revenue management processes, proactively translate strategy into a vision for how BSS should evolve, and de-layer current BSS infrastructure to create flexibility and agility. This is clearly a much bigger order than simply aiming for cost reduction and staff augmentation.

Arguably, to align its business to support current operations alongside the need to innovate to reach new customers with digital services, a telecoms service provider should adopt an approach that prioritises the following:

Increase efficiency and competitiveness:

Organisations that try to take care of all IT services in-house can have much higher research, development and implementation time. All of that increases costs and decreases time to market.

Enable fast implementation of new technologies:

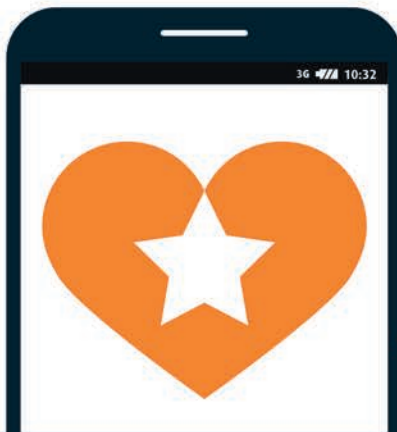
Developing and implement a new project in-house might involve weeks or months to hire the right people, train them and provide the support they need. MSPs can often provide an appropriate level of resources to start and implement such projects. For most deployments, quality IT companies will bring years of experience and domain expertise, saving time and money for the telco.

Reduce risk: Every business investment carries a certain amount of risk. Markets, competition, government regulations, financial conditions and technologies all change very quickly. MSPs assume and manage much of this risk. Furthermore, they can offer specific industry knowledge, especially security and compliance issues.

The consumer demand for digital services everywhere in the world has caused an era of unprecedented change for the telecoms industry as a whole. This is particularly the case in Africa, where the change to digital is unfolding on networks crossing air, land and sea. Drawing upon the knowledge of the industry at large is the key to building the right connections between people and business operations. ■

In a survey conducted with Pipeline Market Research, CSG found that service providers lack confidence in their in-house teams ability to support next-generation digital services.





USSD-based Campaign uses Game Play to Reach and Engage

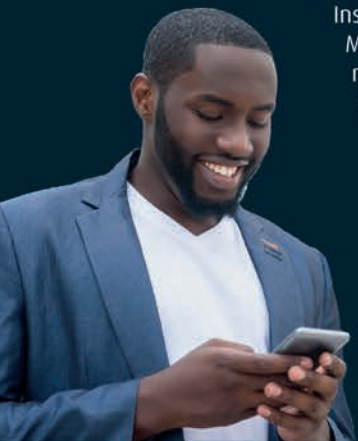
Digitata Insights, in collaboration with Mastercard, recently launched a gamification campaign to educate South Africans on the benefits of making safe, secure and fast payments with Masterpass, the global digital payment service from Mastercard. Gabriel Swanepoel, Product Development and Innovation, Mastercard said. **"To create widespread adoption of our Masterpass solution, we looked for a unique, fun and engaging platform to bring its benefits to life for consumers. Gamification was a perfect opportunity to educate consumers about how digital payments can improve their lives."**

To participate, subscribers had to dial a USSD short code. Players earned points by answering questions relating to information supplied in the game about mobile and cashless payments as well as about Masterpass, and by completing actions such as downloading and using the Masterpass app. Players reached the next level of the game by accumulating points, which could be converted into airtime.

Richard Walton, acting CEO at Digitata Insights, says: **"Gamification – the incorporation of game play into online marketing – is an extremely effective way to keep mobile users engaged, offering the ideal opportunity to educate them in an interactive manner."** Digitata Insights developed the USSD-based gamification service using the company's MeMe measurable mobile media platform. Text-based USSD is device and network agnostic, so bespoke content can be delivered to a huge market without subscribers incurring any charges, as no data is required.

To ensure the broadest reach, Digitata Insights partnered with South Africa's two largest network operators, gaining access to millions of potential customers.

Results from the campaign were impressive with more than 398,595 people starting the race and some 153,000 reaching the finishing line, completing all 17 levels in the game.



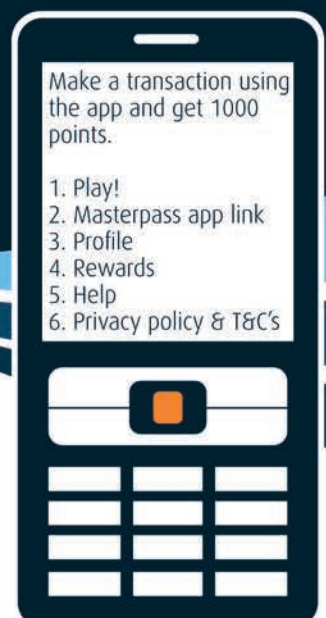
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Nokia and US Cellular test 5G technologies for fixed wireless

 Nokia and US Cellular have tested 5G in North America and demonstrated 5G fixed wireless in both indoor and outdoor environments. As a result, the companies claim they have proved how a next-generation network can provide faster speeds and lower latency for customers.

US Cellular used an experimental 28GHz spectrum license granted to it by the Federal Communications Commission. It then deployed Nokia's commercially available,

5G-ready *AirScale* radio platform to stream six simultaneous 4K ultra high-definition videos.

For the outdoor testing, which was conducted at the operator's technology centre in Schaumburg, Illinois, the team set up a point-to-point, clear line of sight scenario between a base station and user equipment. To test the impact of a real-world environment, impairments such as dry wall, windows and metal panels were introduced, and testing was repeated by moving the

Nokia says *AirScale* can run any radio technology and is 5G ready.




base station and user equipment behind trees and foliage. The indoor testing was done in US Cellular's lab.

In both environments, Nokia says the tests delivered speeds of 5Gbps and ultra-low latency under two milliseconds over the 5G wireless link.

Ricky Corker, EVP and head of North America for Nokia, says: "Our tests show how 5G technology will not only enhance US Cellular's ongoing efforts to stay ahead of the needs of their data-hungry customers and businesses, but also create opportunities for new services requiring high bandwidth and low latency."

Peruvian city has fibre-like connectivity without wires

 Axesat, a multinational provider of satellite solutions headquartered in Colombia, has begun providing broadband connectivity to ISPs as well as cellular services including LTE in the remote city of Iquitos.

Iquitos has a population of more than 400,000 people and is the largest Peruvian city in the Amazon province of Loreto.

Previously, it was connected only with legacy geostationary satellites or a series of microwave towers that carried internet signals through the jungles to POPs closer to the coast.


Using O3b's medium Earth orbit satellites and architecture, it's claimed Axesat is now not only

delivering fibre-like connectivity, but is also able to increase capacity as needed to keep up with rising demand – all without laying a single cable through the Amazon.

As businesses in Iquitos and its surrounding area have expanded, high-speed broadband has become essential to sustained growth. The new infrastructure will ensure Iquitos can compete with other cities such as Lima.

It is also hoped that the new data services will serve as an impetus for startup firms, as well as deliver much needed communications and data services for telemedicine, e-learning initiatives, e-government services, etc.

Satellite routers deliver high cellular data rates

 Sevis Systems says its suite of *Intelligent Backhaul Optimisation (IBO)* apps now works across ND SatCom's 5G VSAT system.

The company says validation testing confirmed high-performance for 3G and LTE mobile services across ND SatCom's *SKYWAN* platform which is integrated with Sevis optimisers.

It's claimed this validation of the technologies delivers a high-speed and bandwidth-efficient solution to mobile network operators who want to expand 3G and 4G coverage to more remote areas.


The companies say joint testing of the *SKYWAN* 5G terminals and Sevis *IBO* included optimisation and TCP acceleration technology. They claim

this resulted in substantial bandwidth savings and boosted performance over high-latency geostationary satellite links provisioned for both 3G and LTE backhaul.

As part of the evaluation, the partners tested signalling as well as voice and data aspects of the network. This included: registration/deregistration; mobile originated/terminated voice calls; SMS; accelerated web browsing; and FTP/HTTP data sessions.

The backhaul optimisation tests looked at bandwidth savings using out-of-the-box *SKYWAN* 5G terminals, while the Sevis TCP *Acceleration* application was tested via HTTP browsing and file transfers.

DMR cleared for take-off at London airport

 The UK's London Gatwick airport has installed a Digital Mobile Radio (DMR) system that aims to double its previous voice and data communications capacity.

The *Capacity Max* digital radio system from Motorola Solutions is designed to be used by 1,300 staff, both airside and groundside. It replaces an existing analogue communications network.

Motorola says staff will also be able to utilise the incoming system's data capacity with new applications. These include *TRBOnet PLUS*, the vendor's

dispatcher application that enables voice recording, mapping and event logging in the control room, as well as *iBeacon*, an indoor positioning feature which allows alerts to be sent to individual radios based on location.

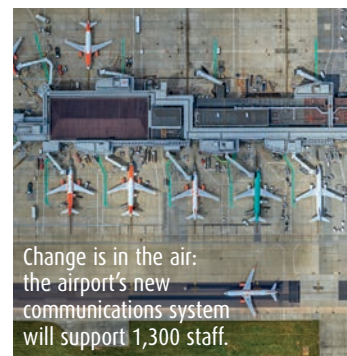
Other built-in functionality includes settings for lone workers, geo-fencing to create restricted areas, and automated escalation protocols which, according to Motorola, will bring upgraded safety and security capabilities to the airport.

The company adds that as the system hardware is connected via Wi-Fi,

software updates can be transmitted via Gatwick's wireless network directly to equipment and endpoint devices, with less load on the core radio network.

"We have experienced significant growth over the past decade and we are now approaching the limits of our previous analogue system," says Simon Telling, IT project manager at Gatwick Airport Limited.

"Migrating to scalable, digital communications will double our capacity, and bring new capabilities that will help us improve efficiency and safety for staff, retail partners,



and passengers across the airport."

Gatwick is said to be one of the UK's most important transport hubs: 40.3 million passengers passed through its gates last year, a 5.7 per cent increase on 2014.



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Kathrein to create testbed 'network' in Sweden



German antenna specialist Kathrein has opened a new test environment in Rosenhaim, Sweden. It will be run in association with Ericsson and used to test new communication technologies and innovations in order to gain insights into their limitations and open potential new avenues for R&D.

Maximilian Göttl, head of portfolio and innovation in Kathrein's Communication Products division,

says the companies are creating their own "network" so that they can draw conclusions from live operations.

He says: "The test environment will allow us to try out various technologies and their interaction in a single overall system – a capability that is very important for our development work.

Göttl adds that the insights gained will allow systems to be improved on a step-by-step basis. This will provide the basis for advancement of Massive

MIMO technology, LTE and new 5G standards.

One of the focus areas of the testbed trials will be the automotive sector. Cars will be equipped with the appropriate antenna systems to optimise data transmission between them.

Kathrein is also collaborating with Altair Engineering, the software specialist that provides *WinProp*, a programme that simulates mobile network coverage based on maps. The



One of the focus areas of the testbed trials will be the automotive sector. Cars will be equipped with antennas to optimise data transmissions.

company says testbed measurements can be checked against computer simulations, with the ultimate aim of using simulation alone to conduct test runs for future system architectures.

Singtel completes Fleet Xpress installation



Singapore Telecom (Singtel) has deployed one of Asia's first commercial installations of *Fleet Xpress*, Inmarsat's maritime-focused, secure high-speed broadband service. The installation was recently completed on the *Houston Bridge* container ship owned by K Line Ship Management Singapore.

As one of Inmarsat's largest partners, Singtel successfully managed the installation by migrating the vessel's Ku-band satellite internet service to *Fleet Xpress* Ka-band L-band services. The migration involved changing the vessel's antenna hardware and reconfiguring its complex on-board network while ensuring that day-to-day operations were not affected.

K Line is using the new installation to leverage the advantages that 'Big Data' analysis can offer. It's claimed Inmarsat's service enables the company to not only monitor engine performance and overall fleet management, but also delivers high levels of crew welfare as it provides reliable ship-to-shore communications.

Lim Kian Soon, head of Singtel Satellite, says: "The service's high-speed broadband allows maritime firms to introduce new business applications that optimises and streamlines the management of their fleets."

Health service trials IoT technology to help people living with dementia



A pioneering trial in the UK aims to discover how the Internet of Things could transform the lives of people with dementia. Launched by the Surrey and Borders Partnership National Health Service (NHS) Foundation Trust, the GBP5m project will involve 1,400 people, and is the first in the UK to test how the IoT could help to modernise NHS healthcare for people with long-term conditions.

Called 'Technology Integrated Health Management', the trial will help clinicians to remotely monitor the health and well-being of people with dementia so that they can

intervene earlier to help someone avoid a crisis and unnecessary hospital stay.

Participating patients will have their homes equipped with non-invasive technological devices, such as apps and trackers. They include sensors attached to objects such as refrigerators, kettles and beds. These can detect if someone is following normal patterns of behaviour for eating and drinking, and whether they're unusually restless at night.

The devices will connect to each other via the IoT, and work together to collect and analyse different pieces of securely managed information

about a person's health and behaviour patterns. The technology will not replace any existing face-to-face contact with health or social care staff.

Surrey and Borders Partnership will lead the trial and has teamed up with nine technology providers: Docobo, eLucid mHealth, Halliday James, Safe Patient Systems, Arqiva, Vision360, Intelesant, Sensely and Yecco.

Its other partners include the Alzheimer's Society, University of Surrey, Royal Holloway University of London, Kent Surrey Sussex Academic Health Science Network, as well as six Surrey and north east Hampshire NHS clinical commissioning groups.

Gilat's cellular solution chosen by Optus to extend 3G across rural Australia



A new deal between Gilat Satellite Networks and integrated telecoms provider Optus will mean 3G coverage will reach to even the remotest parts of Australia for the first time.

According to Gilat, rural areas of the country have, until now, suffered from poor cellular coverage. Under the new partnership, Optus will leverage the satellite company's *CellEdge* SDR small-cell-over-satellite solution.

By choosing Gilat's software defined radio, the telco aims to extend its 3G network coverage along some of the major highways of



Some of the highways in Australia's Northern Territory will benefit from Gilat's small cell technology.

the Northern Territory and Western Australia, providing a 'check in' capability. Gilat claims its integrated solution, which combines small cell and VSAT functionality, allows cost effective and fast deployment of cellular coverage.

Optus Satellite VP Paul Sheridan says Gilat's system will provide mobile connectivity to unserved and underserved areas. He says: "It is an innovative and cost-effective solution to address our requirements for delivering a high-quality user experience, under challenging environmental conditions in regional Australia."

Optus and Gilat Satellite Networks have been partners for some time. They first teamed-up more than a decade ago on the development of Australia's first two-way broadband satellite internet services which used Gilat's *SkyBlaster* VSAT equipment.



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RSCC support for Eutelsat



The Russian Satellite Communications

Company (RSCC) has started new services for Eutelsat using Ka-band on *Express-AMU1*. RSCC is responsible for securing access to the satellite segment as well as monitoring the performance of communication channels. These services are provided via RSCC's centre in Dubna, Russia. In 2017, the firm is planning to complete the commissioning of a second antenna system at the centre to address redundancy issues and ensure what it says is the "most advanced level" of operator and customer service.

Sydney puts TETRA on line



A new TETRA network will connect Sydney Light

Rail's new Central Business District and South East line. The system will link 19 stations over a 12km route to provide comms between all staff and the control centre. Teltronic will provide its *Nebula* system, *RTP-300* onboard units, *SRG3900* mobiles and *STP9000* hand-portables. The network will be integrated with an intelligent transport system application for fleet management, traffic regulation, and passenger information management.

ViaSat uses Radant



ViaSat will use a radome supplied by Radant Technologies to provide connectivity for the Airbus *A320* aircraft. A division of Communications and Power Industries, Radant says its radome can switch dynamically among six satellites and three satellite networks across Ku- and Ka-band frequencies. The new installation will be fully compatible across all ViaSat's network operations, including aircraft served by *ViaSat-1*, *ViaSat-2* and *ViaSat-3*. It is also fully compliant with WGS (Wideband Global SATCOM) system operations across its entire spectrum.

New home for Skynet 5A in Asia Pacific region



The ground anchor station for the *Skynet 5A* satellite in Asia Pacific has now been secured with a partnership between SpeedCast International and Airbus Defence and Space (ADS). The move follows the earlier relocation of the satellite from 6°E to 95°E to provide global X-band and UHF coverage in the region.

Built by EADS Astrium, *Skynet 5A* was launched in 2007 and was the first in a series of new-generation military communications satellites used by the British Ministry of Defence and other NATO forces.

ADS completed *Skynet 5A*'s move in September of last year. The relocation was initiated to extend the *Skynet* constellation's coverage and services from 178°W to 163°E, including the Indian

Ocean and Western Pacific region.

With a presence in more than 90 countries, SpeedCast International offers managed global satellite communications services and a global maritime network. Its new partnership with ADS will build and provide on-site management for the ground anchor station that will deliver secure X-band network services.

Commenting on the announcement, SpeedCast CEO Pierre-Jean Beylier, said: "The advanced capabilities of the *Skynet* satellite will suit very well the needs of governments in the region, starting with Australia and New Zealand.

"This partnership is an important step in the development of our government business, which we



SpeedCast's Western Australia teleports. The company says the advanced capabilities of *Skynet* will suit the needs of the region's governments.

anticipate to be a significant growth engine in the next three years."

5G standards 'must provide' robust security



5G will realise a huge variety of use cases and an equally large range of security threats and risks, warns the SIMalliance.

It believes that security and privacy remain fundamental requirements at every stage of the 5G standardisation process and across every segment.

In its recently published *5G Security – Making the Right Choice to Match your Needs* technical whitepaper, the alliance analyses functional and security requirements, together with proposed solutions across five market

segments for 5G. These include: massive IoT; critical communications; enhanced mobile broadband; vehicle to X; and network operations.

The paper states that while many devices using 5G will be simple and low cost, particularly in IoT, security decisions must take into account the value of data being stored or transferred and not just the device cost.

The SIMalliance says 5G security measures must protect subscribers, devices and their communications and also the integrity of the network itself.

"Appropriate security, relevant to the broadest range of use cases, is therefore in the interests of all actors in 5G," says the organisation's chairman Hervé Pierre. "It is vital to build security into 5G from the outset – what is not built in from the beginning cannot easily be added later on."

The paper maps security requirements to different aspects of the 5G ecosystem – network, services, applications, devices and users – and calls for recommendations for security across all levels of the value chain.

EPIC helps TIM reach Brazil's remote areas



Under a multi-year deal with Intelsat, TIM will become the first mobile network operator in Brazil to incorporate high throughput satellite (HTS) services into its infrastructure.

Intelsat launched its first satellite to use its *EpicNG* HTS platform earlier this year. Orbiting at 310°E, *Intelsat 29e* entered service in March and will enable TIM to deliver more throughput.

In addition, the backwards-compatible design of the *EpicNG* platform allows the use of existing hardware. According to Intelsat, this not only means less disruption in TIM's network, but also enables the operator to satisfy its current and future



Intelsat 29e was launched in January. It is the company's first *EpicNG* satellite and deliver HTS services across Brazil.

demands while improving its TCO.

The solution is also said to support TIM's technology roadmap of deploying 3G and 4G, as well as its

desire to improve coverage and services in remote areas. TIM's wholesale director Marcelo Duarte says: "Our goal is to provide more throughput and achieve high penetration within our service territories. Our Intelsat *EpicNG* solution allows us to do more than just improve services for our existing mobile customers; we will also be able to deliver connectivity in remote and less-densely-populated regions of Brazil where terrestrial infrastructure is difficult to efficiently deploy."

Intelsat plans to launch two more *EpicNG* satellites in 2017 which will enable TIM to further extend its coverage across Brazil.

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