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For communications professionals in southern Africa

COMMUNICATIONS

MAY/JUNE 2015
Volume 20
Number 1

- Is Africa ready for the Internet of Things?
- Using L-band to extend military satcoms
- How RFS is helping to overcome the challenges of building networks

Satellite Operator of the Year.



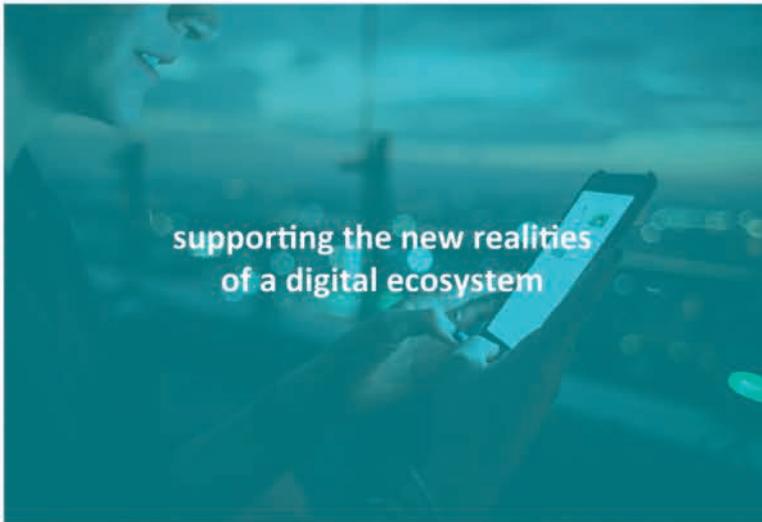
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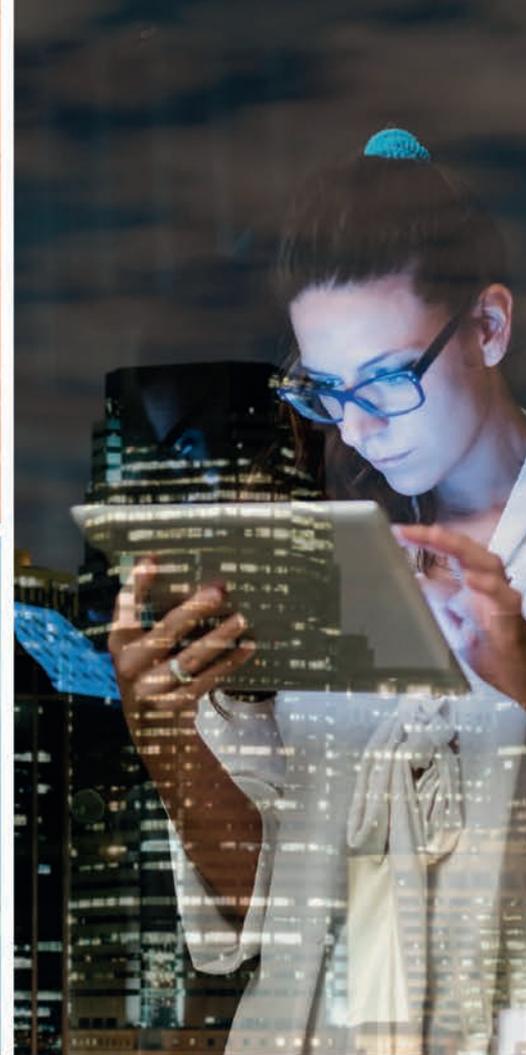
Singtel

Let's make everyday better

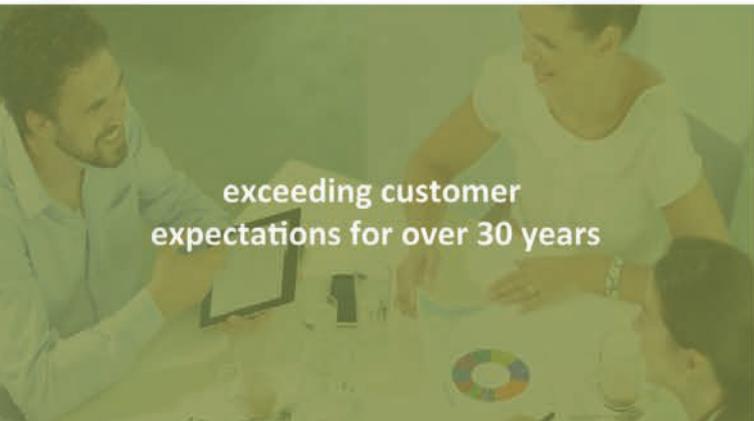
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We are honoured to be named the Satellite Operator of the Year by Asia Communication Awards 2015 organised by Total Telecom. Over the past year, we have achieved several milestones, including the launch of ST-3 and awarded the VSAT Service Provider of the Year by Informa Telecoms & Media, in partnership with Comsys.

ST-3 is known in the industry for its high power C-band coverage to support a diverse group of services such as cellular backhaul, enterprise data to primary distribution of HDTV channel especially for enterprises looking for high performance connectivity in Africa, Middle East and Asia.

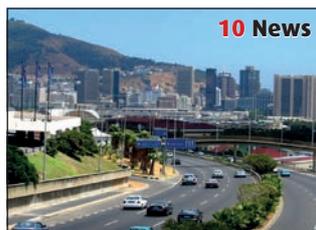
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Let's make everyday better



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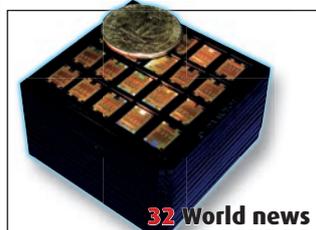
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Deadline for digital TV switchover missed by many African countries

The agreed deadline for countries in ITU Region-1 switching over from analogue to digital TV broadcasting has now expired. Africa, the Middle East, Europe, Central Asia, along with the Islamic Republic of Iran are included in Region-1.

The 17 June 2015 deadline for switching over to digital terrestrial television (DTT) broadcasting is part of the GE06 Regional Agreement and was set by ITU member states at the Regional Radiocommunication Conference in 2006.

Commenting on reaching what he described as the “historic landmark”,



ITU secretary-general Houlin Zhao said an “historic landmark” had been reached. However, African nations still have some way to go.

ITU secretary-general Houlin Zhao said: “The process, which began in June 2006, has re-envisioned the way the world watches and interacts with TV and opened the way for new innovations and developments in the broadcast industry.”

However, according to online data from the ITU showing the status of DTT deployments in Africa, only Malawi, Mauritius, Mozambique, Rwanda and Tanzania have completed their switchovers. Deployments are still ongoing in many other countries on the continent, but Central African Republic, Namibia and South Africa are among some of the nations that have yet to start, according to the union.

A recent ITU symposium took stock of countries that have achieved the switchover from analogue to digital broadcasting and explored the technical and regulatory frameworks

required to make the transition.

The union said a new digital GE06 Plan was discussed which provides not only “fresh possibilities” for structured development of digital terrestrial broadcasting, but also “sufficient flexibilities” for adaptation to the changing telecoms environment.

Digital TV offers many advantages over analogue systems. Its more efficient use of radio spectrum also creates the so-called ‘digital dividend’ as it frees up much needed frequencies in the UHF band for use by other services, such as mobile broadband.

Low Earth orbit satellites to provide global coverage

Thales Alenia Space (TAS) is continuing to help Leosat look into the feasibility of using low Earth orbit (LEO) satellites to provide high-speed, low-latency, cost-effective broadband services worldwide.

The two companies have been working together since last year and have already come up with a preliminary system design for the Leosat constellation. In the coming months, they plan to assess the architecture and performance of the overall system, including both

the ground and space segments. “We will provide Leosat with all our experience and expertise based on our work with O3b and Iridium NEXT around complex system validation, industrial challenges and cost efficiency versus performance,” said TAS CEO Jean Loïc Galle.

The feasibility study is due to be completed by July. Leosat expects to be ready to contract for its satellite constellation development within about a year, with the first launch taking place in 2019 or 2020.

Leosat’s fleet is initially planned to include 80 to 120 high-powered Ka-band satellites that will fly in polar orbits at an altitude of around 1,400km. Each one will be fitted with a dozen steerable spot beams and it’s claimed this will provide aggregate throughput rates greater than 10Gbps.

The constellation will form a private data network via high-speed inter-satellite links. Leosat says the aim is to provide global coverage specifically for large corporations and government agencies.

It says the system is designed to deliver point-to-point data connections to and from anywhere on Earth without the need for any interstitial terrestrial landings or transport.

Leosat adds that its network is “strongly-secured” as data will be able to travel in its native form but is encrypted and secured from end to end.

Founded by former Schlumberger executives Cliff Anders and Phil Marlar, US-based Leosat has been developing its systems since 2013. *Greg Wyler launches OneWeb, pp12-13.*

ACE connects more countries and will reach further south

Construction of phase II of the ACE (Africa Coast to Europe) submarine cable has been successfully launched to extend from São Tomé and Príncipe to South Africa. There are also plans to connect other Southern African countries.

As part of the second phase, ACE has also added Benin, Nigeria and the Canary Islands to its network. It’s claimed the number of people now connected by the system has risen 53 per cent to 200 million.

Since its launch in The Gambia in December 2010, phase I of the ACE network has connected 15 West African countries to Europe. They include landlocked Mali and Niger which are linked via a terrestrial extension.

After the completion of the second phase, which is expected by the end of next year, the cable will be extended to Cape Town and will cover 17,000 kilometres.

Branches will also connect Angola and Namibia, as well as the DRC and Cameroon. The latter has become an ACE consortium member after signing the construction and maintenance agreement in June.

ACE management committee chairman Yves Ruggeri said the addition of Cameroon will add value to the cable system. He also said its development continues to improve direct connectivity within Africa and to the world at large. “It will contribute to the overall objective

of ACE to reduce communication costs and drive social and economic growth in Africa.”

ACE’s system supports 100G and has an upgradable design capacity of up to 12.8Tbps. Working in collaboration with its contracted supplier Alcatel Lucent, ACE has also recently tested 300G which it plans to deploy in the near future.

The consortium behind the cable has 19 members from 23 countries and was formed by Orange in 2010.

At a recent meeting in London, Orange said it will spend EUR15bn, mainly on fibre, on its group-wide networks over the next three years. Marc Rennard, the company’s senior EVP for the region, added that



ACE management committee chairman Yves Ruggeri (right) said the addition of Cameroon to the consortium “adds value” to the system. Also pictured is Camtel DG David Nkoto Emane.

around EUR1bn per annum of this will be invested in Africa and the Middle East.

Pupils help build satellite payload

Not many school pupils can say they have launched something into space. But as a result of a new initiative by the Meta Economic Development Organisation (MEDO), a number of high school students in South Africa will be able to say exactly that next year.

MEDO implements private sector funded economic development programmes, including enterprise and supplier development for multinational corporations operating in South Africa.

Under its STEM programme, the organisation is promoting the selection of science, technology, engineering and mathematics as

high school subjects. Through a collaboration with Morehead State University in the USA, MEDO is implementing the programme focusing on young women in high schools that will result in them constructing the payload for Africa's first private satellite, *MEDOsat1*, which is expected to be launched in mid-2016.

The programme includes one-day workshops called *Space Prep* where students will learn about electronics and practical science. By the end of the day, each participant will build a 'Jiggy Bot' that can be controlled in movement, light and sound.



Young women chosen for the space programme will help develop the payload for the *MEDOsat1* satellite which is due for launch next year.

They can also take part in week-long camps during school holidays called

Space Trek. Here, students design satellite payload experiments and test them using high-altitude weather balloons.

In addition, the programme includes extended school holiday internships with MEDO to finalise payload designs and build the satellite for launch.

The organisation says the programme is not a one-off and aims to be the start of drive that will last at least a decade to inspire young people to enter the science and technical fields. It adds that South Africa's STEM graduate shortage is a pressing one for all companies wanting to compete in an ever-increasing technical knowledge-based economy.



Altech Radio Holdings MD Brett Nash says the upgraded network opens up new markets for Fleetcall.

Altech Fleetcall begins DMR rollouts

Altech Fleetcall has completed the first phase of its DMR (digital mobile radio) network rollout in South Africa (see News, Jan-Feb 2015).

The initial portion of the updated network in Gauteng province provides DMR coverage stretching from Sasolburg to Rustenburg, and from Hammanskraal to Devon.

Altech says migrating the existing analogue network to digital provides a number of advantages. These include more efficient use of spectrum, added network capacity, improved voice

and data quality, and other features and functions that were previously unavailable such as support for both analogue and digital devices.

The activation of the digital network is the culmination of a project which Altech Fleetcall began in mid-2014.

Brett Nash, MD of parent company Altech Radio Holdings, said Fleetcall took the strategic decision to deploy the latest Tier 3 digital radio network system using Hytera's infrastructure to provide an overlay on its existing analogue network. He added: "This

new technology provides Altech Fleetcall with numerous opportunities in a number of market sectors where it previously struggled to gain traction due to the limited number of features available on the legacy network."

Altech claims to have built the only network to offer a national trunking radio service in South Africa. The firm says it has expanded and maintained this network for the past 21 years, and now runs more than 170 sites providing coverage to over 80 per cent of the country's economically viable areas.

Mobile traffic in Africa and Middle East predicted to grow 15-fold by 2019

Annual IP traffic will triple over the next four years and will reach a record two zettabytes globally in 2019, according to Cisco's latest annual Visual Networking Index (VNI) forecast.

Factors expected to drive traffic growth include global increases in internet users, personal devices and M2M connections, faster broadband speeds, and the adoption of advanced video services.

Doug Webster, Cisco's VP of service provider products and solutions marketing, said: "It took 32 years – from 1984 to 2016 – to generate the first zettabyte of IP traffic annually. However, as this year's VNI forecasts, it will take only three additional years to reach the next zettabyte milestone with more than two zettabytes of IP traffic annually in 2019."

In Middle East and Africa, the index predicts mobile data traffic will grow 15-fold from 2014 to 2019, and will reach three exabytes per month by 2019, up from 199.5 petabytes per month in 2014.

Cisco forecasts that by 2019, 41 per cent of mobile connections in the region will be from smart devices, an 11 per cent increase from 2014. It expects consumer mobile traffic to grow 16-fold from 2014 to 2019, a CAGR of 74 per cent.

According to the VNI, there were 1,200 million mobile-connected devices in MEA in 2014. This will rise to 1,676 by 2019, with 4G connections growing 32-fold from 2014 to 2019, a CAGR of 100 per cent.

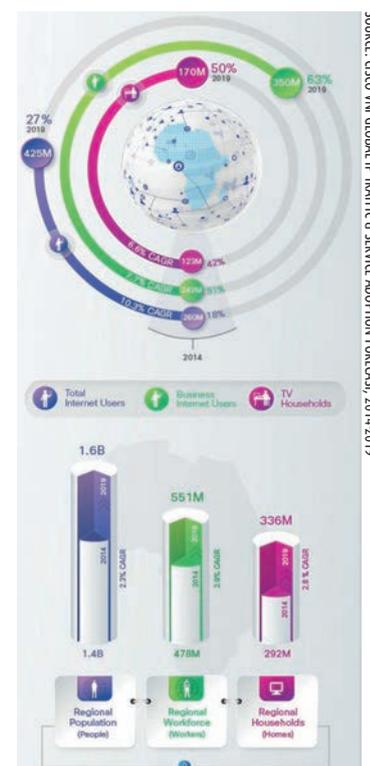
3G connections are forecast to be 54.4 per cent of total mobile connections in the region by 2019, compared to 19.4

per cent last year. This means 3G will overtake 2G in the next few years, as second-generation connections will represent 31.6 per cent of total mobile connections by 2019, compared to 80 per cent in 2014.

Cisco has been conducting its annual VNI since 2005. Its predictions rely upon independent analyst forecasts and real-world mobile data usage studies. The company then uses these data as a foundation for its own estimates.

Building the Internet of Things in Africa – feature pp21-23.

Cisco says the world's population, number of households and workforce are growing moderately, but the rate of connectivity is growing faster. This 'infographic' highlights growth in the Middle East and Africa.



SOURCE: CISCO VNI GLOBAL IP TRAFFIC & SERVICE ADOPTION FORECAST, 2014-2019



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Avanti signs SENTECH and TTCL deals

Avanti Communications has signed a multi-year contract with SENTECH to provide satellite broadband services in South Africa. Under a separate deal it will also work with Tanzania's incumbent telco, TTCL.

State-owned SENTECH operates in the broadcast and telecoms sectors, and its signal distribution network is said to form the backbone of broadcasting in South Africa. Under a new contract, Avanti will support the firm's delivery of satellite broadband connectivity to South Africa's public sector at a large scale, across hundreds of state

institutions and government sites. The service will be supplied using Avanti's *HYLAS 2* Ka-band satellite, which has 100 per cent coverage of South Africa.

According to SENTECH COO Kganki Matabane, the partnership with Avanti enhances his company's data connectivity technology platform in order to fulfil its public service mandate.

"This will enable us to provide robust connectivity services which extend our broadband infrastructure to some of the most remote sections of the country," said Matabane. "Avanti's satellite broadband service



Avanti will help extend broadband connectivity to areas in Tanzania where fibre has not yet reached.

will allow SENTECH to enhance public value to a vast range of institutions across the country."

Meanwhile, TTCL (Tanzania Telecommunications Company Ltd) will use *HYLAS 2* to expand its high-speed broadband network to customers beyond the reach of fibre.

The telco adds that it is planning to launch a new satellite broadband service to its consumer, enterprise and government customer base.

TTCL CEO Dr. Kamugisha Kazaura said: "Avanti's proven Ka-band satellite technology will deliver high-speed broadband to our national customer base, which demands the highest levels of service quality."

Telkom expands LTE-A

Telkom has expanded its LTE-A network to an additional 22 suburbs across South Africa, adding to what it claims is "already the largest LTE-A network in the country".

The expansion covers areas in greater Johannesburg, the Western Cape, KwaZulu-Natal and Tshwane.

Telkom says it is South Africa's only operator to have a license for 2.3GHz spectrum. It claims this unique spectrum allows it to offer "efficient, high quality and stable" LTE-A technology to customers.

The firm adds its LTE-A speeds are comparable to those available

over a fibre network and offer a "compelling" alternative to fixed line broadband. Its current LTE-A network configuration supports downlink rates of up to 150Mbps.

"Telkom is on a journey to deliver super-fast broadband on both wireless and fixed lines to cater for the specific needs and requirements of our customers," said Attila Vitai, MD of Telkom Mobile and consumer. "We have geared ourselves up to be as responsive as possible to what our customers want, be it VDSL, fibre or LTE-A."

Telkom Mobile first announced plans to rollout LTE-A services in South Africa last year. Speaking at the time in late September 2014, the operator said it was currently upgrading its network to offer customers peak speeds of more than 200Mbps, with a view to developing its network to ultimately deliver LTE-A peak speeds of 3Gbps. (Also see *News*, Nov-Dec 2014).



Attila Vitai, MD of Telkom Mobile, claims the company's LTE-A network is unrivalled anywhere in Africa.

AlwaysOn launches SA's first Wi-Fi calling service

Wi-Fi provider AlwaysOn has launched what it describes as South Africa's first Wi-Fi calling service.

AlwaysOn Calling works on *Android* devices and allows subscribers to make calls via Wi-Fi or using their mobile data packages. It's claimed this is much cheaper than using a cellular network for voice calls.

Once registered on the AlwaysOn website, the customer's handset will automatically choose Wi-Fi or other data networks to make calls.

As part of a launch offer, the service includes 60 minutes of free talk time to any local mobile or landline number. Thereafter, calls remain free between all users of *AlwaysOn Calling* but those made from the service outside the network will be charged at a flat rate of ZAR30 (USD2.50) per hour of talk time at a per second rate.

"We hope that by providing this service we will enable more people to be connected which is great for the country," says AlwaysOn MD Hayden Lamberti. "The South African consumer is having a rough time of it at the moment with mobile tariff hikes across the board.

"For South Africans wanting to get the best deal and maximise their time online, this is the perfect answer. It is easy to get, easy to use, and users get to save a lot of money."

AlwaysOn is a division of South African ISP Internet Solutions and says it operates the country's most extensive Wi-Fi hotspot network, providing services to close to a million users each month.

Early last year, the company also claimed to have built South Africa's first carrier grade Wi-Fi network (*News*, Jan-Feb 2014).

EcoCash gets approval for cross-border services

Zimbabwean operator Econet Wireless has finally been given approval from the South Africa Reserve Bank to start a cross-border remittance service.

The approval allows Zimbabweans living in South Africa to send money directly to any Econet Wireless number anywhere in Zimbabwe using *EcoCash*, the cellco's multi-language, mobile money service.

In a statement issued around mid-June, Econet said it will take several weeks for the service to be fully

established, but added that it expected to be up and running by the end of July.

"The approval, which took more than 18 months to secure, will come as a major relief for Zimbabweans working in South Africa, as it takes out the hassles and challenges of sending money to relatives. It will be as accessible, quick and convenient as making a 'cash-in' to *EcoCash* in Zimbabwe," said Econet.

According to the company, by making the process of sending money

from South Africa "highly accessible, quicker and more convenient", Zimbabweans living in South Africa will be able to send remittances of even less than ZAR50 at affordable rates.

Econet predicts the new service will fundamentally alter the pattern of remittances which today is characterised by large, lump sum transfers of around ZAR1,000 being sent monthly or every few months. The operator now hopes its 'micro-remittance' solution will stimulate increased money coming into



EcoCash on the move: Zimbabweans in South Africa can now send money home using Econet's mobile money system.

Zimbabwe and help ease "liquidity challenges" in the nation's economy.

ITU defines 5G vision and roadmap

The ITU has now defined the main goals, process and timeline for 5G, and has established the overall roadmap for the development of systems.

At a meeting of the ITU-R Working Party 5D held in California in June, the union also agreed that the work should be conducted under the name "IMT-2020". The formal adoption of this title is expected to be agreed later this year in October.

IMT-2020 is an extension of the ITU's existing family of global standards for International Mobile Telecommunication systems. These include IMT-2000 and IMT-Advanced, which serve as the basis for all of today's 3G and 4G systems.

The organisation says work on IMT-2020 is now well underway in close collaboration with governments and the global mobile industry.

The next step is to establish detailed technical performance requirements for the radio systems to support 5G,

taking into account the needs of a wide portfolio of future scenarios and use cases, and then to specify the evaluation criteria for assessment of candidate radio interface technologies to join the IMT-2020 family.

Over 2016-2017, Working Party 5D will define in detail the performance requirements, evaluation criteria and methodology for the assessment of the new IMT radio

interface. Evaluations by independent external groups and a definition of the new radio interfaces to be included in IMT-2020 will then take place during 2018-2020.

The whole process is planned to be completed in 2020 when a draft new ITU-R Recommendation with detailed specifications for the new radio interfaces will be submitted for approval within ITU-R.

The union says the new systems will "usher in new paradigms" in connectivity in mobile broadband wireless systems.

For example, it says they will support extremely high definition video services, real-time low latency applications, and the expanding realm of the Internet of Things. *Etisalat plans to be first in the region with 5G – News, p11.*

Rwanda to collect tax by mobile

MTN's *Mobile Money* platform is to be used for tax collection by the Rwandan Revenue Authority (RRA).

The cellco claims its mobile money service has been hugely successful as a banking platform, enabling people to make transfers, pay bills and other conventional banking transaction on their mobile phones.

Now, as a result of a deal between MTN Rwanda, the RRA says a new function has been added which will make tax payment "easy".

Ebenezer Asante, CEO of MTN Rwanda, says: "This move is aimed at further easing up the process and cost of doing business. It will also rank Rwanda as the first of its kind in Africa in doing business, hence a boost for Rwanda in terms of ICT development."

According to the RRA, the initiative is a step forward from its earlier introduction of a "mobile declaration system", commonly known as 'M-declaration'. The authority says M-declaration has been successful, partly because it has reduced the number of taxpayers that need to call in and visit its offices to make enquiries.

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ON THE NETWORK

The logical next step in Africa's digital evolution

As LTE networks become increasingly commonplace, the continent's operators are looking for innovative ways to monetise this additional bandwidth with new services. The end game is to drive improved levels of working efficiency and productivity to boost overall GDP.

But achieving this goal goes way beyond infrastructure and technology – it's also about providing education and guidance to the millions of small businesses across Africa on how they can leverage advancements in connectivity and new working practices.

Small businesses are an intrinsic part of the region's economies. In South Africa, 92 per cent of businesses are small enterprises while in Ghana they represent 92 per cent. This is despite some major hurdles – a World Bank report in 2012 singled out regulation, poor infrastructure, and corruption as the main barriers to entrepreneurship.

So how do operators capitalise on this and extend the value they deliver to small businesses? The answer lies in the emergence of the business applications marketplace.

Small businesses increasingly need digital tools – marketing, accounting, HR, and so forth.

These tools used to be exclusive to big firms or to developed countries. But now, parts of a business that previously required entire teams of people have become 'virtualised' by software, and these tools are increasingly available online.

Furthermore in Africa, no one is better placed than mobile operators to offer these services. MNOs in other markets are fast becoming mere utilities that provide the data for other, OTT services. But operators in Africa have a chance to avoid this fate by engaging with their small business customers, and ultimately being the champion of small enterprises across the continent.

African internet 'poised' for transformation

Africa will undergo dramatic change in the next few years as a result of robust growth in the number of people going online, according to the Internet Society.

Speaking at the Africa Internet Summit held in Tunisia in early June, Internet Society president and CEO Kathy Brown described the continent as "the frontier" for the next phase of growth for the internet.

"Africa's recent economic growth rates and growing entrepreneurial spirit are combining to create a climate of opportunity," said Brown. "Advances in internet infrastructure and the meteoric rise of the mobile

internet have already transformed the African technology landscape."

But she warned that there are still many barriers to overcome, such as the high cost of broadband access, online fraud, lack of local content and fragmented markets.

"Africa is now the frontier for the next wave of internet progress. While there is huge potential for Africa to continue building an internet that will best serve its needs, it is critical that true collaboration across Africa's technical community, a culture of innovation and entrepreneurship forms part of this process."

According to a report produced by the society, the vast majority of Africa's 54 countries have between 0-20 per cent internet penetration. Only South Africa, Egypt and Morocco are estimated to have more than 60 per cent penetration.

Internet Society president Kathy Brown said the mobile internet has transformed Africa's technology landscape.



Network video helps secure Cape Town

Some of Cape Town's busiest roads are now secured with an automated license plate recognition system installed by LPR Solutions.

At its heart is a network of 42 DS-2CD4012F-A Smart IPC day/night box cameras from China-based Hikvision. The LPR team also installed wireless links as well as cabling to feed the video streams from the cameras to a dedicated central control room located within Sea Point.

Each camera supports 802.11b/g/n Wi-Fi, and has a range of 50 metres depending on the environment, according to Hikvision. Their video streams are recorded on a dedicated



Engineers identified 42 points for the cameras, with each one dedicated to monitoring one lane of traffic.

server via iVMS monitoring software and fed from there to LPR's itrack license plate recognition software.

"With an average of over 300,000 vehicle movements per hour being expected for the network, the sheer intensity of traffic movement represented a considerable technical hurdle for the system designers," says LPR Solutions' Chris Hobbs.

"The main challenges we faced on this project were the changes in lighting conditions as we passed from day to the dark of night, the speed of the passing traffic, and ensuring the utmost in reliability."

Early indications claim to show a 65 per cent decrease in recorded crime within the Sea Point suburb since the deployment of the system.

Malawi aims to advance digital finance

The Government of Malawi is trying to accelerate the progress of digital finance in the country with the help of a number of organisations.

The Better Than Cash Alliance (BCA) and Mobile Money for the Poor (MM4P) – both formed by the United Nations Capital Development Fund's – are the main backers of the government initiative.

At a recent conference organised by the government and attended by the organisations and other stakeholders, a detailed report into the country's readiness to move to digital money was presented. The research was conducted through a partnership between the Malawian

Ministry of Finance, the Reserve Bank of Malawi, and the BCA.

One of its main findings was that fewer than one in 25 adults in Malawi currently use digital finance money of any kind. The country's population is approaching 17 million, so that means about 700,000 people use some type of e-money. The government is hoping to bring that figure up to more than 1 in 10, which is about 1.7 million.

Goodall Gondwe, Malawi's minister of finance, economic planning and development, said switching to digital payments is part of the government's commitment to achieving social and economic goals within the nation's Growth and Development Strategy.

"This is part of our mandate to realise balanced and sustainable economic growth and to reduce poverty. We believe creating an economy where digital payments are widely available is the right path for us to embark on and we are doing so based on sound economic and fiscal policies."

The joint report, *The Opportunities for Malawi's Transition Away from Cash*, also identified potential opportunities for Malawi. These include the government advancing on digitising its centralised payment system with support from banks, and merchants accelerating digital payment acceptance via mobile money and debit card at the point of sale.

Etisalat plans to be region's first operator to launch 5G

Etisalat Group and Ericsson will exchange knowledge and share their solutions to develop 5G.

Abu Dhabi-based Etisalat has extensive operations in African countries, including Tanzania (Zantel), Sudan (Canar), Egypt, Nigeria, amongst others.

The operator plans to be the first in the region to roll out 5G in the coming years. In tests carried out in 2014, it claims it has already demonstrated 115Gbps data transmission capability as part of the development of fifth generation mobile technology.

It will also work with Ericsson to develop LTE's potential speed of 450Mbps. This can be achieved using



Etisalat Group CTO Hatem Bamatraf believes partnership is essential to bringing 5G to the market.

License Assisted Access (LAA), an LTE-A feature that leverages the 5GHz unlicensed band in combination with licensed spectrum to deliver a performance boost for mobile users, especially indoors.

As well as enabling carrier aggregation of licensed and unlicensed bands, LAA optimises wireless network resources and improves app coverage for all users,

regardless of whether their devices are using licensed cellular or Wi-Fi.

According to Etisalat, LAA "spearheads" the journey to 5G. The group's CTO, Hatem Bamatraf, adds: "Partnership is essential to bringing 5G to the market. Through our collaboration with Ericsson, we hope to gain a deeper understanding of the full potential of 5G, and subsequently accelerate the transition to a networked society."

Ericsson says it already has live indoor and outdoor 5G test networks in Sweden and the US using multipoint connectivity and distributed MIMO systems. It claims the latter can increase downlink throughput speeds by 100 per cent.

Accelerating ICT plans



The Communications Regulators Association of Southern Africa (CRASA)

has signed an MoU with Ericsson to support the accelerated development of ICT policies and regulations in the SADC region. Under a three-year deal, the two will facilitate capacity building workshops aimed at the development of national broadband plans. They will focus on specific concerns related to ICT in the 15 member states of the SADC who are planning, developing or revising and amending their broadband policies.

BTCL starts 4G trials



Botswana Telecommunications Corporation Ltd

(BTCL) is planning to trial 4G this year. CEO Paul Taylor told local reporters that a commercial rollout would begin towards the end of 2015 following trials that were expected to start during Q1. While BTCL has yet to issue any official statements about its 4G plans, the *Botswana Guardian* said the firm is currently deploying LTE trial sites across the country and is also investing BWP110m (USD11m) in a network upgrade programme. Mascom Wireless and Orange have already demonstrated their 4G capabilities in the country.

Free Wi-Fi a "basic service" in Tshwane

Everyone in the South African city of Tshwane will be within walking distance of a free Wi-Fi hotspot within the next 18 months. As part of Project Isizwe, an additional 1,848 free Wi-Fi zones will be rolled out across the city to add to the 575 sites that are currently active.

In his State of the Capital Address in May, Tshwane mayor Kgosisentso Ramokgopa said: "By the end of 2016, every citizen of Tshwane is within walking distance of free Wi-Fi. The vision is to eventually provide free Wi-Fi in every street and household in the city."

Ramokgopa said the new sites will be deployed in communities including Bronkhorstspuit, Hammanskraal,

Soshanguve, Centurion and the greater Tshwane area.

Project Isizwe co-founder and CIIO James Devine added: "In an urban environment, there will be a Wi-Fi hotspot within one kilometre of every single person in the city. In the rural context, this would mean placing a free internet zone within five kilometres of every person. The City of Tshwane is now taking the stance that free Wi-Fi is a basic service."

The free Wi-Fi project was launched in November 2013, and as of May 2015 it's claimed it had more than 570,000 unique users on the network. Since then, Isizwe has also deployed networks in Thohoyandeu, Robertson, Atlantis and Lusikisiki.

In Tshwane, the project has enabled a number of value-added services. These include: free Wi-Fi on board local buses; the *WiFi TV* video-on-demand service, a community initiative produced by young citizen journalists; and free on-net phone calls that are integrated with municipal call centres. The latter enables residents to report, for example, broken traffic lights whenever they are in a free Wi-Fi zone.

Project Isizwe was co-founded by former Mxit and iBurst CEO Alan Knott Craig Jr. It works with municipalities and uses low-cost and low-maintenance Wi-Fi equipment, under-utilised fibre that's already in the ground, as well as with semi-skilled technicians and labourers.

Helping Rwanda become cashless society

Airtel has introduced new features to its mobile payment service in Rwanda. *Airtel Money* will now enable subscribers to pay for school fees, and eventually water bills and tax demands from the Rwandan Revenue Authority by the end of June 2015 (also see *News*, p9).

Mobile payments are said to be growing in Rwanda. The government aims to make the country a cashless society, and wants electronic payments and usage of mobile-based financial

services to replace traditional methods. John Karamuka, head of payment systems at National Bank of Rwanda, said: "Rwanda's mobile financial sector is showing steady growth in mobile payments with 104,773,115 transactions in the last year alone. It's economically beneficial for the country to have less physical cash exchanging hands and to see telecoms spearheading this."

Airtel Rwanda is optimistic about creating a new wave of accepting

payments using mobile phone technology, thus bridging the gap between the traditional "brick and mortar" modes of payment.

MD Teddy Bhullar went on to claim that the *Airtel Money* payment gateway will enhance and create ease amongst the company's m-banking subscribers. "As a telecoms operator, we believe that this is the journey towards answering the questions around financial inclusion," he said.



Wi-Fi networks will

carry almost 60 per cent of global smartphone and tablet data traffic by 2019, according to Juniper Research. It forecasts that such traffic will reach more than 115,000PB over the next four years, compared to under 30,000PB in 2015. Juniper says off-loading mobile data onto Wi-Fi addresses issues of patchy coverage and also offers the potential for new services such as VoWi-Fi. But it warns that for effective deployment, MNOs need to build their own Wi-Fi zones in problematic areas or partner with hotspot providers and aggregators.

Digital divide will be “fully bridged” by 2019

O3b founder raises USD500m from major global companies to develop and launch hundreds of LEO satellites.



OneWeb says it's signed the largest ever commercial launch deals with more than 65 rockets, including 21 orders from Arianespace and 39 from Virgin Galactic.

A new company is planning to launch hundreds of satellites into low Earth orbit (LEO) as part of an ambitious mission to “fully” bridge the digital divide by 2019. While such claims could easily be dismissed as PR hype from yet another start-up firm, OneWeb's impressive roll call of partners and supporters suggests otherwise.

The company has been set up by US telecoms entrepreneur Greg Wyler who is said to have helped create Africa's first commercial 3G mobile and FTTH networks when he owned Terracom Communications (now Rwandatel) in Rwanda. Wyler went on to found O3b Networks in 2007.

Speaking at a press conference in London in June, he announced that OneWeb has now raised USD500m of funding. Investors include: Airbus Group; Bharti Enterprises; Coca Cola Company; Hughes Network Systems; Intelsat; Qualcomm; Virgin Group; and Mexican triple-play provider Totalplay, which is owned by Ricardo Salinas.

Using Ku-band capacity specially allocated by the ITU together with patent-pending technology, OneWeb claims its system will bring more than 10Tbps of new capacity to rural areas around the world, offering fibre-quality internet connectivity.

Airbus will initially manufacture 900 satellites for the company. These will be mass produced ‘micro

satellites’ that are said to be easier to build, use fewer components, and weigh less than 150kg, making them cheaper to launch. The satellites will also use OneWeb's innovative *Progressive Pitch* system. The firm claims this allows it to unlock spectrum in the “most efficient” way by gradually and slightly tilting the satellites as they approach the equator to ensure they never cause or receive interference.

They will be launched into a near-polar orbit at an altitude of 500km before raising themselves to their operational locations.

While the initial production satellites will go up in late 2017, the bulk of the launches will be a continuous campaign starting in 2018. Indications suggest that OneWeb will need around 648 satellites in space before it can begin commercial services, and a rapid launch schedule is therefore crucial.

In what's claimed to be the largest ever deal for commercial rockets, the firm has signed 21 Soyuz launch orders from Arianespace and 39 from Virgin Galactic. Virgin said its *LauncherOne* vehicle is able to launch and replace satellites at just a few hours' notice. OneWeb also has options for eight additional Soyuz and Arianespace rockets. These will be available starting in 2021 to support the replenishment and enhancement of its constellation.

Meanwhile Qualcomm will work on creating what its executive chairman Dr. Paul Jacobs described as “backhaul in the skies”. It will build the air links in both directions as well as the reference designs for OneWeb's terminals which will support local area Wi-Fi as well as all cellular services from mobile operators.

OneWeb's ground segment will be designed and developed by Hughes Network Systems.

Satellite is the only option

Bharti chairman and group CEO Sunil Bharti Mittal reckons OneWeb's proposition is a “game changer” for remote areas such as the jungles of Africa or Asia's Himalayan region. He said: “This project will mitigate the problems we are facing in connecting the rural, difficult areas and the last remaining populations onto the broadband networks. The only way to do it is through satcoms.”

Wyler clearly supports this. He says cable costs GBP4,000 per kilometre on a telephone pole (if one exists) and dismisses fibre as a technology for connecting rural areas. “Cities have cable and fibre because the houses are close together. But as the houses move further apart it becomes more and more expensive per home to connect.”

So what about MEO (medium Earth orbit satellites)? While GEO (geostationary) satellites orbit at a height of around 36,000km, companies such as O3b Networks promised to 'connect the unconnected using MEO spacecraft that are placed into orbit at 8,062km above the planet.

Some experts are forecasting that high-throughput LEO satellites will threaten MEO missions, and could even lead to their demise. Wyler disagrees: "O3b is up and running today and has 12 satellites. It provides core trunking services to telecom operators and is not designed for direct to consumer [services]."

"OneWeb is a different system. It uses an inexpensive terminal which you can place [for example] direct to schools. O3b has a different type of terminal and is doing an excellent job. O3b is a different company and does a different thing on the infrastructure side."

Will LEO work this time?

Intelsat is investing USD25m into OneWeb and the two companies will also collaborate on developing hybrid LEO/GEO end-user terminals. In addition, Intelsat will use OneWeb's LEO platform with its forthcoming *EPIC* high throughput satellite (HTS) system to complement its GEO services.

This is not the first time LEO satellites have been explored. In the mid-1990s, Teledesic poured more than USD9bn into its plan for a fleet of over 800 satellites that would orbit at an altitude of 700km. But the commercial failure of similar operations, such as those from Iridium and Globalstar, prompted Teledesic to abandon its programme in 2002.

So why will LEO constellations work today? And why haven't the big hitters in the satellite industry invested in their own low or medium orbit programmes?

"We looked at the opportunities in MEO and with O3b as an example," said Intelsat CEO Stephen Spengler. "What they were trying to do didn't fit into our strategy. O3b is very much a point-to-point trunking application and we felt that had different longevity in the marketplace. Our long-term strategy has been GEO and that's been very successful. The bulk of the applications can be supported very well from GEO, and so we're going to continue with that as the core of our strategy."



Intelsat CEO Stephen Spengler (left) and OneWeb founder Greg Wyler (right) believe satcoms need to leverage the broader telecom technology ecosystem.

Spengler also pointed out that while Intelsat may be a major player in the telecoms sector, it is not actually a huge company. "So we look at the broader technology landscape and the ecosystem to see what is happening in different places. When Greg came along and brought us up to speed with the work he's been doing, it was very intriguing."

"We're in a different era now from the one we had with Teledesic, Iridium and Globalstar. Technology really has advanced. It's moved a long way and Greg has actually pushed it even further and is taking a different approach."

"We fundamentally believe what he believes: we really have to leverage the broader telecom technology ecosystem to help change satcoms. Satellite has operated in a microcosm in the broader telecom industry for many years. For us to now develop the price, performance and the accessibility that is required for a lot of these applications, we have to think more broadly."

By operating in Ku-band, Spengler said OneWeb offers a natural fit for Intelsat, its fleet and global coverage. He added that by working together, the two companies will, for the first time, integrate LEO and GEO satellites, connecting customers from pole to pole on a "seamless" basis.

"LEO is of interest to our aeronautical customers, and those in the maritime and oil and gas sectors who operate at very high latitudes. [At Intelsat] we can't do the poles effectively. So a LEO system allows us to work with our mobility customers and give them pole to pole, high-performance coverage. A MEO system is based on the equator so you're not

going to get full coverage from top to bottom.

"The other thing is that when you look at spot beam systems, sometimes there's congestion. So OneWeb is going to give us another layer of growth. There are also going to be certain situations where the low latency of a LEO system will be beneficial. We don't believe latency is an issue across the broader set of applications, but in certain applications it's going to be beneficial for certain customers. So we'll be able to bring that to the equation."

Spengler said OneWeb's throughput rates will be comparable to Intelsat's *EPIC* system. For example, this could provide up to 50Mbps or more to aeronautical customers, and OneWeb will be about the same for such applications.

Satellite connectivity is often criticised for its high costs and this, coupled with the fact that operators continue to struggle with ARPU's especially in remote and rural areas, limit the technology's appeal. But Spengler reckons this will change.

"One of the markets we're focused on with *EPIC* is wireless network extension to the rural areas. With *EPIC* we're going to bring in different performance levels and higher performing services. We're going to be able to lower the economic equation for these operators, and we're going to have a smaller kit capable in these remote areas."

Spengler pointed out that MNOs continue to use satellite for backhaul in Africa and are still making money. For example, he said Intelsat is currently working with Hughes to provide cost-effective, rural cellular backhaul in the DRC for a large operator.

"With *EPIC* we're going to take another step in terms of performance and economics. OneWeb is going to be very complementary. There are going to be some networks that fit better with *EPIC*, other networks that fit very well with OneWeb, and still others that fit with a combination of the two. That's our vision for these kinds of services."

Wyler said the next phase of OneWeb's development will involve working with countries, operators and aid organisations to help them realise their goals of "open and ubiquitous" access. He added: "The dream of fully bridging the digital divide is on track to be a reality in 2019. We have the key elements in place: regulatory, technology, launches, satellites, as well as commercial operators in over 50 countries and territories."

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The Singtel logo features the word "Singtel" in a white, sans-serif font. Above the letters "i", "n", and "g" are three red circles of varying sizes, arranged in a slight arc.

Let's make everyday better



Economic growth for Africa in 2014 despite global and regional shocks

GDP in African economies grew by an average 3.9 per cent in 2014 compared to 3.7 per cent in 2013, according to the African Development Bank (ADB) Group's annual report released in May.

In relative terms, ADB said the growth was higher than the 3.3 per cent global average in 2014. Western Asia recorded 2.9 per cent while Latin America and the Caribbean increased by 1.2 per cent.

But it noted that Africa's growth was slower than some of developing economies of the world which registered a rise of 4.4 per cent, and there were sharp variations between regions and countries on the continent.

Southern Africa, which went down from 3.6 per cent in 2013 to 2.7 per cent last year, remained sluggish.

ADB said South Africa, the region's largest and most influential economy, had to contend with "structural bottlenecks, strained industrial relations, and low investor and consumer confidence". As a result, its GDP growth declined from 2.2 per cent in 2013 to 1.5 per cent in 2014.

But increases in other Southern African countries was substantially higher. With 7.6 per cent compared to 7.4 in 2013, Mozambique continued to be the region's fastest-growing economy, driven by foreign investment in mineral, gas and oil

prospecting. ADB said Zambia and Malawi also posted impressive growth rates of 5.7 per cent each, from 6.7 and 6.1 per cent respectively in 2013. Namibia's economy grew at 5.3 per cent from 5.1 per cent in 2013.

East Africa, especially Ethiopia, Rwanda and Tanzania, emerged as the best region on the continent with 7.1 per cent average GDP growth.

West Africa followed with an average of six per cent which is still regarded as a "commendable performance" given regional conflicts, the Ebola crisis, and the decline in oil prices. Central Africa recorded an average of 5.6 per cent despite shocks such as military insurrections. North Africa continued

to recover from the slump in previous years, with an average growth of 1.7 per cent in 2014 compared to 1.6 in 2013.

ADB believes future economic growth in most African countries will be driven by domestic demand supported by investments in the natural resources sector, increased investment in infrastructure, and expansion in agriculture. It forecasts growth to accelerate to 4.5 per cent in 2015 and five per cent in 2016.

East Africa is predicted to rise from 5.6 per cent in 2015 to 6.7 in 2016; Central Africa will increase from 5.5 in 2015 to 5.8 in 2016; and Southern Africa is predicted to grow by 3.1 per cent in 2015, up from 2.7 in 2014.

Tough year for Vodacom in South Africa

The Vodacom Group's active customer base increased 7.2 per cent to 61.6 million, and revenues rose 2.1 per cent to reach ZAR77,333m according to preliminary results for the year ended 31 March 2015. But service revenues in South Africa declined 2.7 per cent.

All this was played out against what CEO Shameel Joosub described as a "tough" backdrop: "In South Africa we faced major cuts in mobile termination rates, a weak economic environment, exchange rate volatility and increased price competition. In Tanzania and the DRC, pricing pressure impacted our performance."

Joosub said a 50 per cent reduction in MTRs was a major contributor to the 2.7 per cent decline in service revenue in South Africa. Excluding the MTR cuts, the group's service revenue in the country grew 1.5 per cent.

In international operations, service revenue was up 10.0 per cent with Lesotho and Mozambique performing well, while Tanzania and the DRC faced stiff pricing competition.

The operator claimed it now has 26.5 million active data users and 1.8 million M2M customers across the group. Overall data revenue grew 25 per cent. In South Africa, the number of smart data devices active on the network grew by 29.7 per cent to 11.6 million, boosted by the launch of the low-cost, Vodacom-branded *Smart Kicka* and *Smart Tab* devices.



Vodacom Group CEO Shameel Joosub said the MTR cut was to blame for the decline in South African service revenues.

"Our focus on network investment is the key enabler behind the increasing contribution that data is making to service revenue," said Joosub. "We lifted group capital expenditure 23.4 per cent to ZAR13.3 billion, adding another 2,576 3G sites across the group and more than doubling our LTE/4G sites to 2,610. In South Africa, 3G coverage was extended to 95.6 per cent of the population."

The CEO added that the delay in receiving regulatory approval for the acquisition of Neotel was "disappointing". The transaction has been waiting for the go-ahead from the authorities for almost a year now (see *Wireless Business*, May-Jun 2014).

Millicom to acquire Zanzibar Telecom

Millicom has signed a share purchase agreement to acquire an 85 per cent stake in Zanzibar Telecom (Zantel) from Etisalat Group. The Government of Zanzibar will continue to own the remaining 15 per cent.

Under the terms of the agreement, Millicom will pay a total cash consideration of USD1 and assume

total debt obligations of USD74m. In addition, Zantel will have up to USD32m in net current liabilities at closing. The transaction remains subject to approval by the TCRA and the Fair Competition Commission.

Millicom expects Zantel's EBITDA to reach USD25m via a combination of bringing new products and services to the existing customer base and delivering greater efficiencies. The agreement allows for an adjustment to the total consideration if that target is not reached by the end of 2019.

The Luxembourg telco adds that it has arranged a USD100m five-year credit facility for Zantel with an unnamed international bank. It intends to retain the Zantel brand while delivering cash flow growth by leveraging technical and operational efficiencies.

Among its plans for Zanzibar, Millicom says it will improve network service quality and coverage, roll out 4G, access further bandwidth capacity via EASSy, and expand mobile financial services to support financial inclusion.

Zantel reported gross revenues of USD82m in 2014 and is said to have 1.7m mobile subscribers across Zanzibar and mainland Tanzania.

It operates 2G and 3G services over 545 network sites and has ownership rights to undersea fibre optic cable capacity. According to the Tanzania Communications Regulatory Authority, the company has around a five per cent share of Tanzania's mobile market.

CEC Liquid Telecom goes for Realtime in Zambia

In mid-May, CEC Liquid Telecom announced the expansion of its business in Zambia following the full acquisition of the country's second largest ISP, Realtime Technology Alliance Africa. The value of the deal has been withheld.

Realtime will now focus on the retail and business markets in Zambia which are not regulated by the Zambia Information and Communications Technology Authority. It will provide communications services to homes and businesses using its existing WiMAX network as well as CEC Liquid Telecom's satellite and fibre networks.

CEC Liquid Telecom says it will continue to provide wholesale products and services to all licensed operators in Zambia. Realtime will receive network access on the same terms as other providers.

The ISP will also be one of the first resellers for *Fibroniks*, Liquid Telecom's FTTH service which was launched earlier this year (see *News*, Mar-Apr 2015).

Angola completes tenure as SATA chairman

Angola has completed its 12 month chairmanship of the Southern Africa Telecommunications Association (SATA). In his report as outgoing chairman, Angola Telecom CEO João Adolfo Martins said a number of key projects were successfully

implemented during his tenure. These include phase two of the SADC Region Information Infrastructure initiative which dealt with the implementation of switches, IP platforms, management, IXPs and billing systems in the All-IP network.

Another scheme that was completed was the Backhaul Transmission Links project. Its aim was to connect land-linked countries in the region to the submarine fibre systems on the western and eastern coasts. Martins said all missing links in this project have now been implemented, and members have been upgrading infrastructure in order to take advantage of the connectivity.

Namibia has now taken over the leadership of SATA. In his speech as new chairman, Theo Klein, acting MD of Telecom Namibia, thanked Martins for his “able leadership” which he said had guided SATA with “wisdom and openness to new ideas and challenges”.

He also pledged his commitment to carrying out the resolutions agreed by the association’s members.

Klein added that SATA had already demonstrated its proactiveness and responsiveness to the challenges presented by telecoms in the modern era, and to addressing the needs and aspirations of member organisations.



DAMM’s CCO Allan Detlefsen claims the one-stop shop offers innovations from two “leading edge” companies.

DAMM and Airbus enter into alliance

DAMM Cellular Systems is teaming up with Airbus Defence and Space (ADS) to support the critical communications market. According to the Denmark-based TETRA supplier, its alliance with ADS will lead the way to help more industries and end-users access the “most intelligent” and scalable radio communication system available.

“We [will] make it easy for our system partners worldwide to provide a full solution with DAMM infrastructure and Airbus terminals,” claims DAMM CCO Allan Detlefsen. “This one-stop shop will [also] give the end user quick and easy access to the hands-on experience and knowhow of the system partner, as well as innovations from two leading edge communication providers.”

ADS hopes the partnership will provide it with new opportunities to increase its footprint of full-scale TETRA terminals portfolio to DAMM’s markets and customers.

CDC and SCB to support increased lending to businesses in Sierra Leone

CDC Group, the UK’s development finance institution, and Standard Chartered Bank (SCB) have announced a risk participation agreement that will support new working capital lending to businesses in Sierra Leone.

The agreement enables SCB to increase the number of loans it makes in Sierra Leone. The one-year deal will see the two organisations share the default risk on up to USD50 million of new loans originated by SCB in the West African state.

Economic growth in Sierra Leone is slowing as a result of the Ebola crisis. GDP growth was expected to be 11.3 per cent in 2014 but has been revised downwards to four per cent. This comes on the back of shortages in the supply of basic essential commodities and disruptions to supply chains, as well as reduced production from mining.

By providing short-term loans and overdrafts, the organisations say they will support local businesses to continue to operate, meet their day-to-day finance needs and expand.

Although the facility does not explicitly target Ebola relief efforts, a number of the companies that it is expected to support are playing a direct role in mitigating the effects

of the crisis. SCB says supporting the working capital requirements of these businesses will enable them to scale up their operations to supply consumer goods to affected zones.

Universal service funds to support broadband rollouts in Lesotho

The Lesotho Communications Authority (LCA) will build at least 10 more new mobile towers to unserved areas as part of the next phase of its plans for universal service funds.

The fund aims to support the rollout of broadband to unserved and underserved areas over 2015-16. The LCA has set the minimum standard for mobile projects to be based on UMTS, using 3G or equivalent.

The authority adds it will use the funds to increase support for the education sector by ensuring that higher learning institutions have access to sufficient broadband services. High schools will be provided with content and tools even if they are outside the current reach of broadband networks.

During this planning cycle, the authority says revenues collected by the fund will remain between LSL11.5m-12.5m (around USD900,000) per annum. However, other sources of revenues, such as subventions from the government, are also anticipated.

LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
19/4/15	Etisalat	UAE	1Q15	AED	12,906	NA	0.25	Acquired 53% stake in Maroc Telecom in May 2014; disposed of Atlantique Telecom operations in Jan 2015.
28/4/15	Orange Group	France	1Q15	EUR	9,672 (bn)	2,916 (bn)	NA	Revenues down 0.9% on a comparable basis, but steady growth in Africa & the Middle East which now accounts for 100.6m customers – an 11.3% YoY increase.
30/4/15	American Tower	US	1Q15	USD	1,079	724	0.45	International rental & management segment revenue increased 6.2% to \$344m.
11/5/15	VimpelCom	Netherlands	FY14	USD	19.6 (bn)	8.0 (bn)	0.53	Africa & Asia performance impacted by weaker results in Algeria & Pakistan, offsetting strong performance in Bangladesh.
12/5/15	Eutelsat	France	3Q14	EUR	368	NA	NA	Revenues in line with objectives, with like-for-like growth of 4.5%. Quarter was marked by successful launch of EUTELSAT 115 West B, one of the first commercial all-electric satellites.
18/5/15	Arianespace	France	FY14	EUR	1,399 (bn)	NA	NA	41% increase over 2013 revenue of €989m; described 2014 as a “record year” with 11 launches.
19/5/15	Vodacom Group	South Africa	FY14	ZAR	77,333	26,905	0.86	CEO Shameel Joosub: “The indications are that we’ve pulled through a transformative period, & conditions over the medium-term look more favourable.”
19/5/15	Vodafone Group	UK	FY14	GBP	42,227	11,915	21.75	Reports 10.1% rise in group earnings. But MEA & APAC 0.8 decrease to £12.03m. Data customers reported to be increasing across these regions & now number 115.5m.
20/5/15	Gilat Satellite Networks	Israel	1Q15	USD	45.2	0.2	NA	Revenues down compared to \$50.9m for the same period in 2014. Expects stronger second quarter, & still aiming for full year revenues of \$250-260m.
8/6/15	Alcatel-Lucent	France	1Q15	EUR	3,235	82	0.03	Growth in North America & APAC, but in the Rest of the World growth in CALA was offset by 3% revenue declines in MEA.
8/6/15	Telkom Group	South Africa	FY14	ZAR	26.0 (bn)	9.0 (bn)	2.45	Mobile data grew 50.6% while fixed line data revenue increased by 1.5%. Changes to the mobile termination rate added ZAR725m to EBITDA. Fixed line revenues declined by 2.3%.

The fund executes its mandate based on strategic business plans (SBP) that follow a three-year cycle. The current plan is for the three-year period 2014-15 to 2016-17.

The key thrust of the SBP for 2009-10 and 2011-12 was the provision of basic voice telephony to unserved and underserved areas. Secondary services were identified as internet access and distribution of broadcasting signals.

Airtel supports youth entrepreneurs

Airtel is supporting young entrepreneurs in Tanzania with its *Fwasa* programme. It targets those aged 18-24, and aims to help sustainably nurture business ideas, serve communities, and reduce unemployment in the country.

"We seek to equip our youth in all corners of Tanzania with the right skills and resources," said Airtel MD Sunil Colaso. "This programme targets young, energetic and enthusiastic business startups that are ready to take up the challenge and grow their businesses."

IN BRIEF...



Grant Marais has left Intelsat as regional VP for Africa after nearly two-and-a-half years. At the time of writing in June, Intelsat had not made any official announcements about his departure or reasons for leaving. However, Marais' *LinkedIn* profile states he is now CEO of WirelessCo, the joint venture set up between Dimension Data and Multichoice last September.

Headquartered in Johannesburg, WirelessCo will build and operate an open access carrier-grade Wi-Fi network. It combines the network assets of Dimension Data-owned Wi-Fi provider AlwaysOn, with the assets of MWEB Wi-Fi.



The MTN Group added 4.1 million new subscribers during 1Q15. In its quarterly update for the period ending 31 March 2015, the operator said this represents a 1.8 per cent quarter-on-quarter increase and

means that it now has a total of 227.5 million customers. But group president Sifiso Dabengwa said results for the quarter were impacted by a weaker macro-economic environment following the reduction in the price of oil in 2014 and continued price competition. "We continue to focus on our non-voice services which remain the key driver of the group's revenue growth."



2015 marks the 150th anniversary of the ITU. The union was born on 17 May in 1865 after 20 European states signed a treaty in Paris to harmonise telegraph services. As part of this year's celebrations held in Geneva, Robert E. Kahn, the co-inventor of the TCP/IP protocols, radio spectrum innovator Martin Cooper, and Bill Gates were among those honoured with the ITU's 150th *Anniversary Award*.



MTN and Vodafone have agreed to interconnect their mobile money services. The

operators say their collaboration will enable "convenient and affordable" international remittances between Vodacom's *M-PESA* users in DRC, Kenya, Mozambique and Tanzania, and *MTN Mobile Money* customers in Rwanda, Uganda and Zambia. Under the terms of an MoU, MTN Group and Vodafone Group will also share best practice and work together to define the rules and standards of mobile-based remittances in Africa.



Arabsat and Santander Teleport are offering new solutions to provide their customers in Spain, Portugal and other countries with cost-efficient and reliable communications in Africa. The collaboration will include Santander's earth station facilities and network, and Arabsat's 5C satellite at 20°E. Santander has made available a 9m C-band antenna with fully-redundant uplink chain at its teleport location in northern Spain.

INVESTMENTS, MERGERS & ACQUISITIONS

Date	Buyer	Seller	Item	Price	Notes
1/5/15	Shareholders	Eaton Towers	Equity	USD350m	Has now also signed first independent tower deal in Egypt, with the purchase, leaseback & management of more than 2,000 Mobinil towers.
27/5/15	Nokia	Eden Rock Communications	Company	NA	Nokia says Eden Rock's <i>Eden-NET</i> centralised self-organising network solution is highly complementary to its own SON systems & provide a basis to build state-of-the-art solutions for a wide range of market needs.
27/5/15	Fortinet	Meru Networks	Company	USD44m	Fortinet says acquisition broadens its portfolio of security solutions & expands its opportunity to "uniquely" address the \$5bn global enterprise Wi-Fi market.
1/6/15	Financial institution	SES	Shares	EUR7.5m	Agreement for subscription of 6,000,000 A-shares in connection with a EUR7.5m reserved capital increase. Issued simultaneously with three million B-shares subscribed by existing shareholders, resulting in a EUR11.25m overall capital increase.
2/6/15	Global Invacom	Skyware	Company	USD11.6m	Singapore-based Global Invacom hopes the acquisition of satellite terminal manufacturer Skyware will make it a world leading producer of satcoms equipment.

NEW APPOINTMENTS

Date	Name	New employer	New position	Previous employer	Previous position
9/2/15	Byron Clatterbuck	SEACOM	CEO	SEACOM	CCO
10/3/15	Terrence Curtin	TE Connectivity	President	TE Connectivity	President of industrial solutions division
6/4/15	Fernando Valdivielso	ECI Telecom	VP EMEA sales	SEACOM	COO
4/5/15	Chuck Robbins	Cisco	CEO (as from July 2015)	Cisco	SVP, worldwide operations
5/5/15	John Chambers	Cisco	Executive chairman (as from July 2015)	Cisco	CEO
6/5/15	Willem Marais	Liquid Telecom Group	Group managing executive & CEO South Africa	Nokia Solutions & Networks	VP of global customer operations for Telefónica
12/5/15	Andrew Kossowski	Airtel Africa	CIO	Ericsson	VP of operations for Latin America & Caribbean
26/5/15	William Kish	-	-	Ruckus Wireless	Stepping down as CTO
29/5/15	Gavin Carter	Wylless	CTO	JOC Group	CEO
16/6/15	Shola Taylor	Commonwealth Telecommunications Organisation	Secretary-general	Kemilinks International	CEO

Hytera unveils platforms for PMR network users

Hytera's *SmartOne* unified communication platform integrates computer technology, PSTNs and PMR networks to enable multi-system inter-communication for two-way radio users, public network users, dispatchers and commanders.

MANUFACTURER: Hytera

PRODUCT: SmartOne & XPT

MORE INFORMATION:
www.hytera.com

The system allows for CSSI and ISSI interface access, wired and wireless inter-connection, PMR and public network integration and SIP support. Hytera says it features advanced voice processing technology through various voice format conversions including G.711, G.729, AMBE++ and TETRA code.

It also includes voice detection technology that can automatically assign talking authority by detecting voice activity of radios, and gain control technology which adjusts voice levels from different communication systems

to a uniform level without decreasing voice quality.

SmartOne also provides a unified API for integrators to develop more flexible and customised applications for end users.

Separately, Hytera has developed a distributed trunked mobile radio system for demanding users. *XPT* is based on conventional DMR technology, but unlike classic trunked radio platforms, the firm says it does not require a control channel.

As a result, all available channels are available for communication



and a free channel is automatically searched via the repeater for the call request. It's claimed channel utilisation is optimised, and that channel and cell changes are automated via the infrastructure.

Hytera says *XPT* cell can consist of up to eight repeaters, thereby providing up to 16 communication channels. Other features include end-to-end encryption for secure communication, and flexible IP networking for easy scalability.

Weightless-N open standard goes live

The Weightless SIG has announced version 1.0 of its new *Weightless-N* open standard, which is based on a low power wide area star network architecture for Internet of Things (IoT) deployments.

MANUFACTURER:
Weightless SIG

PRODUCT: Weightless-N v1.0

MORE INFORMATION:
www.weightless.org

Operating in sub-GHz spectrum using ultra narrow band (UNB) technology, the SIG says *Weightless-N* offers "best in class" signal propagation characteristics leading to "excellent" range of several kilometres, even in challenging urban environments.

It adds that very low power consumption specified in the standard provides for exceptionally long battery life measured in years from small conventional cells, while leading edge innovation in design will minimise both terminal hardware and network costs.

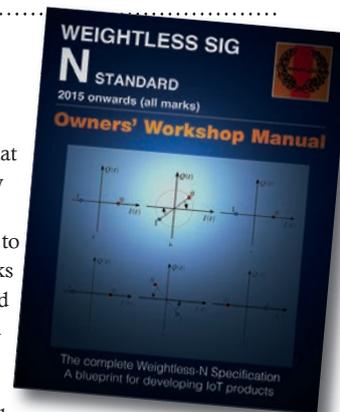
Central to the Weightless proposi-

tion is its status as an open standard. Unlike alternative proprietary LPWAN technologies, the SIG says Weightless is different as it uniquely enables a competitive, free and fair market that does not lock developers into using particular vendors or network service providers.

Any company is able to develop both low-cost base stations and terminals using royalty-free Weightless technology. Networks can be owned and operated independently by any company or, typically, IoT terminal devices and applications can be produced

for use cases that will rely on connection to networks operated by third parties.

It's claimed a Weightless terminal device can be produced for less than USD2 with a Weightless base station bill of materials of less than USD3,000.



Sat-Fi turns Wi-Fi devices into satellite phones

Sat-Fi enables customers to use their existing smartphones and numbers to communicate over Globalstar's satellite network, offering them voice and data connectivity when they're outside cellular range.

Up to eight users can make and receive voice calls and email using the *Sat-Fi* hotspot and app that runs on Wi-Fi enabled devices including tablets, smartphones and laptops. Globalstar says SMS

capability will also be added soon.

The company boasts that the hotspot provides the "most affordable" mobile satellite data speeds, offers the "best voice quality in the industry", and that its performance is four times faster than rival offerings. Globalstar adds that *Sat-Fi* is easy to set up and can be operational within minutes to make calls and send emails.

MANUFACTURER: Globalstar

PRODUCT: Sat-Fi

MORE INFORMATION:
eu.globalstar.com



Easy way to migrate from analogue to digital

Simoco Group hopes its *LinX 200* portable radio will meet the market need for reliable and cost-effective communications.

It operates on DMR Tier II digital and analogue modes, and the vendor says it is ideally suited to organisations in the process of beginning their transition from analogue to digital radio communications.

With the capability to support individual, group and emergency calling, and featuring an emergency alarm and programmable side

buttons, Simoco says the *LinX 200* can be deployed with little or no user training.

The device works through a repeater or in direct mode, and other features include noise suppression, voice encryption, AMBE+2 vocoder, 22 hours average battery working time, and an IP55 rating for dust and shower resistance.

MANUFACTURER: Simoco

PRODUCT: LinX 200

MORE INFORMATION:
www.simocogroup.com



MIMOtech doubles backhaul throughput with Air Division Duplexing



MIMOtech describes *Janus AirDuplex* as a range of “ultra-high” capacity microwave backhaul radios that use a new patented technique called *Air Division Duplexing (ADD)*. This combines MIMO and full duplex transmission to achieve claimed data rates of up to 1Gbps in a single

MANUFACTURER: MIMOtech

PRODUCT: Janus AirDuplex

MORE INFORMATION:
www.mimotechnology.com

28MHz channel, and 2Gbps in 56MHz bandwidth.

The company says the radios are suitable for small cell, microcell and macrocell mobile deployments for a range of technologies including LTE/LTE-A and potentially 5G, providing a cost-effective alternative to fibre and millimetre-wave links for enterprise and government applications.

ADD uses spatial multiplexing to double capacity and spectral efficiency. With an antenna separation of typically only 100mm, MIMOtech says it can be considered as a quasi single-aperture antenna from the

point of view of licensing, site rental cost and implementation.

The firm says that both capex and opex are reduced due to lower spectrum fees, lower site/tower rental fees and lower maintenance costs, while software definability offers downstream savings in upgrade costs.

MIMOtech adds that its technology brings re-usability to frequency spectrum below 42GHz which, until now, has been limited to backhaul applications with a maximum of several hundred Mbps. It says these frequency bands can be re-applied for gigabit backhaul applications.

Newtec gateway increases DTH availability

The *MCX7000* is Newtec’s latest multi-carrier satellite gateway. It has been designed to offer a number of benefits including increased bandwidth efficiency of up to 51 per cent for distribution to TV and radio towers and head-ends, increased service availability, and

MANUFACTURER: Newtec

PRODUCT: MCX7000

MORE INFORMATION:
www.newtec.eu

reduced opex and capex.

The gateway is compatible with the company’s *Dialog* multiservice broadcast platform. It also features *multistream*, Newtec’s efficiency-boosting clean channel technology, and *Equalink 3*, a new linear and non-linear pre-distortion technology designed to compensate for the effects of distortions caused by the satellite’s filters and amplifiers. It’s claimed the additional throughput

this provides equates to up to 15 per cent more TV channels in a DTH carrier.

Newtec says the “easily upgradeable” nature of its DVB-S2X platform means it can guarantee increased functionality and higher density. It believes this makes “future-proof” and the ideal solution for the reception of channel-bonded UHDTV programming on towers and cable head-ends in the future.



Gilat claims small cell breakthrough

Gilat Satellite Networks has launched *CellEdge*, an integrated small cell over satellite solution designed specifically for unserved rural areas.

Developed using what the company claims is its “extensive expertise”

MANUFACTURER:
Gilat Satellite Networks

PRODUCT: CellEdge

MORE INFORMATION:
www.gilat.com

in rural cellular backhaul, the integrated solution comprises a small cell that is optimised to provide the ability to deliver cost-effective 2G and 3G cellular services to unserved areas.

Gilat says *CellEdge* has an 80W total average power draw, including both the small cell and VSAT in a typical configuration, and therefore “significantly” lowers capex in the terminal and solar power generation. The firm adds its technology also minimises satellite space segment overhead



by applying efficient voice and data compression combined with satellite bandwidth allocation on demand. Gilat claims this can reduce satellite opex by up to 80 per cent compared to traditional solutions.

The company hopes *CellEdge* will enable operators to overcome high rollout costs, lack of backhaul and power infrastructure, as well as low consumer uptake and ARPU.

ALSO LOOK OUT FOR

Raising the bar for satellite technology

Eutelsat and Intelsat claim to have reached major milestones in the development of satellite technology, with two separate developments.

Earlier this year in March, Intelsat announced the completion of a series of tests demonstrating the compatibility of its *EpicNG* digital payload with existing ground equipment platforms.

According to Intelsat, *EpicNG*’s all-digital payload allows connectivities in any bandwidth increment from any beam to any beam. This enables independent frequency selection of the uplink and downlink.

When combined, it’s claimed these features provide “unprecedented” adaptability for a customer’s network configuration and topology, allowing users to leverage installed hardware and to operate mixed spectrum networks.

Intelsat believes this feature of completely flexible beam connectivity is an important early differentiator of its *EpicNG* fleet. It says the digital payload will be instrumental in allowing flexible and efficient use of spectrum, resulting in a “dramatic” increase in the amount of throughput it can deliver on its satellites. The company adds that the technology also increases its ability to mitigate interference and purposeful jamming.

Intelsat 29e will be the first *EpicNG* satellite and is scheduled to launch early next year.

Meanwhile, Eutelsat claims it has broken new ground with its software-defined *Quantum*-class satellites. The firm says the programme represents a first in the commercial satellite industry by enabling the complete electronic synthesis of ‘receive’ and ‘transmit’ coverages in Ku-band, including on-board jamming detection and mitigation.

According to Eutelsat, clients will now be able to actively define the performance and flexibility they need. *Quantum* will give them access to premium capacity through footprint shaping and steering, power, and frequency band pairing.

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Is Africa ready for the IoT?

Research says there were around 230 million cellular M2M subscriptions globally at the end of 2014. This number is expected to grow substantially in the coming years.

In the machine-to-machine world, data from connected devices is transferred to networks to create the 'Internet of Things'. But will the IoT take-off in Africa? RAHIEL NASIR finds out.

It was Ericsson that first predicted a future of more than 50 billion connected devices by 2020 in a paper published in February 2011. Over the last few years since then, many in the industry have been citing that figure, particularly when it comes to the potential offered by machine-to-machine (M2M) connectivity.

But at the same time, other market observers have criticised Ericsson's forecast as being somewhat exaggerated. Indeed, in its latest *Mobility Report* published in June 2015, the company is now expecting 26 billion connected devices worldwide by 2020. Of these, almost 15 billion will be phones, tablets, laptops and PCs.

While that revised total excludes passive sensors and RFID tags, Ericsson says M2M is expected to show strong growth, driven by new use cases such as in cars, machines and utility metering.

According to the report, there were around 230 million cellular M2M subscriptions globally at the end of 2014, and it says this number will "grow substantially" in the coming years.

Cisco agrees. Its annual Visual Networking Index (VNI) is also used as an industry benchmark and in its latest forecasts for mobile traffic growth published in late May (*also see News, p6*), it predicts that global M2M connections will more than triple over the next four years, growing to 10.5 billion by 2019. It adds that annual global M2M IP traffic will increase 15-fold over the period, from 308PB in 2014 to 4.6EB by 2019.

So how does Africa figure in all of this? Cisco reckons M2M traffic in the Middle East and Africa will grow 38-fold from 2014 to 2019 to reach 50PB per month in four years time. Furthermore, it says M2M will account for two per cent of total

mobile data traffic in the region by 2019, compared to just one per cent at the end of 2014. The only African country featured in the index is South Africa. Here, it is predicted that M2M traffic will grow at a CAGR of 97 per cent from 2014 to 2019. Cisco says while M2M modules represented 8.68 per cent of device connections in South Africa last year, they will account for 19.1 by 2019.

"Local solutions to local problems"

The ITU believes the Internet of Things (IoT) promises a wealth of new opportunities for economic growth and social development. In June, its members established ITU-T, a new study group that will be responsible for international standards to enable the coordinated development of IoT technologies, including M2M communications

and ubiquitous sensor networks. The union said African experts contributing to ITU-T have identified “numerous” IoT use cases relevant to the continent, and it expects a wide variety of innovators to answer the demand for applications.

“New players can enter the market from the edge of the network, and the key in the IoT sphere will be local solutions to local problems,” says Bilel Jalousie, chief of the ITU-T study groups department. So what are those use cases?

TEOCO specialises in planning, analytics and optimisation solutions, and has worked with operators such as Vodafone in Ghana, Orange, as well as with Zain’s former operation in Nigeria. Steve Bowker, the firm’s VP of technology and strategy, believes M2M does present a very real opportunity in Africa, but in very specific markets.

“Education, health and agriculture in particular are areas where M2M is likely to make a big impact in Africa. However, for certain usage models, M2M in Africa is ahead of other markets. For example, PoS devices in Africa have a multitude of connectivity options in order to make sure payments can be processed.”

While luxury cars and fleet vehicles have been tracked using mobile networks for more than ten years in South Africa, Bowker thinks connected cars will generally be far less popular in Africa than elsewhere in the world. (Also see ‘Connected cars to create network traffic jams?’, opposite page).

Econet Wireless is unlikely to agree here. Last year, the Zimbabwean mobile operator announced a new focus on connecting the IoT starting with vehicles (see News, Nov-Dec 2014). Under its Connected Cars initiative, customers can use the Econet network to track the movement of goods and passenger vehicles, monitor driver behaviour, and receive safety alerts, customised fleet management reports, as well as other services.

At the launch of the initiative in October, Econet said its ambition was to connect most of Zimbabwe’s more than 1.2 million cars within a few months. While the company has not revealed the precise number of vehicles that have been connected to its network since then, in May it announced an upgrade of the Connected Cars platform. Customers now have a more “user friendly” interface to view and monitor their fleet in real-time, and to customise any reports dependent on their particular requirements. Econet claimed this was to meet “increasing” demand for its recently launched fleet management service.

For UK-based M2M specialist Cyan Technology, Africa’s IoT will be driven not by cars but by energy. “The US Trade and Development Agency has forecast that South African utility executives will spend USD11 billion on grid modernisation over the next decade,” says the company’s VP Mark Coyle.

Cyan is collaborating with Adenco Construction to deliver smart energy solutions that will help increase energy security and reduce supply costs in South Africa. Earlier this year, it also signed a deal with Johannesburg-based M2M specialist XLink Communications for the distribution of its smart energy communication technology in the region.



Mteto Nyati,
CEO,
MTN Group

“In South Africa, the wholesale M2M market – one aspect of the IoT – is already worth an estimated ZAR350 million and is expected to grow to ZAR1.2 billion by 2017.”

This has been designed to enable the measurement and control of energy consumption for the metering and lighting markets (see News, Mar-Apr).

XLink claims that it currently manages M2M solutions for more than 68,000 businesses in Africa, facilitating 35 million monthly connections via its portal. CCO Hymie Marnewick believes the continent needs solutions for the smart monitoring of any remote asset – electricity, manufacturing, generators, etc. – to better manage and utilise valuable resources such as water and electricity, as well as to optimise current human capital.

“In South Africa, we see a huge focus on smart metering. We see new government regulations and [tax] incentives being introduced to encourage better reporting/monitoring of environmental sustainability. This will create the required platforms and focus for the IoT in Africa.”

According to Cisco’s VNI, the consumer health segment will have the fastest growth in global M2M connections and is forecast to rise 8.6-fold from 2014 to 2019. The implications for this in terms of mHealth applications in Africa is particularly significant.

The World Health Organisation says sub-Saharan Africa is home to 12 per cent of the planet’s population but carries 26 per cent of its disease burden. For instance, 90 per cent of the world’s malaria cases occur in Africa as do 60 per cent of HIV/AIDS incidences.

In a thought leadership article written last year, Tony Smallwood, Vodacom Business’ executive head of machine-to-machine and industry vertical solutions, said M2M is providing the healthcare industry with greater control over medical data and enabling patients to take a more proactive role in their own treatment.

But he warned that while M2M offers “unrivalled opportunities” to get information to the right place at the right time and as quickly as possible, there are several barriers that impact the adoption of mHealth technologies in Africa. Smallwood pointed out that in M2M communication, devices collect and transmit

information independently. This justifiably raises concerns over who will be accessing the mHealth data and how secure it is.

“To overcome these, communities would need to be educated on how to use the technology including benefits. Most importantly, before the potential of mHealth can be realised across the continent, individuals need to reach a level of comfort in using the devices and trust that their information is secure and will remain confidential.”

He said that one step to resolving the challenge is to take measures to ensure data is stored securely. In many cases, the data is encrypted by customers themselves which means that not even the M2M service provider has access to it without the required encryption key. For example, he said Vodafone secures the data stream through a dedicated M2M platform with no access to the open internet.

“Another step is to operate a transparent system of access. Inspiring confidence means making people aware that they are in charge, and can control which healthcare providers view which data, and also for how long,” said Smallwood.

He added that without building more bureaucracy into systems already weighed down by regulation, it is also vital for national and international policymakers to take an active role.

“For example, as smartphones become all-capable devices with an app for everything, it is important to define what constitutes a medical device for the purpose of mHealth.”

Will the networks be able to cope?

While Smallwood focuses on the challenges of implementing mHealth applications on an M2M network, others would argue that there are bigger hurdles that have to be overcome before you can even get to that stage.

“The challenges of implementing the IoT are bigger in Africa than elsewhere, notably because of the lack of universal connectivity or secure, inclusive network access,” says Bilel Jamoussi, chief of the ITU-T study groups department.

“International standards will be critical in offering common platforms for innovation by improving interoperability and reducing barriers to market entry.”

So doesn’t GSM present the solution here? According to Ericsson’s Mobility Report, 75 per cent of cellular M2M modules today are GSM-only and serve applications that do not require high network throughput.

TEOCO’s Bowker agrees and says most M2M applications in developed markets currently use 3G infrastructure (or better) for their data transfer. But he warns that 3G coverage in many African countries is often sketchy at best, and 2G connections severely limit the amount of data that can be transmitted.

“There are two solutions to this – either improve 3G infrastructure or create solutions that can be used even when data bandwidth is extremely limited. The former is unlikely in the short term; instead, we will see applications developed that don’t use a great deal of data in order to be useful.”

LTE may be vital here. In its *Mobility Report*, Ericsson says LTE modem prices will enable new applications with very low latency requirements. It adds: "New developments and 5G capabilities are expected to extend the range of addressable applications for massive machine-type communications deployments."

But according to Cyan, all types of networking technologies have a role to play in the IoT. Among the wireless options, Coyle says that while Bluetooth and ZigBee transmit signals over shorter distances, Wi-Fi and sub-GHz have a longer range.

"In urban areas, a sub-GHz standard performs most effectively, as the lower the operating frequency, the higher the transmission range for the signal. In simpler terms, operating on a 433MHz frequency ensures that the signal can easily propagate through concrete walls and can reach longer distances.

"Many IoT and M2M devices must continuously be connected to other components of the network and the utilities; a compromise on the range is generally not acceptable. Also, because of its longer range, sub-GHz systems require fewer data collectors to serve the same number of smart meters as compared to ZigBee for example, thus reducing the cost of deployments."

Ericsson largely supports this view. Despite the dominance of GSM, it says more things will be connected through capillary networks using short-range radio to cellular gateways: "This will leverage the ubiquity, security and management of cellular networks. One example is home alarm systems where sensors on doors and windows, as well as motion detectors and fire alarms, all connect to an alarm centre through a cellular gateway."

Getting connected

Africa currently has an internet penetration rate of around 16 per cent and includes eight out of the top 10 countries worldwide with the lowest internet access rates. While this indicates yet another barrier to the IoT, Coyle says it also presents clear opportunities for growth.

"As the continent does not possess the same entrenched infrastructure as Western countries, its cities can be more easily adapted for IoT solutions," he says. "Consulting firm McKinsey estimates that by 2025 Africa will have tripled internet penetration to over 50 per cent, or around 600 million people. The GSMA says this will give Africa the opportunity to 'leapfrog' and go to the latest in innovation and technology at the same time."

Ultimately, it doesn't matter how many billions or millions of connected devices the world is predicted to see in the coming years: the reality is that there is real potential for the IoT in Africa. And if proof was needed, then it came earlier this year in May when MTN, the continent's biggest mobile operator, unveiled what it described as the first truly pan-African IoT platform.

"The IoT/M2M opportunity is real," says MTN Group CEO Mteto Nyati. "It is no longer a matter of if or when IoT/M2M will take off, as we have

CONNECTED CARS TO CREATE NETWORK TRAFFIC JAMS?

In June, Juniper Research forecast that the telematics sector will continue to outperform all other M2M markets over the next five years in revenue terms, with one-in-five passenger vehicles connected globally by 2019.

That's perhaps not good news given an independent study published earlier this year by Machina Research on behalf of TEOCO. It warned that rush hour traffic will have "grave implications for mobile networks", with certain cells set to experience a 97 per cent increase in data traffic over the next ten years.

Connected cars will be the key driver of this sharp increase in network usage.

"Connected cars, as with other M2M devices, don't behave like smartphones," said Machina Research CEO Matt Hatton. "They represent a very diverse set of challenges to operators through highly varying network traffic patterns at different times of the day."

While connected cars don't present much of a problem in terms of overall data volumes, Hatton pointed out that network resource management is not based on total traffic volume but on particular cell sites during peak times of network use.

"If connected cars regularly cause network traffic spikes in a particular location that can't be met, there are implications for operators in meeting SLAs and delivering a positive quality of experience," he warned.

seen developments in this area from as far back as six to 10 years ago. Reflecting on Supervisory Control and Data Acquisition (SCADA) and the inception of machine-related data communications, it is clear that we have the building blocks and now need to enhance and facilitate greater efficiencies with our own solutions."

MTN claims its IoT platform will provide enterprises in Africa with greater control and advanced management features for their connected devices and SIMs. The company has also launched a global machine-to-machine SIM card and says this gives customers the same rate for M2M activity across its network footprint in Africa.

MTN's IoT platform is now live in South Africa, and its other operating countries are set to follow over the next 12 months. Echoing other commentators here, Nyati says how the Internet of Things is used and what that means for customers are the questions that now need to be asked.

"Africa has a unique set of problems that cannot be compared to other territories. The continent faces issues largely related to health, environmental sustainability, public safety and agriculture. Underpinning these are the constraints faced in relation to connectivity and data costs.

"Therefore, there is certainly an appetite for solutions to address the aforementioned problems. By addressing these we create a viable ecosystem to drive solutions and their adoption. A key focus



Connected cars during rush hour will have "grave" implications for MNOs as some cells could see a 97 per cent increase in data traffic over the next ten years.

The report outlined a number of areas that operators must prioritise to cope with the uptake in M2M connections. These include: dynamic network management and optimisation for both RAN and backhaul planning; support for greater diversity in access networks including the management of both licensed and unlicensed spectrum; more sophisticated planning tools; and an increased focus on device management.

It added that a more considered approach to spectrum re-farming will also be required: "M2M devices are more sensitive to spectrum re-farming. They will have lifespans measured in decades and be installed in hard to reach places making them difficult to swap out. This will have a big impact on how operators choose to re-farm their spectrum," said Machina.

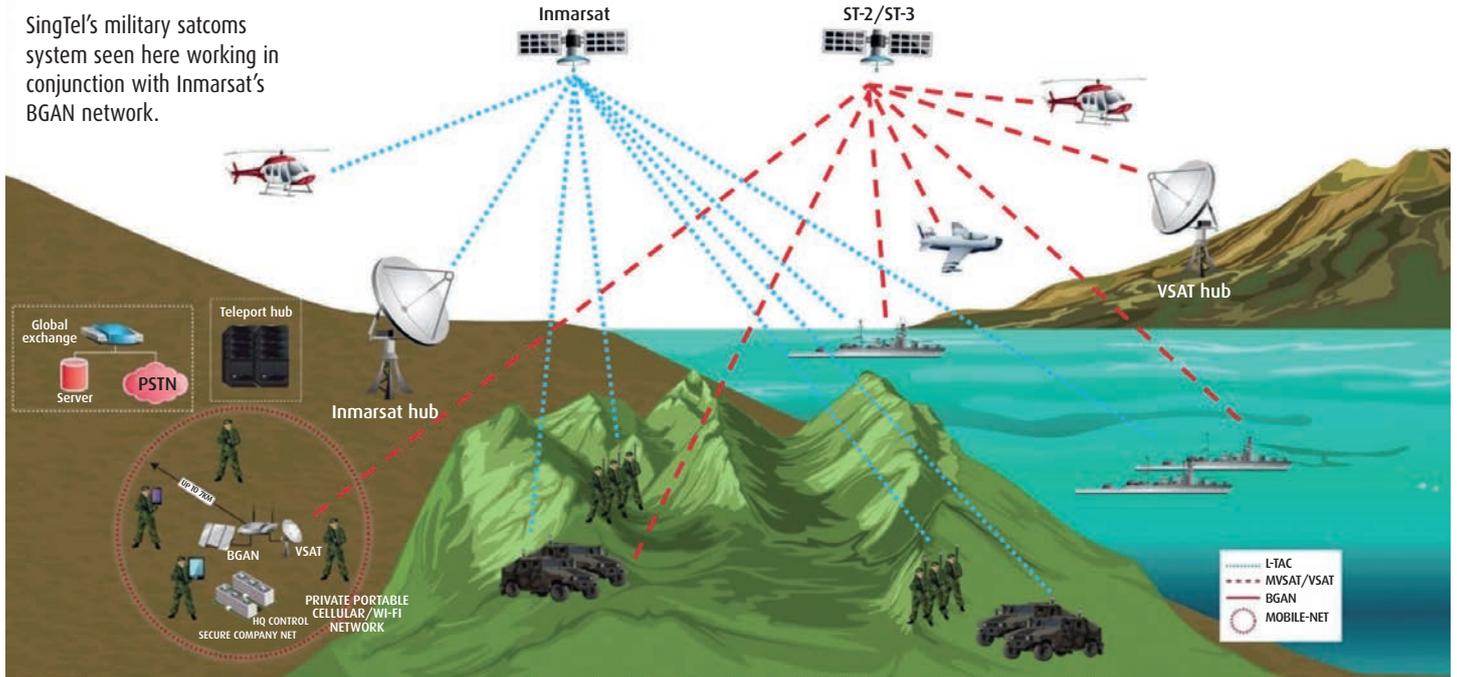
for MTN in this respect is providing solutions to address the need for basic necessities like clean and drinkable water, driving energy efficiencies, economic inclusion and citizen engagement."

He continues by saying MTN's IoT environment has eased the above mentioned dependencies by providing a dedicated management platform that runs on a dedicated network.

"This allows us to provide a consistent service experience across our footprint and manage costs accordingly. With the addition of an open architecture software development kit and API, we have opened our toolsets to allow the developer community in Africa to build African solutions to address our uniquely African problems."

As part of the IoT platform launch, application developers from across South Africa are participating in MTN Business' first *Mind-2-Machine Challenge*. The initiative aims to identify and enable talented local developers to create scalable and relevant business solutions that solve real-world problems.

Nyati concludes by saying that there's money to be made from the IoT on the continent. "In South Africa, the wholesale M2M market – one aspect of the IoT – is already worth an estimated ZAR350 million and is expected to grow to ZAR1.2 billion by 2017. This means there are significant business opportunities for aspiring developers in South Africa and the rest of the continent. ■



A new force in military communications

LEE FOH CHEONG describes an innovative way for military users to extend the range of multiband, multimode radio communications in L-band satellite systems.

The military in general, and troops in the land environment in particular, rely on robust, portable radio terminals to provide all-informed communications for command, control and coordination of dispersed teams.

However, when operational distances extend beyond line of sight, their normal workhorse VHF terminals face range limitations and are unable to meet the capability requirement without the use of re-broadcast (or relay) stations. This can often lead to teams being isolated which can compromise the safety and lives of personnel.

To work around this, the alternative is Communications on the Pause (COTP) using tactical satellite (TACSAT) which is conventionally provided in the UHF band on military-owned satellites. But the demand for these channels exceeds supply, and as a result nations are often unable to lease or gain access to them. In addition, governments that use VHF radios cannot

use this system. Therefore, radio interoperability cannot be achieved in a single radio network.

Overcoming RF limitations

Most military radios require a small narrow bandwidth of 25kHz to establish voice communications. However, radio frequency transmission ranges are often prohibited by environmental obstacles, electrical power, and the performance of radio wave propagation due to ground reflection characteristics.

Existing solutions to address the limitations of radio transmission range are often evolved around developing an IP radio gateway with a VSAT solution. This is used for backhauling IP traffic in an effort to overcome the problem of beyond line of sight (BLOS) communications.

But such complex integration design involves large financial investment that can incur high



Lee Foh Cheong, Chief engineer & director of engineering & customer solutions, SingTel Satellite

maintenance costs in the long run, as well as logistical challenges that could hinder fast response deployment.

A new, highly innovative solution has been designed to convert existing VHF/UHF radio signals to L-band to access a global satellite network such as Inmarsat's BGAN. This directly cuts back the required RF power amplifier needed in VHF/UHF to operate a narrowband channel of 25kHz in the L-band frequency range.

Existing sovereign encryption can be used and is transparent over the L-band network which covers the globe, in a secure broadcast mode over the satellite.

Security and mobility

The risk of direct RF interference from terrestrial UHF can be mitigated when the military UHF signal is converted to commercial L-band frequencies. This will also indirectly reduce the potential exposure from intruders using military jammers to sabotage mission-critical, rescue, and covert operations.

In addition, any combination of UHF and VHF radios can share a single channel, making the conversion system ideal for rapidly establishing a single interoperable network for multiple agencies or even multiple nations.

Owing to the small form factor of the frequency converter and antenna, operational deployment time is improved significantly without the need to integrate to a VSAT.

The system itself is designed to run on low power consumption and can operate using existing battery and power sources. This directly advances the flexibility to install the system on a completely mobile man portable system and fast moving platforms such as Communications on the Move (COTM) on land and, for example, speed boats for coastal patrolling operations.

Because there is no requirement for additional infrastructure, cost is kept to a minimum. So instead of investing in a high radio tower to extend radio coverage, the costs of owning the ground space, electricity and high power radio towers are eliminated. Furthermore, with no

repeaters, relays or cells, there are fewer targets for hostile forces attempting to disable command and control.

SingTel's innovative tactical area radio network integration system provides government and military users with the capability to rapidly deploy a cost-effective, simple and secure comms system. Extending existing military radio range can therefore be enabled today without investing in an expensive GEO satellite UHF payload. ■

Lee Foh Cheong is the chief engineer and director of engineering and customer solutions at SingTel Satellite. In 2007, he developed the world's first 1.5m C-band stabilised antenna which has since been successfully deployed by various naval operations, off-shore supply vessels, and rig platforms. Before joining SingTel, he worked for Singapore's Ministry of Defence.

WHAT IS ONE OF ASIA'S BIGGEST TELECOMS OPERATORS DOING IN AFRICA?

KIAN SOON LIM, HEAD OF SINGTEL'S SATELLITE DIVISION, EXPLAINS HOW THE COMPANY HAS HIGH HOPES FOR THE CONTINENT



SingTel Satellite is a division of Singapore's incumbent telecoms carrier. The company has been providing fixed and mobile satellite services for almost four decades, and now covers more than 100 countries spanning Africa, Asia Pacific, Europe and the Middle East.

SingTel was one of the founding members of Inmarsat which was established by the International Maritime Organisation in 1979. The telco's first satellite, *ST-1*, was launched in 1998 but after 15 years of service it reached end of life and was retired in 2013. *ST-2* was introduced in 2011 as a joint venture with Taiwan's Chunghwa Telecom and covers Asia and parts of the Middle East.

ST-3 was developed as part of a transponder purchase agreement signed with ABS in June 2009. SingTel is now marketing its satellite services in Africa under the *ST-3* brand using capacity on *ABS-2* which was launched to 17°E in February 2014.

Lim Kian Soon (pictured above), head of satellite at SingTel, says Africa's business environment continues to look promising and believes the momentum will continue during this year and beyond.

In 2014, the company established teleport facilities to provide iDirect hub and SCPC VSAT services for *ST-3* coverage in Africa, and also signed several key customers contracts. They include what Soon describes as a "leading" international natural resources company, although he cannot name the firm.

"[It has] significant proven and probable reserves of copper, gold, molybdenum, cobalt, oil and gas, and needed to increase both the number of sites in its Democratic Republic of Congo network as well as its main facilities circuit size. We have provided a fully managed shared mesh network.

"In addition, the solution also includes SingTel's *integrated Network Management System (iNMS)* which is a fault detection, monitoring, management and reporting system that remotely monitors link utilisation, weather-affecting performance, link status, and router."

Soon describes another customer as one of Asia's "fastest growing" telcos. "We deployed a space segment on our strong C-band satellite covering Europe to Africa for a VSAT project. We recommended a highly reliable and most advanced SCPC modem in the market, and the use of CnC [carrier-in-carrier] technology with total availability of 99.98 per cent."

According to Soon, satellite still plays a vital role in delivering critical communications to many parts of the continent that are still unconnected and under-served. "Africa has an enormous and dispersed land area. Most, if not all of it, has an under-developed telecom markets in terms of connectivity due to limited transport, telecoms infrastructure, and socio-economic conditions."

He adds that the backhaul market for satellite in Africa will remain strong: "The demand for satellite backhaul in Africa will continue to increase due to strong growth in mobile data usage. Telcos

in Africa are looking at satellite to help them to provide services in to customers in rural areas."

As has been well-documented, the continent represents one of the fastest-growing telecoms markets in the world. But Soon acknowledges that it is also perceived as being "tough to penetrate", and is characterised by low per capita income levels, political instability, regulatory problems and linguistic barriers.

"Lack of transparency or sound governance practices and lengthy bureaucratic processes also reduce investor appetite and risk tolerance. This affects the development of infrastructure which in turn affects how communications network can be established, be it terrestrial or satellite. We are looking forward to seeing strong political support, sound regulatory systems, and support from users in the uptake of satellite communications."

He concludes by saying the outlook for African satcoms remains promising albeit uncertain at times. "We will continue to grow our partners' base so as that we can serve our customers more efficiently. For our global customers expanding their presence in Africa, we will enable reliable connectivity for them, ensuring that their businesses will operate successfully."



SingTel's teleport in Singapore.

The firm has a capacity agreement with ABS and offers services in Africa branded as *ST-3* via *ABS-2*. Its payload includes a pan-continental C-band beam as well as Ku-band.

ACE

A two-phase project:

Phase 1:

- 3 segments in service:
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 - Senegal-Cote d'Ivoire,
 - Cote d'Ivoire-Sao Tome & Principe.
- 16 countries connected on the coast, 2 landlock countries.

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- Canary Islands, Benin & Nigeria, Operational May 2015
- Cameroon, Democratic Republic of Congo, Angola, Namibia

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MEANS FOR DIGITAL
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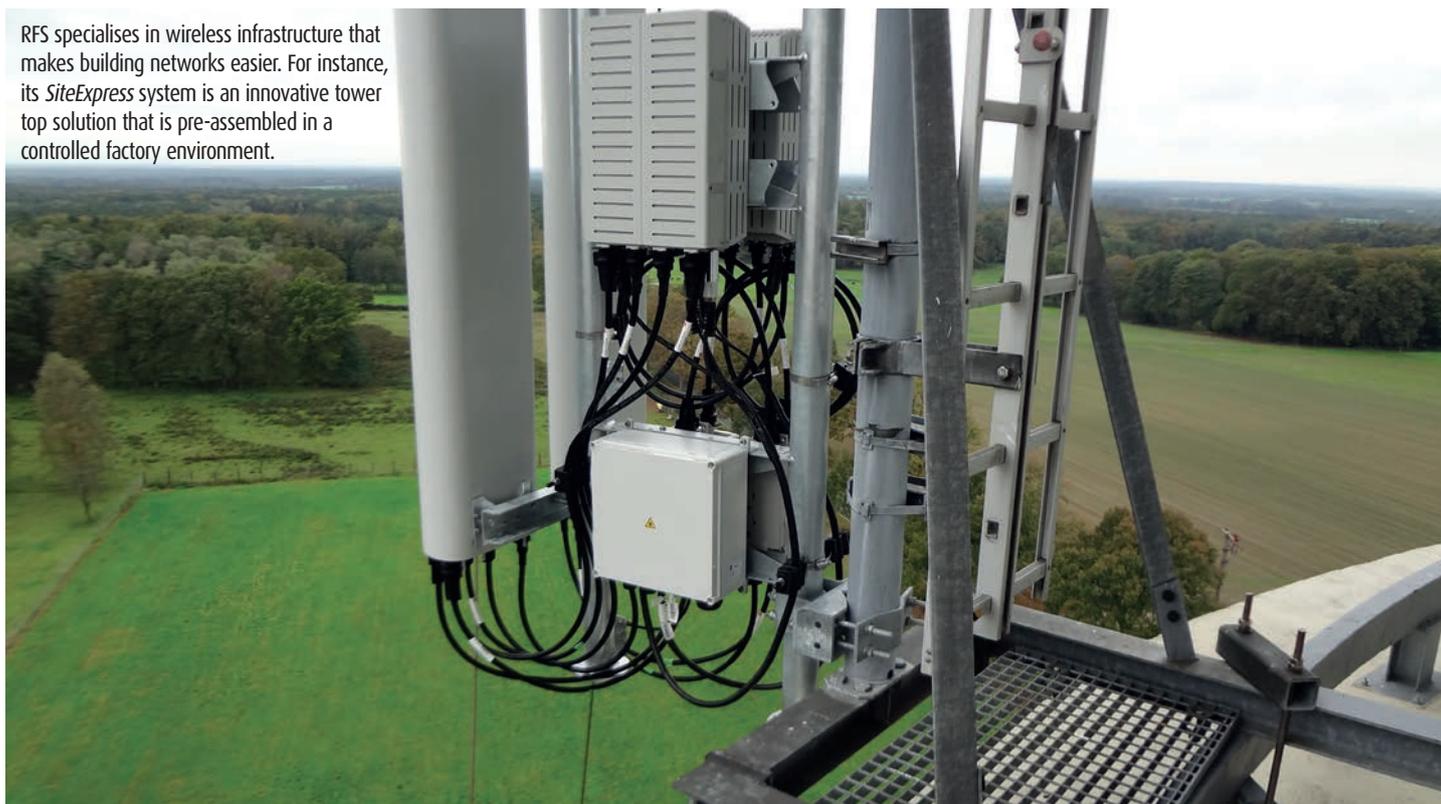


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RFS specialises in wireless infrastructure that makes building networks easier. For instance, its *SiteExpress* system is an innovative tower top solution that is pre-assembled in a controlled factory environment.



On the right frequency

RFS has been developing unique wireless infrastructure solutions for over 70 years. JEAN-LOUIS HUREL explains how the company is helping network builders overcome the challenges they face.

Radio Frequency Systems' (RFS) roots go back to the start of the 20th century when the Hackethal Wire Company was founded in Germany. It made improved electric cables using a new insulation technique, and over the next six decades the firm went on to develop a significant portfolio of patents.

These include the world's first RF power cable with a corrugated steel outer conductor in 1951, the first corrugated elliptical waveguide in 1961, the first corrugated seam-welded foam dielectric

cable a year later, amongst others. Many of these innovations are still used by RFS today as part of its *HELIFLEX* and *CELLFLEX* cable brands.

By 1966, Hackethal had become Kabelmetal, and following various company mergers around the world, the RFS Group became established in 1999 with Alcatel as its parent company.

Today, France-based RFS has six factories around the world, as well as five R&D centres in Australia, China, France, Germany and the US. Jean-Louis Hurel joined the company in July 2014

following a career that spanned almost a quarter of a century with Alcatel/Alcatel-Lucent. His last position before he left the firm was vice president of its GSM business unit. He is therefore no stranger to the wireless business, or indeed Africa where he has spent a lot of time visiting customers.

According to Hurel, what makes the continent so interesting for RFS is that operators are trying to address the two challenges of coverage and capacity for LTE as well as for 3G and 3G+ both at the same time. And one of the benefits they have is that they

can leapfrog other regions and take advantage of technologies that have been tried and tested elsewhere. “Without having to update or re-invest more, they can really fit and adapt their investment to both challenges at the same time,” he says.

As an example, Hurel talks about how that has been applied to base station antennas. “When the very first LTE adopters started, they put in additional antennas in order not to disturb the existing 3G antennas and radio access. They therefore installed antennas that offered one band per antenna, and then an additional one which meant increased visual ‘disturbance’ on the different radio sites.

“But now multi-band antennas are able to offer, for example, 3G at 900MHz, LTE at 1800MHz, etc., on the same band. And of course, because there are multiple combinations of this, they can also offer higher bands such as LTE 2.6GHz.”

This approach of offering more bands and much larger spectrum has become fundamental to RFS’ development of base station antennas. For example, earlier this year in May it introduced two new ultra-broadband models in its *RF X-TREME* range. The company says the *APXVBLL20X-C* and *APXVBLL20X-C-I20* antennas facilitate triple-band site upgrades for reduced cell interference in high traffic areas, and can be used for multiple bands such as LTE 700, LTE 800, Digital Dividend 2, CDMA, GSM, DCS, UMTS and LTE 2.6.

Hurel claims that while some rival firms also offer high-capacity, multi-band antennas that can support a broad frequency range, they do not offer the same gain performance which RFS has maximised across its product line-up.

But he adds that what really sets the company’s antennas apart from the competition is a unique radome design that dramatically reduces wind load and minimises tower loading. Hurel reckons the wind load resistance that RFS now offers on its antennas is double that offered by products from rival manufacturers.

“In sub-Saharan Africa and places that are close to the desert, the fact that you are able to load the different towers and pylons (or even rooftops) without having to suffer from problems from wind is something that really helps. It also enables the cell planners to do the best optimisation.

“We have invested a lot in the low width of our antennas. We have carried out a great deal of work in simulations, as well as testing the life and aerodynamic shape of our radomes in different chambers. If your antenna is not able to resist the wind, this is something that can definitely be a bottleneck. You have to reinforce your pylon and that can be painful. This is what we mean by optimising the cost of ownership.”

Hybrid solutions

RFS sells its portfolio of products via OEM firms such as Alcatel-Lucent, Ericsson, Huawei, Nokia, ZTE, etc., as well as directly to operators like MTN, Orange, Vodafone/Vodacom and others. Ooredoo is also named as a key customer, not only in the Middle East but also in Maghreb

countries such as Algeria and Tunisia, as well as in South East Asia. So is business growing for RFS in Africa?

“In 2014, globally and especially in Europe, investment has not grown especially for this type of business and that has been valid for our total addressable market. But RFS has had stable revenues in EMEA, and I would say that Middle East and Africa (and more particularly Africa) has performed better compared to the overall trend of Europe which has been kind of flattish.

“What is for sure is that in 2015 we are focusing to perform better in the market which is expecting to grow by around 10 per cent although we expect it to be higher than that.”

Hurel agrees that the acceleration of LTE deployments will drive that growth. But he also points to a growing trend for hybrid solutions. “Operators are rolling out LTE both in 800MHz as well as in 2.6GHz for the places where capacity is required, but they are also re-farming the 1800MHz band which is currently being used only by GSM. Like most of the operators in Europe, they are not shutting down GSM because that really remains their ‘bread and butter’, especially if we talk about voice.

“The operators are going to their sites, implementing LTE, and are also putting UMTS in the 900MHz band at the same time. This is when they take advantage of not only installing a complete and new solution for the antenna, but also for the cabling between the remote radio head [RRH] and antenna, as well between the RRH and the baseband unit. This is a trend that we have observed. It has started to take off with good results and we strongly believe it will be an important growth factor.”

Hurel says RFS’ optimised hybrid solutions integrate the DC cables needed to feed the RRHs with the optical fibre cable that provides the signal from the baseband unit which is co-located with, or very close to, the base station antenna.

“When this trend started, there was a kind of mixed configuration of conventional solutions where all the electronics were co-located with the macro base station. They required long feeder cables of around 60 metres or more, going from the ground or the technical room to the top of the tower.

“Now that the power amplifier is remote and has been put inside the RRH which has come very close to the antenna, those cables can often be three metres or even less. But you still need a way to provide power to the remote radio head, and feed the RRH with the signal. With a hybrid solution, both the DC cable and the fibre cable are bundled together into a single cable which offers all the flexibility to expand or deploy a new remote radio head.

“For example with Ooredoo, we have had large deployments of our *HYBRIFLEX* hybrid solution. It’s a really flexible solution both during and after the installation because you can put in some additional pairs of optical fibre and DC cable and that will last and allows you to expand a site in the future. We have had such deployments for

Ooredoo in Tunisia and Algeria, as well in the greenfield operation it deployed in Myanmar around two years ago.”

Evolution of microwave

RFS has long invested in products for microwave backhaul. Hurel believes the technology still has a long way to go in Africa – despite the advent of fibre, which suffers from the complexity of civil works and the threat of vandalism, and the availability of satellite which he says remains a costly option.

“The operators keep using microwave backhaul to roll out and control the overall end-to-end quality of service of their network. On top of that, apart from places where the spectrum located for microwave links is extremely busy, there is still room for expansion in Africa.”

According to Hurel, one area that is a current focus for developing microwave technology is for backhauling small cells. In 2014, RFS introduced *Invisiline*, an integrated solution that features transparent antennas that have been designed to minimise visual impact by allowing better integration into any urban environment.

“We worked with new materials which not only allowed us to get extremely good performance but also enabled total integration with the small cell and the microwave. *Invisiline* also works well for making the links ‘stronger’ in terms of disturbance, as well as in solutions to double or more the capacity without having to completely change the microwave equipment.”

Another area for innovation is miniaturisation. A few months ago, RFS added the *SFA04-W800* to its *Invisiline* range and claimed it was the industry’s smallest E-band (80GHz) microwave antenna. The company says the antenna’s 122mm reflector and 166mm radome diameter means it is “visually unobtrusive” in any landscape.

Hurel is keen to point out that RFS’ customer base goes beyond mobile operators. For more than 40 years, the company has been providing communications technology for railways, metro systems, road tunnels and underground mines.

Here, its solutions include the unique *RADIAFLEX* radiating cables which can be used to support indoor coverage needs for 2G, 3G, 4G, TETRA, and multi-band GSM-R mission critical services. As well as being LTE-ready, Hurel points out that *RADIAFLEX* is also MIMO-ready.

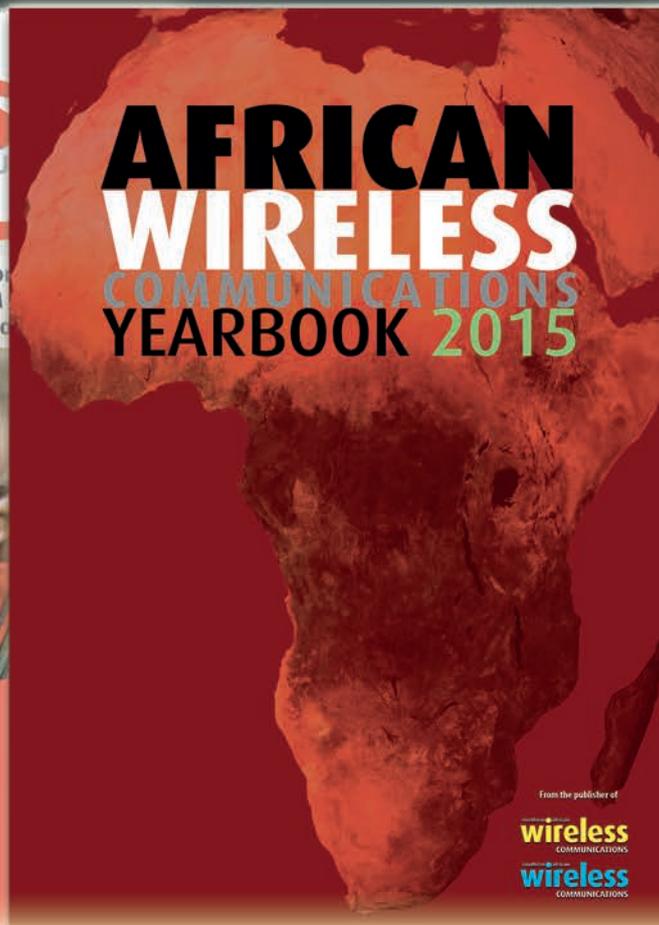
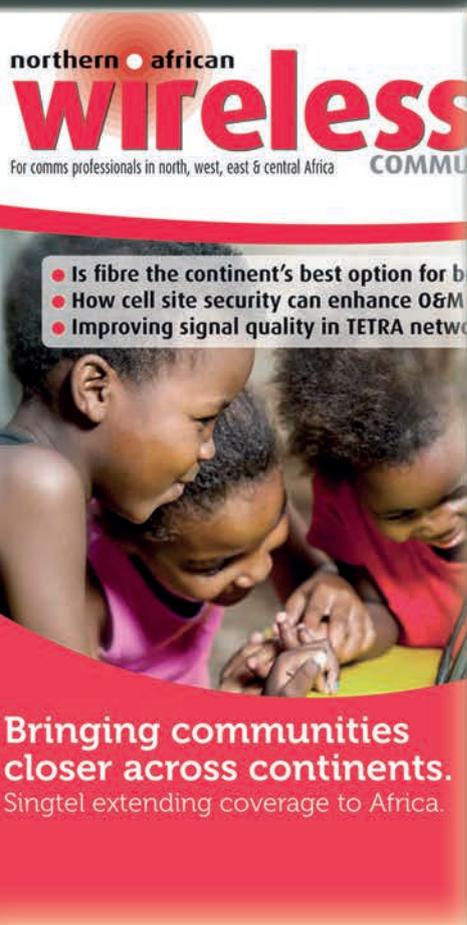
He adds that RFS is currently working on deployments of the system for the metro system in Algiers, and expects further contracts for metro projects in other big African cities. ■



Jean-Louis Hurel,
VP portfolio
& strategy,
RFS

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“Massive IP gravitational centre”

 TI Sparkle and DE-CIX have established an internet exchange (IX) as a key landing site for online traffic to and from North Africa, the Middle East and the Mediterranean region.

TI Sparkle is Telecom Italia Group’s international services division and runs the ‘Sicily Hub’ data centre in Palermo. The company says its facility is located closer to the Mediterranean region and the Middle East than any other European peering point. It is also connected to all cable landing stations in Sicily and served by *Seabone*, TI Sparkle’s Tier 1 IP transit service.

DE-CIX provides IX services and operates numerous carrier- and data centre-neutral internet exchanges around the world, including its flagship facility in Frankfurt. It will set up an IX at the Sicily Hub using its *APOLLON* platform which is claimed to provide “unmatched” scalability and performance.

The new exchange is designed to allow carriers that land their IP backbones in Sicily to directly interconnect with each other and to other providers that have a presence in the hub. According to TI Sparkle, the hub hosts some of the world’s best known and largest content providers.

“Our partnership with DE-CIX and their new IX node in our Sicily Hub is the most important milestone in the creation of a massive IP gravitational centre in the middle of the Mediterranean,” says TI Sparkle CEO Alessandro Talotta. “We will be able to better serve ISPs in the area by bringing worldwide content directly to their doorsteps.”

DE-CIX president Harald Summa adds that there is an intense need in the region to bring content closer to the end users: “The powerful combination of Sicily Hub and DE-CIX’s *APOLLON* platform will support internet growth in this region so that end users will have a better internet experience, better security, and a lower risk of network outages.”

TI Sparkle says its partnership with DE-CIX is the first step towards a wider collaboration that will extend to other locations in the Mediterranean.

World’s first dynamic capacity allocation trial

 Dali Wireless says it has successfully completed the first ever dynamic capacity allocation field trial in Singapore.

The US-based company specialises in digital-over-fibre wireless distribution systems that are claimed to provide significant advantages over traditional passive and active distributed antenna systems (DAS).

Dali has developed a patented wireless *RF Router* that enables capacity to be pooled at a central location and dynamically routed to where and when it is needed. As a result, the firm says resources are only consumed when needed and with elasticity.

It adds that since the network can be dynamically configured with software, entire base station sectors can be dedicated to specific high demand areas on-demand or per schedule using its wireless *Network Management System*.

To demonstrate the system’s capabilities in Singapore, Dali worked with ICT engineering solutions specialist and SingTel subsidiary, NCS.

Radio capacity was pooled at a central location through the router, and a mix of live 2G, 3G and LTE-MIMO signals from the centralised base stations were dynamically allocated to where there was a high demand within the trial venue. Dali says all KPIs were met, and in particular the high throughput

performance KPI confirmed its claims of an almost lossless router-based RF distribution network.

The firm points out its *RF Router* is different from both conventional analogue and hybrid-digital systems. It says with traditional DAS, operators need to support the wireless peak load for each individual service area where mobile usage and density are high.

“This makes it difficult for operators to realise [cost] savings,” states Dali. “With *RF Router*, systematic capacity over-provisioning is no longer an issue. Patented dynamic capacity allocation capability allows all mobile users to stay connected at anytime, anywhere without interruption to services.”

Free Wi-Fi promise for Sri Lankan towns

 Sri Lanka’s Government has launched a programme to offer free Wi-Fi in regional towns. The initiative was unveiled in April by the country’s new president, Maithripala Sirisena, who came to



Sri Lanka’s new president Maithripala Sirisena promised free Wi-Fi as part of his election campaign.

office at the start of the year. The promise of free internet access was one of the pledges Sirisena made in his presidential election manifesto.

The Telecommunication Regulatory Commission of Sri Lanka (TRCSL) is spearheading the programme which will initially cover 100 towns.

Following this first phase, the commission says nearly all towns in the country are expected to be brought under the programme, making free internet readily available nationwide, particularly to the rural youth.

Under the Government’s initiative, each citizen will be able to take advantage of free internet access of up to 100MB per month. Extra usage charges will apply to those who exceed this limit. The service is only available to Sri Lankan citizens and they will therefore need to register before using it.

In early April, the TRCSL held meetings with ISPs who said they would fully cooperate to fulfil the president’s pledge and that they will bear the cost of the rollouts.

IBM breakthrough in silicon photonics

 IBM claims it has reached a milestone in the development of silicon photonics with its CMOS Integrated Nano-Photonics Technology.

The firm says that for the first time, its engineers have integrated different optical components side-by-side with electrical circuits on a single chip using sub-100nm semiconductor technology.

According to IBM, this will pave the way for manufacturing 100Gbps optical transceivers, enabling networks to offer greater data rates and bandwidth for cloud computing and Big Data applications.

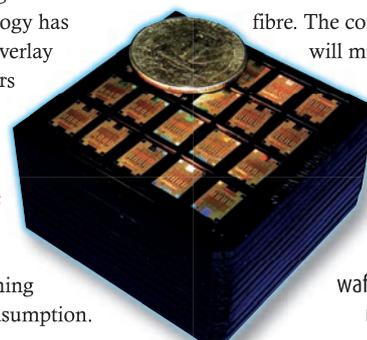
“In just one second, this new transceiver is estimated to be capable of digitally sharing 63 million tweets

or six million images, or downloading an entire HD movie in just two seconds,” states the company.

Silicon photonics enables chips to use pulses of light instead of electrical signals over wires to move data at rapid speeds and longer distances.

The technology has the ability to overlay multiple colours of light within a single optical fibre to multiply the data volume carried, all while maintaining low power consumption.

IBM’s chip uses four laser ‘colours,’ each operating as an independent 25Gbps optical channel. Within a full transceiver design, it says these four channels can be wavelength multiplexed on-chip to provide 100Gbps aggregate bandwidth over a duplex single-mode fibre. The company adds that this will minimise the cost of the installed fibre plant within a data centre.



Cassette carrying several hundred chips intended for 100 Gbps transceivers, diced from wafers fabricated with IBM’s new technology. ©2015 IBM

Xtera demonstrates 'ultra-long' distant transmission

 Telecommunications infrastructure company Xtera Communications has demonstrated what it describes as "ultra-long" unrepeatable transmission over 607km at 100G and 632km at 10G.

Xtera says it was able to send signals such long distances by using its *Wise Raman* technology, which increases the optical span length by turning some parts of the line fibre into an amplification medium.

This is achieved via the Raman non-linear effect, where optical pump waves are launched into the fibre to create optical gain for the optical signal carriers, says Xtera. It also used its "enhanced" *Remote Optically Pumped Amplifier (ROPA)* configuration in the demonstrations.

Bertrand Clesca, head of global marketing for Xtera Communications, says: "These demonstrations represent the industry-leading results for ultra-

long single-span transmission at 100G and 10G. After the 400G field trial over 1,500km of aged, lossy fibres in Verizon's network in summer 2013, and the demonstration of 150 x 100G transmission on a single 410km span in 2014, these new results illustrate the performance of Xtera's *Wise Raman* amplification solution for optical backbone networks over long distances."

The demonstrations were conducted with large effective area ultra-low loss



Xtera says it can deliver unrepeatable transmissions beyond 600km at 100G.

fibre from Corning and the support of State Grid Information and Telecommunication Company.

Corning provided its *Vascade EX2000* optical fibre, which has an average attenuation of 0.160 dB/km, and an average effective area of 112µm². Xtera says this enables higher optical launch powers for Raman pumping, ROPA, and data transmission.

Tait to deliver largest DMR Tier 3 system in US

 Tait Communications, a provider of critical communications systems for utilities and public safety agencies, has been commissioned to create what is claimed to be the largest digital mobile radio (DMR) Tier 3 system in North America. The client is the Alliant Energy Corporation, which supplies Midwest US.

The new 122 site DMR trunked network will provide coverage for Alliant's territories in Iowa and Wisconsin, and will replace an assortment of legacy independent radio networks. The new system will supplant the old system in phases, with the first phase due to be finished before February 2017, with completion before the end of 2017.

The agreement includes the

provision by Tait of the radio network system and approximately 1,650 subscriber units. It also contains a 12-year managed services contract, which comes into effect at the end of the first phase of the rollout.

Garry Diack, chief executive of Tait Communications, says: "This system upgrade will deliver better-than-before coverage and reliability to improve worker safety. Additionally, our managed services capability allows us to work in partnership with Alliant Energy to optimise their network over the life of the system."

Alliant Energy generates and distributes electricity and natural gas for more than one million electric customers and 420,000 natural gas customers. Its geographical territory spans about 70,000 square miles.

Telstra makes SDN platform available worldwide

 Telstra is making its software-defined networking (SDN) platform available globally. The company says the move is a result of its recent acquisition of Pacnet, a global telecommunications provider.

Telstra, the Australian Tier 1 telecommunications giant, will make the *Pacnet Enabled Network* – or *PEN* – available at 25 points of presence worldwide.

The network spans eight countries, including Australia, Hong Kong, Singapore, the US and UK. It also offers connectivity options into public cloud services to bridge hybrid cloud deployments.

Darrin Webb, chief operating officer, global enterprise and services, says the new, global *PEN* platform helps to combine Telstra's and

Pacnet's infrastructure to provide "enhanced connectivity and services" across Asia and the rest of the world.

Pacnet's early adoption of SDN technology prompted Telstra to accelerate its plans. It decided to build on Pacnet's existing 16 *PEN* POPs across Asia by adding nine new Telstra *PEN* POPs.

Webb claims *PEN* has created the world's first globally connected on-demand networking platform.

"While software, servers and storage have all become virtualised over the past decade, networks have largely remained unchanged," he says.

"The new *PEN* platform re-imagines the role of traditional telecommunications and enables organisations to complement traditional network approaches with SDN technology.

Facebook chooses Infinera for global optical network

 The world's largest social network, which boasts one billion users of its website every day, has chosen the Infinera global optical network for its data flow.

Facebook says the Infinera *Intelligent Transport Network* will light what it claims is the world's longest terrestrial optical network route, capable of delivering up to eight terabits per second of data transmission capacity.

The new route spans 3,998km and is deployed without any regeneration. Facebook's European terrestrial



Infinera's Tom Fallon says Facebook is a good example of how to build a global network.

network stretches from its Lulea data centre in Sweden, across major hubs throughout Europe. Infinera will use its *DTN-X* platform to connect these hubs for Facebook, also using its *FlexCoherent* solution, which it says

can deliver terabits of capacity on a single fibre across the continent.

Tom Fallon, Infinera CEO, says: "Facebook is a classic example of how leading internet content providers are building global networks that interconnect their data centres to accelerate the delivery of high bandwidth, feature rich services worldwide."

Currently, Facebook delivers 100 gigabit per second coherent transmission to its European network via 500Gbps super-channels, featuring a forward-scale design to support

1.2Tbps super-channels in the future. The high capacity super-channels are enabled by 500Gbps photonic integrated circuits (PICs) developed and fabricated by Infinera – the only supplier providing 500Gbps of transmission capacity from a single line card.

PICs enable the *DTN-X* platform to integrate wavelength division multiplexing super-channel transmission with up to 12Tbps of non-blocking optical transport network switching, providing seamless scaling as traffic requirements grow in the future.

Polish police deploy TETRA

 Three police forces in Poland have selected Sepura TETRA technology for their secure communications. Police in Lodz, Krakow and Szczecin will deploy the vendor's *FR400* base stations, *SICS NET* dispatch consoles, a fully redundant central switch, and hand-portable radios with encryption, SDS and packet data functionalities. Sepura's TETRA infrastructure will be shared by police with a variety of public sector organisations and emergency users such as the fire and ambulance services, as well as the regional crisis management centre.

Intelsat gets ETL upgrade

 Intelsat has chosen RF signal distribution equipment by ETL Systems to upgrade its teleport facilities. ETL's technology – specifically its *Enigma* range of equipment – will be used at each teleport to monitor the signal strength of each line of communication from the various satellites. *Enigma* routers provide operators with quick switching time that allows continuous cycling through the various channels to prevent any outage going unseen, says ETL.

DAMM gains certification

 DAMM has obtained EN 50121-4 standards certification for its *TetraFlex Outdoor System* which is designed for the rail and metro sectors. EN 50121-4 certification is issued for railway applications, including signalling and telecommunications apparatus, by European standards bodies. It specifies limits for emission and immunity and also provides criteria for performance. By gaining the certification, DAMM's mission critical TETRA radio platform can now be used in all rail systems where EN 50121-4 is required.

Siemens will monitor Arabsat's fleet traffic

 Siemens Convergence Creators (SCC) will monitor all traffic within Arabsat's satellite fleet. It will install a new CSM (communications system monitoring) system at the company's Dirab Earth Station in Saudi Arabia to provide a round-the-clock monitoring service for the RF and quality-of-service measurements, the characterisation, decoding, and analysing of all carriers within the payload.

The CSM solution that SCC will provide is called *SIECAMs*. The company says it will enable Arabsat to enter "a new dimension" of satellite monitoring and interference detection and thus improve the quality of its satellite services. It's claimed *SIECAMs* has a flexible architecture



Arabsat's Khalid Balkheyour says the company is taking a leading role in SIRG.

that is designed to be ready for future requirements. SCC reckons it is one of the first satellite monitoring solutions available on the market to support Carrier ID detection, a new technology that enables the identification of the owner of a satellite signal.

Both Arabsat and SCC are members of the Satellite Interference Reduction Group (SIRG), which they say will lead to cooperation in combating and mitigating satellite interference to improve the overall quality of satellite services.

Khalid Balkheyour, president and

CEO of Arabsat, says: "Carrier ID is a global, industry-wide initiative aimed at speeding up the resolution of interference and improving the quality of service for all users of satellite communications."

"Arabsat is actively involved in the global interference mitigation initiatives through its leading role in SIRG and the [Global VSAT Forum], and always strives to use state-of-the-art technology to ensure the highest quality services to its customers with current and future satellites."

■ Meanwhile, Arabsat has awarded Arianespace a launch service contract for the *Hellasat-4/Saudi Geo Satellite-1*. Arabsat is teaming up with King Abdul-Aziz City for Science and Technology to develop the satellite, which will be built by Lockheed Martin.

Ooredoo in deal with Hong Kong telco

  Qatari operator Ooredoo has signed an IPX/MPLS multi-service interconnection deal with PCCW Global, the international operating division of Hong Kong telco HKT.

PCCW Global says its customers all over the world can now benefit from multiple enhanced IPX and MPLS services when connecting with Qatar's "thriving commercial service community" on the north-eastern coast of the Arabian Peninsula.

The agreement also enables PCCW Global and Ooredoo to collaborate in

the provisioning of services to carrier and multinational customers requiring services such as VoIPX, GRX, Diameter, HD calling, HD video conferencing, Ethernet, cloud and SDN.

"Our IPX network can be directly accessed in 140 countries around the world without having to make use of the public internet or long-distance connections," says Frederick Chui, PCCW Global's SVP of global data sales and pre-sales.

"Extensive coverage, coupled with the diversified design of PCCW Global's private MPLS/IP network,

ensures direct connection to our IPX voice platform and the highest quality services."

Ooredoo and PCCW Global are already collaborating as founder members of the Asia-Africa-Europe-1 (AAE-1) subsea cable system which is scheduled for completion in 2016.

Supporting PCCW Global's plans to deliver services into Africa and the Middle East, AAE-1 is said to be one of the largest consortium cable projects under way in the world today, extending some 25,000km (*News, Dec 2013-Jan 2014*).

Tuvalu selects ABS for high-speed internet

 Tuvalu Telecommunications Corporation (TTC) and ABS have signed a five-year contract for the use of the *ABS-6* satellite, which is located at 159°E and covers the Pacific Ocean and East Asia regions.

TTC provides mainly satellite-based services for communications and broadband connectivity between Tuvalu's islands and atolls, and the with the rest of the world. It will use C-band capacity on *ABS-6* to increase the volume of traffic to the six atolls and three reef islands that make up the tiny island state of Tuvalu, which has a population of about 11,000 people and

is located in the Pacific Ocean roughly halfway between Hawaii and Australia.

ABS-6 will enable state-owned TTC, the nation's only telecoms service provider, to offer high-speed internet to schools, banks, and hospitals, as well as for IP backhaul services for its mobile network.

ABS CEO Tom Choi says his firm is supplying Tuvalu with "reliable communications connectivity". He adds: "In March 2015, Tuvalu experienced the impact of Cyclone Pam when it passed through the region and disrupted communications for days. This service will offer critical

communications to ensure the necessary infrastructure is readily available to support the needs of Tuvalu."



ABS-6, pictured in 2013 before its launch, will now service Tuvalu and its population of 11,000 people.

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