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COMMUNICATIONS

JUNE/JULY 2015
Volume 14
Number 3

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is just best.

- **What's new in critical communications**
- **Testing and optimising LTE networks**
- **How RFS is helping overcome infrastructure challenges**

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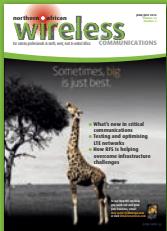


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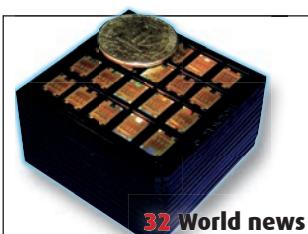
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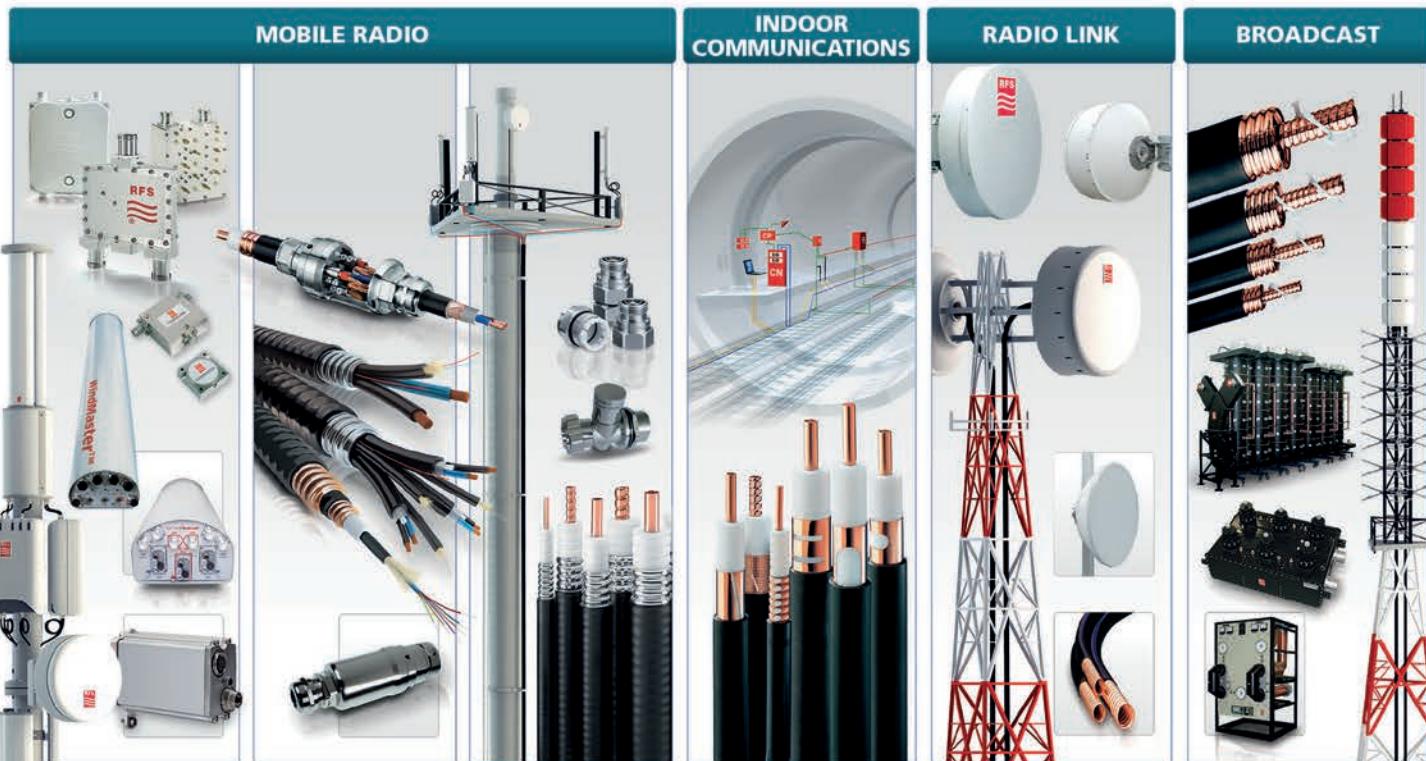
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Deadline for digital TV switchover missed by many African countries

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. The Communications Authority of Kenya says it also met the deadline.

Deployments are still ongoing in many other countries on the continent, but CAR, Namibia and South Africa are among those that have yet to start, says the union.

A recent ITU symposium took stock of nations that have achieved the switchover, 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 begins phase II to connect more West African nations

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 West 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 connected by the system has now risen 53 per cent to 200 million.

Under phase I, which was launched in the Gambia in December 2010, ACE has now 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 due by the end of next year, the cable will be extended to Cape Town and will cover 17,000 kilometres. Branches will also connect the DRC and Cameroon, as well as Angola and Namibia.

Cameroon has also become the newest member of the ACE consortium after signing the construction and maintenance agreement in June. ACE management committee chairman Yves Ruggeri said the addition of the country will bring more value to the cable system.

He also said ACE's 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."

The cable 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.

Inwi aims to create Morocco's first "true" carrier-class Wi-Fi network



Inwi became Morocco's first mobile operator to deploy outdoor Wi-Fi technology when it launched WiFi7dak in 2013.

Inwi is carrying out a major upgrade to *WiFi7dak*, its public Wi-Fi service in Morocco. The operator plans to increase bandwidth, support network expansion, and add new payment functionalities to the platform.

WiFi7dak was launched in July 2013 and made Inwi the country's first celco to deploy outdoor Wi-Fi technology. The company says it now aims to offer a "true carrier-class Wi-Fi network", and will use Aptilo's *Service Management Platform (SMP)*. According to the

vendor, *SMP* provides highly scalable Wi-Fi services to increase Inwi's bandwidth capacity and support the growth of its Wi-Fi network.

Aptilo says it will also allow the operator to easily integrate trusted 3GPP Wi-Fi access with SIM authentication, and backhauling to the mobile core via GTP tunnels as part of the next phase of deployment.

WiFi7dak is available to pre- and post-paid subscribers who can purchase the service through vouchers and credit

cards. Roaming customers will also be able to use the network, thus creating opportunities for Inwi to acquire new users and expand its services.

Mobile users can log on to the service using an app developed by France-based mobile software specialist Smartcom. This is available from Inwi's online marketplace and offers the same functionality as a branded web portal. It also provides the operator with valuable analytics and more granular control over its Wi-Fi service.

Hughes will expand MPLS network for AfDB

Hughes Network Systems is expanding the MPLS services it provides to the African Development Bank (AfDB).

AfDB has used Hughes' managed services since 2008, and has a primary communications network of broadband satellite terminals installed at 32 of its field offices throughout Africa.

Under a new three-year contract signed in 2013, these managed services were expanded to include MPLS circuits connecting four AfDB sites to its group headquarters in Abidjan via a teleport in Germany.

As part of this contract, Hughes will now further expand MPLS connectivity to an additional seven sites including regional resource centres and key field offices. The network will be used for major applications such

as SAP, VoIP, video-conferencing and high-speed internet access.

AfDB had stringent requirements for its network, including: high availability; uniform SLA and QoS offerings; a single vendor to provide full turnkey managed services and ongoing system engineering, installation and field maintenance; monthly reporting, statistics and quarterly reviews on usage and performance; and a round the clock, multilingual helpdesk.

AfDB's ICT director David Wu says: "Our vision is to implement a de-centralised IT cloud for which high throughput redundant links and reliable connectivity is of critical importance. The Hughes service delivers on all of these with superior in-country support."

SimbaPay connects M-PESA PayBill service to Europe

SimbaPay has launched what it says is the first product in the world that allows Kenyans living abroad to make *M-PESA PayBill* payments. Separately, the UK-based digital money transfer provider has also added a service for mobile money remittances to Nigeria.

PayBill allows payments to be made to vendors via *M-PESA*, but until now it has only been available to Safaricom's subscribers in Kenya. With the addition of *PayBill* to its platform, SimbaPay says Kenyans abroad can now also pay hundreds of merchants and utility companies back home.

Kenyans emigrants with a bank account, debit, or credit card will be able to use the free *SimbaPay* app to make instant payments via any mobile, tablet or computer. Unlike subscribers

in Kenya, SimbaPay says customers will not need a Safaricom number or *M-PESA* registration. It adds that it doesn't charge any fees for its service which has already been rolled out in the UK with other EU countries planned in the near future.

Meanwhile in May, SimbaPay announced the addition of Nigeria to its platform. It says Nigerians living in the UK can now instantly send money to any bank account or mobile in Africa's largest economy. The service will gradually be rolled out to other EU countries.

As with Kenya, SimbaPay says it doesn't charge any fees for customers using its Nigeria remittance services. It adds that it provides daily locked-in exchange rates for the naira.

Globalstar now offers pan-continental coverage

Globalstar says it can now deliver its satellite-based simplex services across the entire continent, following the opening of its new regional gateway in Botswana.

The firm began working on the construction of the new gateway in Gaborone in partnership with Broadband Botswana Internet last year. In June 2015, Globalstar announced that the facility was now live, enabling it to deliver what it claims is "affordable" simplex coverage across Africa, including its *SPOT* portfolio of personal tracking devices.

"We see this region as a significant growth opportunity for our low-cost satellite solutions," says Globalstar CEO Jay Monroe. "For the first time, people and industries in this burgeoning region will have access to affordable satellite solutions for personal and asset tracking."

The company says it operates the only complete next-generation satellite constellation in orbit, enabling professional, corporate and government users to take advantage of the capabilities of M2M and the emerging Internet of Things.

According to the firm, Africa-based enterprise, government and consumer users can now take advantage of its new simplex services. These include remote workers who can use its M2M-based *SmartOne* products to monitor machines, or the *SPOT* personal GPS devices for personal safety.

It adds the farmers in Africa can now monitor their livestock with Globalstar-enabled tracking collars including *FindMyAnimal*. This enables animals to be tracked wherever they roam, helping to protect against theft and mitigating the risks of natural



Working in partnership with Broadband Botswana Internet, Globalstar began working on the construction of its gateway in Gaborone last year.

predators. The collars can also help farmers understand the grazing locations of far-flung herds.

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Inveneo delivers 100 new internet connections to help fight Ebola



As part of the ERCI project, Inveneo is running a tower team climbing safety course at a training site in Freetown. Here, delegates are shown rigging for haul and rescue.

Inveneo, the US-based non-profit social enterprise, has delivered 100 new high-speed internet connections in Sierra Leone and Liberia as part of the joint *Ebola Response Connectivity Initiative*.

ERCI aims to establish sustainable infrastructure for high-speed internet access in remote parts of the two countries. Inveneo says this plays a key role in preventing and/or mitigating future disease outbreaks while helping organisations respond more effectively to community needs. As a result of the initiative, NGOs, UN and government

workers, Ebola treatment facilities, hospitals, and logistical hubs can now use broadband to connect with healthcare workers and applications, headquarters, friends, family, etc.

Inveneo launched *ERCI* earlier this year in partnership with Facebook, the Paul G. Allen Family Foundation, Cisco, EveryLayer, and NetHope. (Also see *News*, Dec 2014-Jan 2015.)

It says it reached the milestone of 100 connections in less than five months. Executive director Bruce Baikie adds that the commitment and close

collaboration of all the partners was essential in the success of the rollout.

"The true stars of this project were the field teams, which included staff from Inveneo and Damsel, [our] certified partner in Sierra Leone.

"The field teams were just incredible, scaling rooftops and towers up to 175 feet high to install equipment underneath the blazing hot West African sun, six or more days a week in the realisation that every connection counts to help save a life and create a more resilient healthcare system."

SATMED connects three hospitals in Benin

Hospitals in Benin are using the e-Health SATMED platform to help improve childbirth healthcare, as well as to enhance and disseminate medical knowledge via remote consultation and monitoring facilities.

Conceived by SES TechCom Services, SATMED aims to use satellite technology to improve public health in emerging countries, especially in isolated areas with poor connectivity (see *World News*, Jun-Jul 2014).

In Benin, the platform operates as a remote consultation and monitoring tool to provide communications

between the Maternité Hospital in Ahozonnoude, the hospital in Cotonou, and a third unit in Allada. SES says the e-Health system provides the only effective communication link between the three sites, since overland routes are often inaccessible due to flooding during the rainy season.

At each hospital, SES has trained staff to use and maintain the SATMED equipment, and support for healthcare workers in the field is ongoing. Additional remote training is to be delivered online, enabling midwives and health workers in training to have

their performances monitored and evaluated by an assigned physician.

SES TechCom Services MD Gerhard Betscheider says SATMED is overcoming the barriers often faced in the deployment of health services across Africa, where terrestrial infrastructures may be lacking or even non-existent.

"Thanks to satellite technology, we are now in a position to assist in improving both the speed and quality of healthcare services in rural and remote regions, contributing to change on a much wider scale," he claims.

Smile group
COO Tom Allen
regards Ericsson
as a business
partner rather
than just a
vendor.



Ericsson to manage LTE for Smile

In what's claimed to be the first 4G managed services deal in sub-Saharan Africa, Smile Communications has contracted Ericsson to handle all operations and maintenance for its LTE networks in Uganda, Nigeria, Tanzania, and later in the DRC.

Ericsson is the sole vendor for Smile's 4G networks. Under the five-year agreement, it will provide a fully managed end-to-end service that includes network operations, performance, optimisation, field support and maintenance.

Smile group COO Tom Allen says: "We regard Ericsson as more than a vendor. We are long-term partners focused on delivering on the Smile promise to be the broadband provider of choice in Africa and to ensure that our customers fully benefit from the internet world."

Ericsson adds that the partnership enables Smile to focus more on the core business of delivering products and services that cater to the needs of its subscribers, whilst at the same time improving operational efficiency.

Real-time analytics protect Etisalat Egypt

Etisalat Misr is using IBM's *FlashSystem* storage platform to protect against fraud. According to the vendor, this will enable the operator to significantly speed up real-time analytics to identify fraudulent activity in areas such as calls and unauthorised internet use.

Etisalat uses a fraud management system which relies on data received from network switches to detect suspicious activities. However, it often took as long as three days to capture and analyse fraud data from this system.

By using the *FlashSystem V840*, IBM says Etisalat Misr will be able to access real-time analytics from its fraud management system more quickly, allowing it to capture and analyse data almost instantaneously.



IBM says its *FlashSystem V840* will enable Etisalat Misr to capture and analyse data from its fraud management system almost instantaneously.

instead of taking days. The vendor claims its platform will reduce the time Etisalat spends on processing call records by a factor of 15, and improve the speed of fraud detection 37 times.

IBM adds that *FlashSystem V840* will also reduce the cellco's storage

footprint and energy costs, and has already helped the company improve its operations by 300 per cent.

Khalid Al Kaf, Etisalat Misr's director of operations and infrastructure, says: "We are growing very fast and as a result, we are continuously looking for innovative IT solutions that can help deliver seamless security and end-to-end management of our clients' devices, content and transactions. Modernising our storage is key to competing in an interconnected world."

According to IBM, flash and software defined storage technologies can help organisations bring together fragmented data from segregated systems and a variety of sources. It says this then delivers "enhanced" insights to mitigate risk and better manage fraud.

Airtel launches Ghana NFC payment service

Airtel is claiming a first with the rollout of a contactless payment system in Ghana. It uses NFC (near field communications) technology, and enables *Airtel Money* subscribers to make payments at retail outlets by simply tapping their mobiles on a terminal.

Airtel Ghana has integrated the new service with VeriFone Mobile Money's flexible services platform.

In June, the operator showcased the new service at events held simultaneously at the Koala Supermarket in the Airport residential area and at the Osu branch of KFC. It says customers were able to experience faster, more convenient, secure and instant payments using their mobiles. Those without NFC-enabled devices were given special stickers which

they could attach to their phones for contactless payments.

Airtel Ghana marketing director Manu Rajan reckons the introduction of NFC technology means *Airtel Money* now offers the "smartest" way to pay in the country. He adds: "The use of the NFC payment system has been operationalised at all KFC branches nationwide and at the Koala



A customer uses Airtel Money's NFC service at a KFC restaurant.

supermarket in the Airport residential area. The rollout will continue [across the country] in a phased manner in the coming days".

VoIP helps boost Nigerian interconnectivity

Interconnect Nigeria (ICN) is now using World Telecom Labs' (WTL) latest switches to transfer voice traffic between its VoIP network and the country's mobile operators.

The new switches have been deployed at ICN's NOC in Abuja, replacing what's described as "inferior equipment" bought from another vendor. More than three billion minutes are said to have so far passed through the new VoIP links.

WTL says interconnect exchange carriers such as ICN are using its second generation VoIP switches to build new inter-city routes that can reliably transfer very high call volumes. It believes they offer a "very cost-efficient" way to link Nigeria's cities.

According to the firm, it was previously more expensive to transport traffic between Lagos and Abuja, than from Lagos to London.

ICN chairman Allison Madueke says WTL is helping to improve Nigeria's telecoms infrastructure which is vital for economic development.



WTL adds that its switches offer a number of advantages. For example, it's claimed they use unique compression techniques which reduce the amount of data used per call. The company says this enables a higher density of calls in the same bandwidth whilst maintaining high quality of service.

Other benefits are said to include greater flexibility, reliability and interoperability. WTL has also created a self-healing, clustered architecture that gives n+1 redundancy.

Mobile traffic in MEA 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.



The record was achieved at Alcatel-Lucent Submarine Networks' testbed facility in Villarceaux, France.

Hytera PMR for Ethiopia

 The Addis Ababa Police Commission has awarded

Hytera a contract to supply an emergency command and dispatch system. While precise details are as yet unavailable, Hytera says the scope of the project also includes establishing a PMR network covering Addis Ababa, Ethiopia's largest city, as well as offering two-way radio terminals to the police force. The value of the deal is around USD7.2m. *Latest products for critical comms users – feature, pp21-22.*

ZTE *iRail* in Africa



ZTE has launched its *iRail* railway radio broadband system in Africa. It says the communication solution is based on "cutting edge" LTE technology and provides broadband applications such as passenger information services, patrol alarm systems, and digital advertisements. ZTE entered the railway industry in 1999, and claims it was the first manufacturer to commercially introduce LTE into the sector. In Africa, the company's rail transport solutions have so far been applied in Ethiopia, Morocco and Nigeria.

Hermes and O3b oil deal



Hermes Datacomms is using satellite capacity from O3b to deliver critical comms for a global oil company's operations in West Africa. Under the deal, Hermes is also providing the unnamed firm with a connection back to its regional HQ in Europe. Hermes was acquired by Speedcast earlier this year (*Wireless Business, Feb-Mar*), and says this latest announcement represents its strategic partnership with O3b in the energy business. The two companies have been working closely with the satellite operator since 2012, and say they now have a number of fully trained O3b installation engineers.

MainOne claims largest lit subsea cable capacity

MainOne says its investments of more than USD300m over the last five years to bridge the digital divide in West Africa are beginning to pay off. The Lagos-based telecoms services provider claims it now has the largest lit submarine cable capacity in the region, and is its number one internet transit provider.

MainOne began construction on what is said to be the first wholly private-owned subsea cable along the West African coastline in 2008. Currently stretching across 7,000km, the 1.92Tbps system has landing stations in Nigeria, Ghana and Portugal, with possibilities to branch out to Côte d'Ivoire, Senegal, Morocco and the Canary Islands. It is also able to interconnect with



CEO Funke Opeke says MainOne has now become a full service B2B communications services provider in West Africa.

SEACOM's POPs along the East African coast. Under phase II build out plans, the network will extend to South Africa with landing stations in Cameroon, Gabon, DRC and Angola.

CEO Funke Opeke says that while MainOne initially started as a submarine cable operator, it has now become a full service business-to-business communications services provider. As well as investing in

terrestrial fibre, POPs and partnership deals across the region over the last five years, it also opened West Africa's first tier III data centre, *MDX-I*, in Lagos earlier this year.

Opeke claims that more than 500 major telcos, ISPs, government agencies, large enterprises and educational institutions are on its network, with services offered to seven West African countries.

She adds: "Despite the challenges we face in this region, predominantly a dearth and high cost of infrastructure, we are excited about the future prospects in the broadband market and are determined to remain consistent in our resolve to bridging the digital divide between Africa and the rest of the world."

Unlimited night surfing in Côte d'Ivoire

YooMee Africa has launched an unlimited internet service in Côte d'Ivoire. *YooMee Night* is available from 11pm until early morning, and the operator says its aim is to enable users with limited financial means to enjoy all types of downloading and surfing without limitation.

According to YooMee Africa, Abidjan is home to some 200,000 university students and half of the city's population is under 20 years-

old. It believes *YooMee Night* will allow them to use e-learning and regular search functions to complete their curricula as well as to enjoy entertainment and online gaming.

The company says its unlimited offer costs less than US2 per night or less than US9 for a whole week. Customers can either buy scratch cards in one of the many points of sale in Abidjan, or use PayPal, VISA or MasterCard to pay for services.

Yann Le Guen, MD of YooMee Côte d'Ivoire, adds: "We want to work for all market segments at the same excellent quality – from the low-income student to the well-earning corporation."

Swiss-based YooMee Africa provides high-speed mobile internet and claims to offer the only commercial LTE network in Côte d'Ivoire. The operator also runs a network in Cameroon.

ERT uses M2M to speed clinical trial times

ERT (formerly PHT Corporation) is using Vodafone's global M2M network for its *electronic Clinical Outcome Assessment (eCOA)* system which collects data for clinical research from patients.

ERT says it provides services to 18 of the 20 largest pharmaceutical companies in the world. Its *eCOA* system is currently used to gather data in hundreds of clinical trials in more than 70 countries.

Clinical trial participants record information about their symptoms and experiences using ERT's *SitePad* tablet. Clinical trial participants record information about their symptoms and experiences using ERT's *SitePad* tablet which stores all data collected securely. Over the next three years,



Clinical trial participants record information about their symptoms and experiences using ERT's *SitePad* tablet.

ERT will deliver thousands of tablets embedded with M2M SIMs to clinical research sites across Africa,

Asia, Europe and the Americas. ERT will manage the connections via Vodafone's global M2M platform to help ensure ease of use and satisfaction for patients and sites.

The devices will connect to *StudyWorks*, ERT's study management and patient data portal, over Vodafone's secure M2M network where all patient-agreed trial data will then be available for review, reporting and comparison.

By using its network, Vodafone says ERT can give pharmaceutical trial sponsors real-time access to patient information, enabling them to collect higher quality data and make faster research decisions with confidence.

Red Cross needs urgent help from West Africa's mobile operators

The International Federation of Red Cross and Red Crescent Societies (IFRC) urgently needs help from mobile operators to support its humanitarian work in West Africa.

Following the 2010 Haiti earthquake, the IFRC was given a free license to deploy the innovative *Trilogy Emergency Relief Application (TERA)* platform. This is a fast, secure and cost-effective SMS-based system which makes low use of telecoms services so that networks do not become overloaded during a crisis.

The platform allows both operators and the IFRC to coordinate the appropriate delivery of vital messages to the community, and assist the societies' volunteers to reach as many areas as possible so that they can

Vodacom internet at Lagos school

Vodacom Business has provided high-speed internet services for one of Nigeria's most reputable schools.

The Federal Science and Technical College, Yaba, is well-known for producing some of the country's best students in the science and technical fields at secondary education level.

To help improve the results of the school even further, Vodacom Business Nigeria has delivered Wi-Fi for students and teachers in classrooms, laboratories, workshops and staff offices. The company also sponsored a 220KVA powered generator to help keep Yaba connected during power outages.

Vodacom Business Nigeria carried out the deployment as part of its *Power to You Project*. This supports public and private schools in the country by ensuring that students and teachers have access to ICT and new telecoms technologies.

"Internet penetration in Nigeria is still low, especially in public schools," says Vodacom Business Nigeria MD Guy Clarke. "With the *Power to You Project*, we aim to bridge the digital divide that exists in communities and schools without access to ICT."

coordinate aid-related activities.

As well as in Haiti, *TERA* was deployed in Sierra Leone following the cholera and Ebola outbreaks (see *News*, Apr-May 2013), and has also been successfully implemented in Kenya, Pakistan, Mongolia and

Nepal. The IFRC believes West Africa is the next important region for the system, but now needs urgent help from local mobile operators.

The organisation is keen to point out that it is not asking for any financial support from MNOs as it

already has all the funding needed to deploy the system. Operators can help by giving up some time to work in coordination with the IFRC in installing the platform.

To lend your support and find out more, email TERA.deployment@ifrc.org.

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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 will be 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 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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NEMO

Going for growth in Africa

Africa is an exciting market for telecoms companies. While other continents worry about stagnation or decline, African telecommunications look primed for impressive growth. Economic, political and technological factors are becoming aligned across the region to provide a host of opportunities for those prepared to work hard for growth.

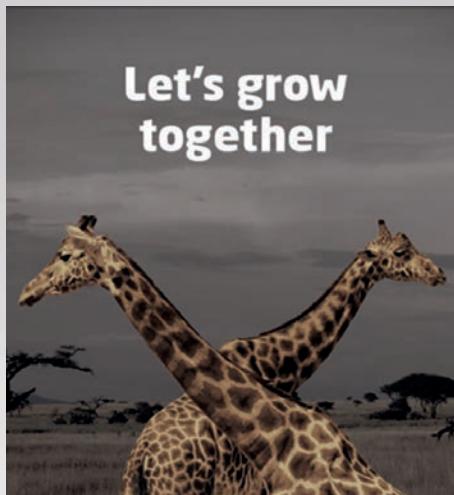
North Africa in particular, will continue to offer growth opportunities for those who are prepared to bring value to local telecoms markets. This requires international companies to develop a true partnership with African operators. A partnership that delivers business benefits for both parties.

At IDT, we've seen significant growth in Africa, driven by our large retail footprint and our relationships with operators enabling us to collaborate on strategic deals. Our approach is to develop both local and global relationships to deliver strategic partnerships. These partnerships aim to deliver mutual growth whether that growth is in minutes, revenue or margin and more usually in all three.

Voice has been the largest contributor of our growth as greater connectivity and market developments expand the international calling market. Greater connectivity has been driven by new technologies, improved "old" technologies and a more conducive regulatory environment. These have all helped to make it easier and cheaper to keep in touch with the ones you love, an essential human need.

We've seen rapid growth in areas such as international airtime top-up (IATU) as an inexpensive, easy and safe way for consumers to transfer value across borders and in doing so, generate new revenues for Africa operators. The African willingness to take on the threat posed by Over-the-Top (OTT) operators has also meant that we've begun to see growth taking off for our white label mobile calling app and our new messaging propositions.

As with all our African activity, our product plans are very much driven by



insight and helping current and potential African partners meet the business challenges they are now and will be facing in the future. We know that the OTT operators present a potential threat to current African operators, so we'll continue to launch a series of services that will help them flourish – not just defend themselves. Our IDT Beyond Mobile App delivers an own branded Android/iOS international calling app so African operators can increase traffic, customer loyalty and revenue that could otherwise be lost to competitors.

In our core market of voice, we'll continue to launch new initiatives to drive collaboration with mobile operators to gain revenue from voice traffic that they've traditionally lost to "grey routes". This means using our strong consumer brand, Boss Revolution, to help maximize corridors of traffic and using that increased traffic to offer better rates/transit fees, which in turn can generate even more volumes. We've started working with some African mobile operators to offer promotions to our Boss Revolution customers, for example in the US and the UK. This doesn't just encourage diaspora communities to call more but also encourages them to tell their loved ones back "home" to use our partner's SIM.

We're also increasingly seeing demand for managed voice solutions, addressing grey market traffic and reducing costs through managed gateways.

Africa is powering ahead with its connectivity revolution. The connected continent of Africa will change many things in the voice market. End user demand for more and longer conversations will increase, creating more demand for high quality services. Improved connectivity will enable Africans to engage in voice conversations in a much more convenient way. We can expect to see more players entering many African voice markets. Anyone that has a connection to an end user, whether that is via an app, hardware or network, will have the capability to offer voice services. As both fibre and satellite technologies advance, voice and data networks will also converge as technologists realize they cannot ignore voice and its importance in generating revenue, customer satisfaction and sustainable profits.

IDT is determined to help our African partners grow. That growth will be of many forms: growth by tapping onto their large diaspora communities throughout the world; growth in their voice business by delivering better quality services to their customers; or growth in their revenue by quickly launching new services using IDT's proven platforms. As the American Business Man, James Cash Penney Jr said "Growth is never by mere chance; it is the result of forces working together." At IDT we're determined to work together with our African partners to ensure that growth isn't down to chance.

**Alessandro Frigerio,
Director of Business Development
Voice Services, EMEA
IDT Carrier Services**

www.idtcarrierservices.com



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 (AfDB) Group's annual report released in May.

In relative terms, AfDB 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.

The bank said North Africa is recovering from the downturn of previous years, recording an average 1.7 per cent GDP growth in 2014 compared to 1.6 in 2013. Algeria saw a resurgence from 2.8 per cent in 2013 to four per cent last year, but Morocco went down from 4.7 to 2.7 per cent, and Egypt remained stable at 2.2 per cent.

AfDB added that Tunisia's "relatively smooth" political transition was an important factor in its modest 2.4 per cent growth (2.3 in 2013), but warned that instability in neighbouring Libya (-19.8 per cent growth) remains a notable downside risk for the country.

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

Nigeria, which re-based its economy earlier in the year, posted 6.3 per cent growth. Gabon's GDP increased at 5.1 per cent and its economy saw expansion in non-oil sectors, especially timber processing, making up for the fall in oil prices. The main drivers of the DRC's 8.9 per

cent growth were mining, agriculture and infrastructure investment.

Meanwhile, Central Africa recorded an average of 5.6 per cent despite shocks such as military insurrections, but Southern Africa went down from 3.6 to 2.7 per cent from 2013 to 2014.

AfDB 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 average growth on the continent to accelerate to 4.5 per cent in 2015 and five per cent in 2016.

African operators lead mobile money boom

The global market for mobile money transfer services is forecast to be worth USD4bn annually by 2018, a 50 per cent rise from the USD2bn revenues they are expected to bring in this year. According to new data released by Juniper Research in June, Africa represents the leading market.

It said that several of the continent's MNOs, such as MTN Uganda and Vodacom Tanzania, are now generating more than 10 per cent of their revenues from mobile money.

It added that Safaricom's *M-PESA* service posted mobile money revenues of more than USD330m in the latest financial year, making it the "most successful" mobile or online money transfer service worldwide.

According to the research, recent surges in both transaction volumes and values were being driven by increased implementation of both cross-border and intra-national remittance interoperability.

For instance over the last few months, MTN has agreed to interconnect its mobile money services with Safaricom and Vodafone; Millicom's *Tigo Pesa* is now interoperable with Airtel, Vodacom and Zantel in Tanzania; and Airtel claimed a "landmark" last year when it signed a deal with MTN for cross-border remittances between Burkina Faso and Côte d'Ivoire (*News, Apr-May 2014*).

Juniper's research also highlighted a shift in service provider requirements. It said most of them are now looking to implement applications in tandem with USSD/IVR mobile money solutions in anticipation of greater smartphone adoption.

But the analyst also warned that while inadequate regulation still constrained growth in a number of markets, low adoption or activity rates in many cases could be attributed to "poor decision making" by service providers.

For example, in Nigeria Juniper found a number of services had failed to gain repeat usage because of the high cash-out fees, while savings accounts in other markets had withdrawal fees that were "inappropriate" for low-income users and savers.

"There are too many instances where service marketing is inappropriate or incorrectly targeted, where the message simply isn't reaching the desired audience," said study author Dr. Windsor Holden.

CDC and SCB support increased lending to 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. It enables SCB to increase the number of loans

it makes in the West African state. 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 country.

Economic growth in Sierra Leone is slowing as a result of the Ebola crisis. Its GDP growth was expected to be 11.3 per cent in 2014 but has been revised downwards to four per cent.

The revision comes on the back of shortages in the supply of basic essential commodities and disruptions to supply chains, as well as reduced production from the mining sector.

By providing short-term loans and overdrafts, the two 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.

CTO appoints new secretary-general

Shola Taylor has been named as the Commonwealth Telecommunications Organisation's (CTO) new secretary-general. He will take up the position



Shola Taylor's CV includes working for Inmarsat, Intelsat, the ITU, amongst others.

in September, replacing Professor Tim Unwin when his four-year tenure comes to an end.

The CTO says Taylor has more than 35 years of global ICT experience working in the government and the private sectors. A Nigerian citizen, he is currently CEO of Kemilinks International, a global ICT consultancy firm based in Lagos.

59-year-old Taylor has previously worked for Inmarsat where he was regional director for Africa, and at the ITU as space technology coordinator for developing countries, director of projects including RASCOM, and as the elected chair of the Radio Regulations Board.

He is a telecoms engineer by training, and during his early career he worked as senior engineer at Nigerian Telecommunications as well as a spectrum engineer with Intelsat.

Taylor studied in the UK and holds an MSc in telecommunication systems from the University of Essex, as well as a BSc in electrical and electronic engineering from the University of East London.

Egyptian tech firms expand African footprint with USD7m deals

As a part of the second phase of its *Africa Together* programme, the Information Technology Industry Development Agency (ITIDA) in Egypt has facilitated business deals worth an estimated USD7m between local firms and 17 telecom companies, financial institutions and ICT enterprises in six African countries.

Among the signed contracts, Egyptian firm Hitekenofal has agreed to provide communications networking

services to Batitech in Ghana, Websprix and Exceed IT Systems in Ethiopia, and Hamms Engineering and Even Data in Zambia.

Founded in 2004, the ITIDA is a public-private partnership between the Egyptian Ministry of Communications and Information Technology and the private sector. It launched *Africa Together* last August to support Egyptian exporters of IT services and products targeting high-growth markets across Africa, especially Uganda, Ethiopia, Kenya, Tanzania and Nigeria.

Airtel now ranks as the world's number three mobile operator

Airtel is now the world's third-largest mobile operator, according to the latest data published by the World Cellular Information Service (WCIS).

With 303.10 million customers across 20 countries in Africa and South Asia, the company has now moved up a position in WCIS' global rankings. China Mobile remains at the top with 626.27 million subscribers, followed by the Vodafone Group which has 403.08 million.

In its full year report for 2015, the operator says its global networks carried more than 1.23 trillion voice minutes and over 333 petabytes of data.

Airtel also claims to have the widest 3G and mobile commerce networks in Africa, and says it is the continent's largest operator in terms of a geographical footprint that covers 17 countries.

In 2010, the celco purchased most of Zain's African operations in a USD10.7bn deal that was described at the time as the largest-ever telecoms

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
10/3/15	Kevin Rock	TE Connectivity	President of industrial solutions	TE Connectivity	President of aerospace, defence, oil & gas division
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	Wyless	CTO	JOC Group	CEO
16/6/15	Ghada Gebara	Optimum Telecom Algeria (Djezzy)	CEO	Korek Telecom	CEO
16/6/15	Bret Griess	CSG International	President	CSG International	EVP & COO
16/6/15	Shola Taylor	Commonwealth Telecommunications Organisation	Secretary-general	Kemilinks International	CEO
22/6/15	Karen Schmidt	Intelsat	VP marketing	Comcast	VP of business marketing
1/7/15	Alexander Matuschka	VimpelCom	Group chief performance officer	Nokia Networks	Chief transformation officer
6/7/15	Ahmad Farroukh	-	-	MTN South Africa	CEO – resigned
13/7/15	Mteto Nyati	MTN South Africa	CEO	MTN Group	Chief enterprise officer
15/7/15	Kash Pandya	Helios Towers Africa	CEO & director	Aggreko International	MD
15/7/15	Chuck Green	Helios Towers Africa	Executive chairman	Helios Towers Africa	CEO
15/7/15	Jos Baart	Flexenclosure	VP of sales & marketing	Flexenclosure	Sales director

LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
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.
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	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.

purchase by an Indian firm. The acquisition instantly made Airtel one of the five largest mobile operators in the world (*News, Jun-Jul 2010*).

Other operators in the WCIS top five include China Unicom which has 299.09m customers, and Latin American telco America Movil which has 274.14m.

■ In mid-July, Orange announced it had entered into an exclusive agreement to explore the possible acquisition of Airtel's subsidiaries in Burkina Faso,

Chad, Congo Brazzaville and Sierra Leone. It said that as yet there is no certainty of any binding agreement as a result of the discussions.

Damm and Airbus enter into alliance

Damm Cellular Systems is teaming up with Airbus Defence and Space (ADS) to support the critical comms 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."



Damm's CCO Allan Detlefsen says the one-stop shop offers innovations from two "leading-edge" companies.

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.

INVESTMENTS, MERGERS & ACQUISITIONS

Date	Buyer	Seller	Item	Price	Notes
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 with its own SON systems & provides 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 believes the 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 to 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.
23/6/15	Redknee	Orga Systems	Company	EUR38m	In an all cash deal, Redknee says Orga's technology and expertise will enhance its real-time monetisation and subscriber management platform for communication service providers and the Internet of Things.

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Cobham claims world first with stabilised drive-away VSAT antenna

Cobham Satcom's new one metre *EXPLORER 8100* drive-away antenna is designed to offer what the firm claims is "unparalleled" performance, ensuring high-quality connectivity on any Ku- and Ka-band networks.

MANUFACTURER:
Cobham Satcom

PRODUCT: EXPLORER 8100

MORE INFORMATION:
www.cobham.com/satcom

According to Cobham, mechanical impacts as small as 0.3° could lead to an immediate loss of signal and stability is therefore crucial, particularly for Ka-band usage.

The firm says the *8100* focuses on ultra-reliable connectivity even when the vehicle is experiencing sudden movements or rocking on its suspension while the antenna is transmitting.

The antenna features Cobham's *Dynamic Pointing Correction* technology which it already uses on its range of stabilised maritime

antennas. The company claims this ensures uninterrupted transmission when similar antennas would experience a complete loss of signal.

It adds that a "state-of-the-art" RTM carbon fibre reflector provides "impeccable precision", and that when combined with pointing correction technologies, the *8100* represents the most accurate drive-away VSAT antenna on the market.

Furthermore, Cobham says the antenna features fast satellite acquisition with pointing achieved automatically in less than two minutes.

The system is available in both Ka- and Ku-band configurations, and works with all major satellite networks. A swappable feed system allows users to change frequency bands.

The *8100* comes with built-in Wi-Fi for access to the terminal, and the same web-based GUI developed for Cobham's Inmarsat *GX* series of antennas.



Easier microwave links with upgraded design tool

With *iQ.linkXG v9.5*, Comsearch believes it's created the first microwave link design tool tailored for small cell backhaul, where non-line-of-sight (NLOS) conditions often apply. The upgraded version is also said to make it much easier to

MANUFACTURER: Comsearch

PRODUCT: *iQ.linkXG v9.5*

MORE INFORMATION:
www.comsearch.com

configure microwave links powered by adaptive modulation radios.

According to Comsearch, small cell planning can involve both LOS and NLOS paths, the latter of which presents a special challenge to designing networks where signal loss predictions are critical.

The firm says it has developed unique and proprietary models that look at the true obstruction environment along a path to better calculate losses. It says these models have been validated with a major radio vendor using existing network

designs and integrated into the latest version of *iQ.linkXG*.

In addition, Comsearch says the use of adaptive modulation radios has made it difficult for link designers to

quickly engineer microwave paths. It says power, fade margins and predicted performance must be evaluated for all the modulations configured for a path, not just one.

In order to simplify the design of microwave links with such complex radios, Comsearch has come up with what it describes as a "highly intuitive" GUI that takes guesswork out of the equation. It reckons engineers can now easily configure power levels for their radios by using the simplified interface, and instantly see the impact on path performance.



Advantech ups the power on latest generation BUC

Advantech Wireless says its second generation *Super Compact TT Series C-band BUC SSPA/SSPB* offers a 60 per cent RF power increase, while reducing energy consumption by 30 per cent.

In terms of linear power, it's claimed the 300W unit is the equivalent of a previous 500W SSPA, and of a 750W TWT. The new version is also 45 per cent lighter and smaller than its 200W

predecessor. Advantech says the new units are specifically designed for maritime applications where bandwidth demand

has increased exponentially, and where the high temperature in the radome is always a challenge. It adds that improved GaN reliability and the smaller form factor enable "perfect integration" into ship stabilised antennas for better balancing, and where heat generation has to be reduced to the minimum.

MANUFACTURER:
Advantech Wireless

PRODUCT: TT Series BUC

MORE INFORMATION: www.advantechwireless.com



Wireless networks 10,000 times more energy efficient

GreenTouch has revealed new tools, technologies and architectures which it claims can improve energy efficiencies of mobile networks by more than 10,000 times.

Two tools are now publicly available. *GWATT* is a web-based interactive application that provides a complete view into the entire GreenTouch portfolio of technologies and their end-to-end energy impact.

Flexible Power is said to be an advanced power model and software tool that provides realistic power consumption values for a variety of current and future cellular base station types, configurations and scenarios.

GreenTouch consortium members have also demonstrated technologies which include a number of previously unannounced innovations. For example, *BCG2* architecture uses densely deployed small cells with intelligent sleep modes, and completely separates the signalling and data functions in a cell network.

MANUFACTURER:
GreenTouch

PRODUCT: Various

MORE INFORMATION: www.greentouch.org

Traffic Steering Manager boosts network capacity

Nokia Networks reckons it has solved the complexities of coordinating the dozens of load balancing and traffic steering features available in mobile broadband networks.

MANUFACTURER:
Nokia Networks

PRODUCT:
Traffic Steering Manager

MORE INFORMATION:
www.nokia.com



The firm says its *Traffic Steering Manager (TSM)* is the first all-inclusive solution to automatically direct traffic to the most effective radio network layer. This ensures more efficient use of existing infrastructure, and its claimed cellcos can effectively increase network capacity by 10 per cent.

The centralised system is said to combine all radio technologies, including Wi-Fi, macro and small cells, as well as the core network to dynamically orchestrate network capacity utilisation. Nokia says it coordinates a multitude of load balancing and

traffic steering functions in networks to use all the capacity available in multi-technology, multi-layer and multi-vendor hetnets.

Traffic is steered according to network conditions. Other criteria, such as device capabilities and SLAs, can also be taken into account when planning efficient service delivery and network utilisation

Nokia adds that if capacity limits are reached, the value-based traffic steering enabled by the *TSM* ensures that the network is used according to business priorities.

Flex accelerates in-flight broadband connectivity

Intelsat has introduced a new service for the commercial air transport market. *IntelsatOne Flex* is described as an enterprise grade, customisable, 'wholesale Mbps' managed mobility service. It enables Intelsat's distributors and their aeronautical customers to

MANUFACTURER: Intelsat

PRODUCT: IntelsatOne Flex

MORE INFORMATION:
www.intelsat.com

access bandwidth when and where it is needed the most, without the complexity of managing multiple beams and satellites.

The service aggregates Intelsat's global satellite fleet and terrestrial network into a simplified ecosystem.

The company says it will enable its partners to maintain control over their network by allowing them to continue to manage the customisation, contention and prioritisation of individual airborne terminals without the overhead of multiple network builds and inefficient use of bandwidth.

IntelsatOne Flex enables users to leverage wide beams for broadcast applications to the plane and spot beams for high throughput data. They can also customise QoS for 'wholesale Mbps' procured on a region-by-region basis to provide access to pre-defined zones.

Intelsat says this can be done with guaranteed SLAs and committed information rate (CIR) plans.

The new service can also streamline capacity management for geographic expansion and surge. Intelsat says it provides flexibility across multiple satellite beams, resulting in a more predictable cost structure directly matched to revenue generating activities.

iBuildNet offers vendor-free DAS solution

Ranplan has developed *iBuildNet DAS*, the latest addition to its range of vendor-independent software tools for indoor and outdoor wireless network planning, design and optimisation.

The software is billed as an "advanced" solution for designing

MANUFACTURER: Ranplan

PRODUCT: iBuildNet

MORE INFORMATION:
www.ranplan.co.uk

and optimising networks that use distributed antenna systems (DAS). It supports multi-system technologies to deliver what's said to be a seamless network environment.

Ranplan says the tool significantly reduces the time it takes to plan and deploy complex DAS systems. It claims *iBuildNet DAS* uses advanced 3D modelling, fast and accurate 3D ray-tracing, and powerful analytics to optimise antenna location type, power, and channel assignment.

iBuildNet DAS can also be used with Ranplan's *iBuildNet Tablet*



Planner (pictured). The company says this is an automated on-site tool designed to enable installers to quote, plan, deploy and optimise a network to deliver maximum coverage and QoE in the shortest possible time, and at the lowest possible cost.

ALSO LOOK OUT FOR

CRT optimises use of scarce spectrum

Cognitive radio technology (CRT) developed under the EU-funded *QOSMOS* project could help to meet the future challenges of using limited spectrum resources for increasing data demand.

CRT dynamically optimises radio spectrum use by accessing under-utilised portions and sharing it across devices.

Michael Fitch of British Telecom, which coordinated *QOSMOS*, says the idea is to break down silos: "Every new service and technology needs a new spectrum, and silos are formed when there are umpteen different devices that use umpteen different parts of the spectrum."

Project partners developed three technologies: a central manager that controls the spectrum 'portfolio' in real-time for a region or country; a resource manager that allocates the spectrum to individual systems and senses the environment; and a cognitive radio terminal.

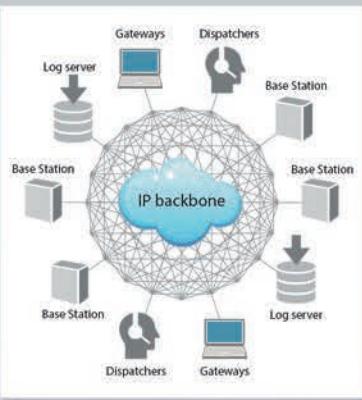
They also developed a prototype transceiver to generate filter bank multi-carrier transmission (FBMC) waveforms. With FBMC transmission, spectrum is carved out in rectangular blocks so that it is tightly packed for more efficient use. The technology is expected to replace OFDM which is more commonly used today.

Members of the *QOSMOS* consortium also conducted a value chain analysis and developed business use cases that compared the costs of accessing under-utilised spectrum against that of buying new spectrum.

They identified the areas where CRT could be commercialised. For example, existing owners of spectrum could rent out their assets for short periods of time, while network managers could offer premium spectrum management services.

As a result, *QOSMOS* members believe an entirely new market in micro-trading spectrum could develop over time.

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A fresh look at critical comms

RAHIEL NASIR rounds up some of the latest products and solutions for professional mobile radio users.

The installed base of narrowband active radios in Africa and the Middle East is forecast to grow from around three million in 2014 to 3.4 million in 2019, according to research by IHS Technology. It says despite a high analogue installed base, digital narrowband technologies such as TETRA, P25 and cost optimised technologies (DMR, dPMR and PDT) are projected to achieve significant growth and will account for 65 per cent of the installed terminals base by 2019 (*also see African Wireless Communications Yearbook 2015, p107*).

Elizabeth Mead, senior analyst for critical communications at IHS, says that with half a million active radios installed at the end of 2014, cost optimised technologies represent the largest proportion of digital technologies in the region.

"IHS forecasts less economically developed countries will adopt cost optimised digital technologies for public safety use, rather than build out nationwide networks based on high-end standards," says Mead. "There is potential for an increase in DMR Tier III/dPMR Mode 3 networks in the region, and for PDT [Professional Digital Trunking] orientated solutions from Chinese companies, especially in Central Africa."

There has certainly been some evidence of one particular Chinese vendor growing its presence on the continent. Earlier this year, South African operator Altech Fleetcall announced it was upgrading its analogue radio trunking network using DMR systems from Hytera Communications. And in Nigeria, Briscoe Technologies is also working with the company on the upgrade of its TETRA network (*see News, Dec 2014-Jan 2015*).



Sepura claims the SC2020 is the first TETRA hand-portable that is LTE data ready.

Hytera could claim that innovation is helping to give it the technical edge when it comes to winning new contracts in Africa and elsewhere. One of its recent products is the *XPT (Extended Pseudo Trunk)*.

According to the firm, centralised trunking requires all activities to be coordinated via a dedicated control channel which may be difficult to obtain under some regulatory commissions. It claims the *XPT* solves this problem by using innovative distributed digital trunking technology.

XPT is designed to enable two-way radio users to use limited spectrum resources to double their channel capacity without using a dedicated control channel. Hytera says a single *XPT* system can support up to eight 12.5kHz repeaters at one site and provide up to 16 traffic channels, supporting up to 1,200 users. Each traffic channel can be customised to transmit voice or data.

The firm explains that the repeaters broadcast the system's status information in each frequency via a beacon signal which informs the radio of available channel resource. The radio can then switch to an available channel and slot to communicate.

At the end of last year, Hytera also unveiled the *DS-6500*, a complete DMR dispatcher solution in one chassis. It comprises a computer with a multi-channel sound card that is used as the platform for Hytera's *SmartDispatch* software. This is used to adapt the company's radios to the users' environment (frequencies, call numbers, etc.), and all standard functions are immediately available, such as voice communication, GPS-based services, short messages and system-wide voice recording.

The standard version of the *DS-6500* includes two Hytera radios. One *MD785* is also available upon request, and up to two additional *MD785s* can be connected to the rear of the chassis to expand capacity by up to eight time slots.

Critical Communication World (CCW) held in May in Barcelona saw a number of clever products unveiled from several manufacturers, including the *BS422* outdoor base station from Damm Cellular Systems. The Denmark-based specialist says this unique cross-technology solution offers TETRA, DMR Tier III, TEDS and analogue technologies in one integrated system.

Damm hopes the *BS422* could "potentially revolutionise" the way critical radio and broadband communication is deployed. It says the base station enables users to simply choose the technology to match their current needs and scale anytime – including migrating from analogue to digital – to meet changing voice and data demands with a simple click.

The unit uses *TetraFlex*, Damm's open and decentralised architecture which it says is based on a "true" IP backbone making it easy to scale. "You can not only scale freely in coverage, but also in redundancy and number of carriers," states the firm.

The company adds that users could even "go hybrid" and combine multiple technologies into one integrated system. The *BS422* enables them to run, for example, one carrier in TETRA, the second in DMR, and a third in TEDS. It is also possible to use different technologies at different sites and combine them into one network with a single, centralised subscriber register.



Hytera's XPT doubles 2-way radio channel capacity without using a dedicated control channel.



Motorola Solutions' LEX L10 uses a unique version of *Android* to enhance safety for frontline officers.



The BS422 outdoor base station from Damm offers TETRA, DMR Tier III, TEDS and analogue technologies in a single integrated system.



Sepura's ULTRA CSM is an IP67 rated all-weather controller speaker microphone. It can withstand 180°C and is said to be highly durable thanks to its polycarbonate casing – the same material used for riot shields.

LTE in critical comms

IHS says the demand for data in critical comms is increasing in a number of regions as more users expect more sophisticated and high-bandwidth applications on their networks. Mead says: "In the short- to mid-term, LMR technologies including TEDS and P25 overlay systems, will gain traction, with options potentially created to move to private LTE at a later stage. IHS projects that LTE will gain traction in some African nations in the mid-term."

Many of the big name critical comms vendors are hoping to capitalise here. For example at CCW, Motorola Solutions launched the *LEX L10* LTE handheld which supports multiple LTE bands as well as 3G UMTS bands and quad band GSM (2G).

The device uses Motorola's *WAVE Work Group Communications* system and is said to provide instant voice interoperability with any broadband device or LMR system. While its operating system is based on *Android*, Motorola is keen to point out that its capabilities go far beyond consumer-grade smartphones. The firm says the *LEX L10*'s 'public safety experience' (PSX) "uniquely transforms" *Android* to enhance safety and efficiency for front-line officers.

Manuel Torres, Motorola Solutions' SVP for Europe, Africa, Latin America and the Caribbean, says: "With the combination of the *LEX L10* and PSX, we can harness the power of broadband mobile data, smartly adapting and streamlining information so that officers receive only information that is relevant to them in a critical moment."

The company adds that a growing number of specialised apps are also available for the *LEX L10*. For example, users can gain access to dynamic resource mapping via Motorola's *Intelligent Data Portal*, take remote control of a two-way radio, securely stream real-time video for situational awareness, fly a drone, and more.

Sepura also had LTE in mind with its *SC2020*. The firm says the "smart" handheld combines TETRA's mission critical advanced performance with an

optional second high-speed data network such as Wi-Fi or LTE. It is equipped with the vendor's new Class 3 TETRA engine as well as a new receiver that is said to "surpass" the ETSI specification.

Featuring a 2.4-inch QVGA display, Sepura also claims the *SC2020* offers the largest high-resolution screen on the market today. It says this is viewable in all light conditions, including direct sunlight, and enables easier deployment of existing and future applications via high-speed data.

The firm adds that the radio's 2W audio capability is enhanced by unique water-porting technology, and remains clear even in continuous heavy rain. It has an IP67 environmental protection rating which means it is completely dust-proof and submersible in water.

Tait Communications has developed a patented approach to bridging land mobile radio and LTE networks. It says its *UnifyVoice* system integrates and provides the benefits of push-to-talk (PTT) over cellular and LMR, giving office and field staff the ability to communicate via either technology as well as Wi-Fi to fill blackspots, extend capacity, and improve resiliency.

Tait partnered with PTT over cellular specialist SLA to power the client software for *UnifyVoice* using the *ESChat* SDK. It says the operational benefits of unifying critical comms start with providing access to real-time, accurate information to provide a number of advantages such as agency interoperability, simplified ICT, cost reductions, improved situational awareness, and more. ■

CREATING 'BUBBLES' OF LTE COVERAGE

Quortus has developed a field-ready 4G tactical cellular solution for public safety organisations. Combining an embedded 3GPP compliant EPC, the UK-based firm claims *ECX Tactical* operates with any LTE radio access technology.

The solution is based on Quortus' *EdgeCentrix* technology which implements core network functions in software that can be run anywhere in the network. In the case of *ECX Tactical*, the company says the core is embedded directly on an LTE radio system-on-chip from any of its partners, supporting x86, ARM and MIPS64 CPU architectures. It is tightly coupled with 4G or Wi-Fi for backhaul and cell-to-cell communication.

According to Quortus, this combination delivers the advanced features required in the tactical market, such as localised VoLTE calling, multicast/broadcast communication, ad-hoc node meshing, and traffic relaying between vehicle nodes.

The company reckons the small footprint of *ECX Tactical* makes it ideal for deployment in next-generation emergency service requirements in vehicles, unmanned drones, or even in a backpack.

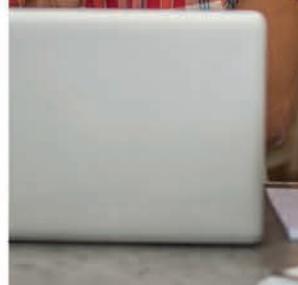
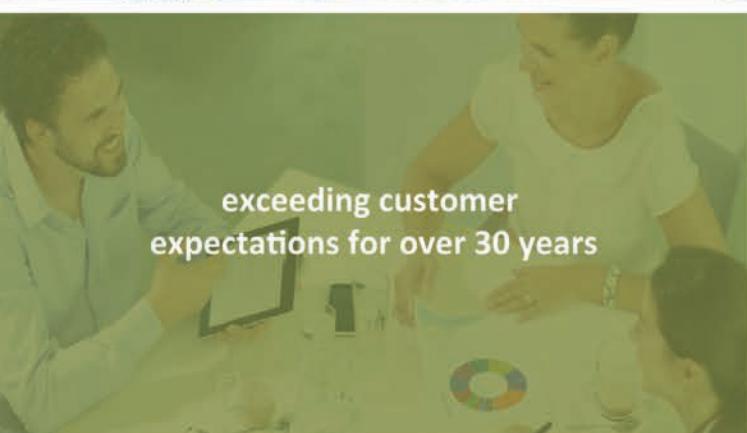
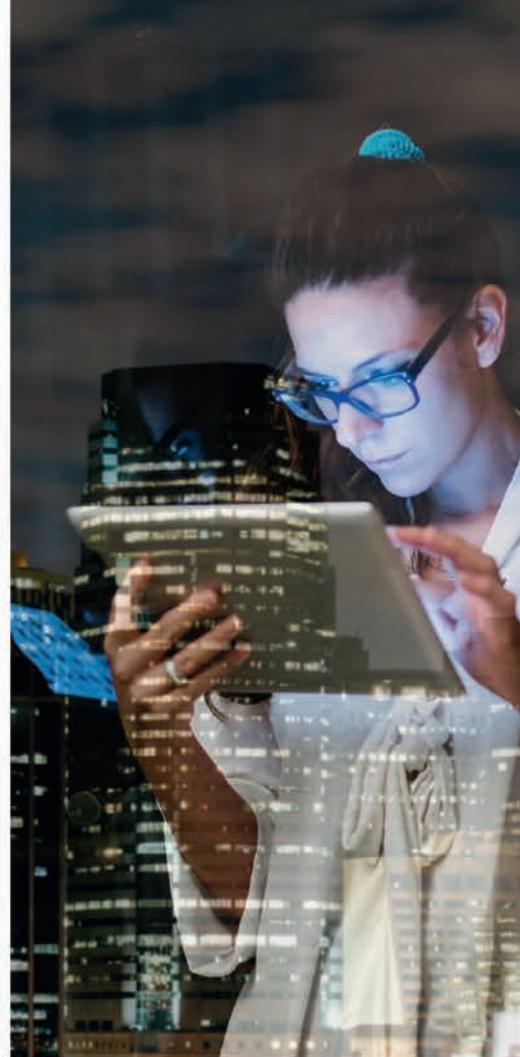
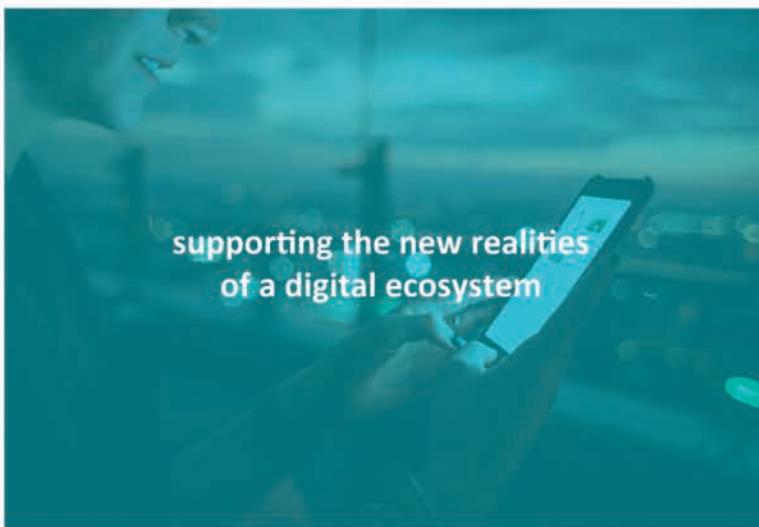
"It allows the creation of 'bubbles' of 4G coverage, with each bubble able to move and 'mesh' with adjacent nodes, creating larger, resilient and sanitised private communications networks for key personnel, exactly where and when they are needed," states Quortus.

It adds that the system supports localised services such as command and control information, video surveillance, and access to local voice services or PBX features 'at the node'. This is said to include in-session continuity during user mobility to ensure integrity of sensitive user data.

The platform is designed so that nodes can be meshed or autonomous, and each one can effectively function as its own private 4G network, even in the absence of a backhaul connection.

In addition to special features provided for the tactical communications market, Quortus says *ECX Tactical* also makes use of many of the benefits of mainstream cellular technology, such as allowing first response teams to use standard handsets, and support for SMS.

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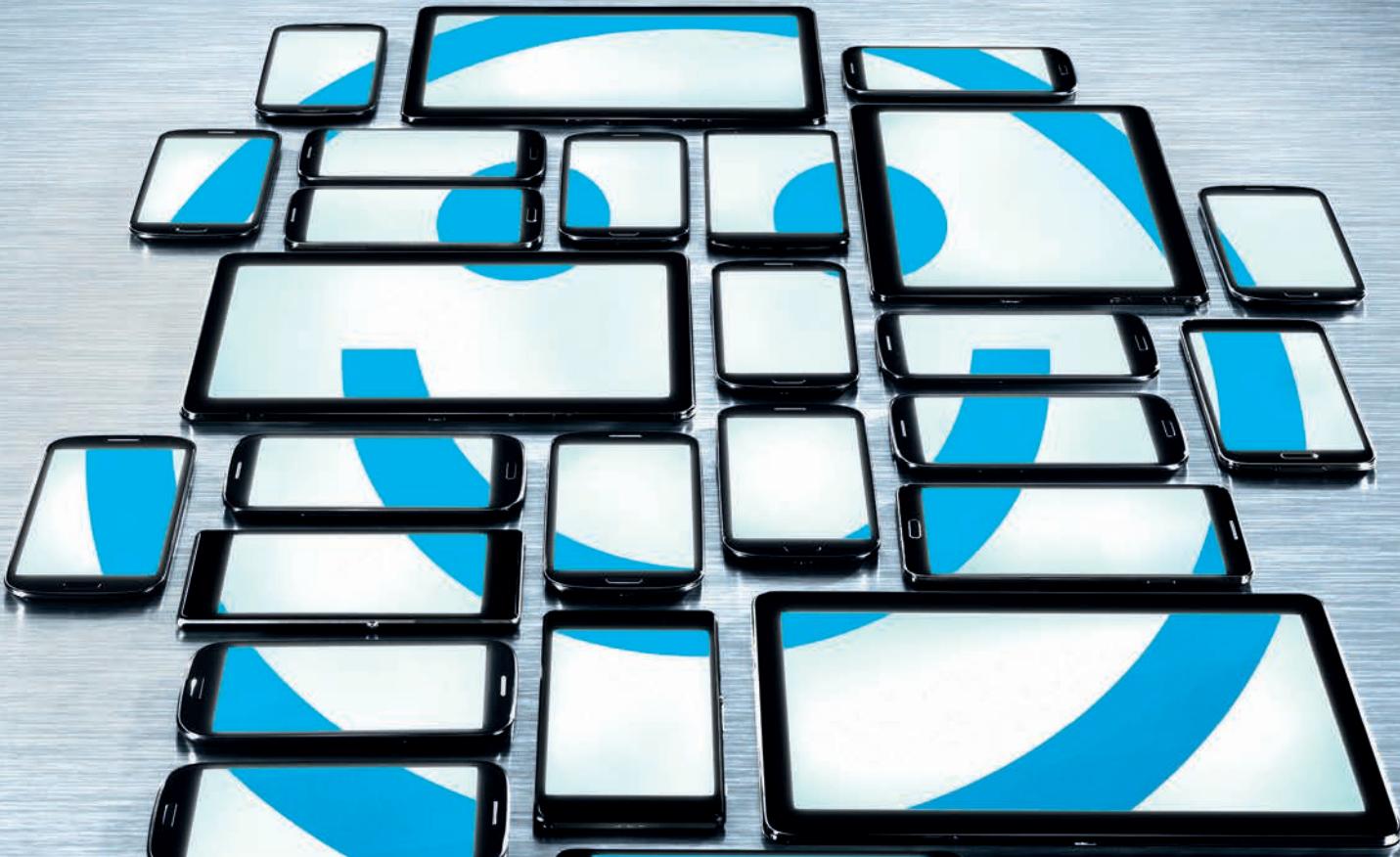
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Next generation testing



Commercial LTE services have so far been launched in around 20 countries in Africa since 2012. Algérie Télécom (above) claimed a first in North Africa when it went live with its network in mid-2014. Operators in several other nations across the continent are either currently trialling networks or have plans to launch 4G in the near future.

Testing and optimising LTE networks often presents a number of unique challenges to operators. So what are the issues and how can they be addressed? RAHIEL NASIR finds out.

What's the most critical factor for mobile engineers to look out for when they need to test and optimise their LTE networks? While the test and measurement specialists we spoke to identified various issues, there was one particular area many of them agreed upon: Quality of Experience.

For instance, Spirent believes MNOs should look at LTE QoE "holistically" from their customers' perspectives. Paul Moss, senior EMEA manager for the company's wireless and service experience division, says: "Subscribers will naturally feel that they should be receiving a higher performance service when compared to 2G and 3G services. So test and measurement activity should be focused on objectively measuring the real user experience in a consistent way, utilising the devices and services that these subscribers are engaging with."

While that may sound obvious for any type of network, Moss warns that simply measuring performance in isolation using traditional radio engineering tools will not necessarily provide information that reflects the real user experience.

Anite agrees: "Some operators still use solely FTP testing to assess the performance of 4G data services," says Bruno Poisson, regional director for the firm's network testing division. "While

FTP makes sense for throughput testing, other tests to ensure QoE need to be performed. For example, close to 40 per cent of mobile data traffic comes from streaming video, notably *YouTube*. Network testing solutions should enable operators to fully assess the performance of *YouTube* as well as other social media services."

Poisson also recommends operators to benchmark the performance of these services against the competition. He believes this is vital for them to gain customers and potentially increase ARPU.

Moss supports this view. Given the highly competitive markets cellcos operate in, he says it's critical for them to have an objective view of the performance of their LTE services and devices – and not just compared to local rivals but even benchmarked against successful operators elsewhere.

"MNOs should conduct a regular and repeatable programme of competitive testing and analysis in order to understand their relative user experience ranking in the market, particularly as the number of subscribers connecting to their services increases, and capacity issues that may not be immediately apparent start to emerge. Failure to do so, will mean that the MNO may not be aware of potentially significant degradations in overall service performance and user experience relative to key competitors."

What needs to be tested?

Many experts point out that LTE increases complexity across the mobile communications ecosystem. For example, Paul Gowans, JDSU's director of marketing, RAN solutions, says: "Although LTE has a flatter architecture, it also has more inherent complexity – new frequencies to deal with, interference, more complexity in the eNodeB with handoffs handled locally, MIMO, etc."

He also believes that there is no such thing as a typical '4G customer': "It all depends on what network coverage is available, plus phones are moving from one network to the other all the time. It is this that defines the customer experience. So solutions are needed that can cover all technologies – 2G, 3G and 4G."

Moss wouldn't disagree here. He says there is complexity associated with ensuring interoperability between LTE and legacy 2G and 3G, as well as increasing complexity associated with ensuring the quality of and interoperability between a whole host of new and legacy devices. It is therefore vital to ensure that all elements of the network, including the radio/air interface and backhaul, devices, services and applications work together effectively. "Ideally, the whole ecosystem end-to-end needs to

be objectively tested and effectively optimised. It's no good having the best performing radio network or backhaul if voice, data and video services are not implemented correctly, or if the connected devices that are carrying these services to the end user are performing badly."

Keysight Technologies adds to this by saying the challenges of optimising LTE networks become much more intensive from the outset. "Multiple types of cells – such as macro, micro, pico and even femto – will co-exist in such networks, so an increasing number of parameters need to be taken into account in network optimisation," says Mayca Avila, the vendor's EMEA field market development manager for mobile broadband operation.

She also says many operators are realising too late that the transport backhaul is a critical consideration in 4G: "It is very important to deploy a core network solution that is flexible enough to offer smooth migration from centralised (longer backhaul) to distributed (shorter backhaul) core network nodes."

Having said that, Avila believes the operator's main goal must be to look for strategies and solutions that will improve its existing 2G/3G networks without requiring a complete equipment upgrade as they deploy their 4G networks.

"The solutions that are already deployed in the market might include many of the elements required of the 4G network, such as: integrated intelligence; simplified network architecture; high bandwidth performance capabilities with on-demand scalability; and enhanced mobility."

Nokia Networks supports this when it says the basic challenges of testing 4G networks remain the same as 2G/3G. However, when it comes to LTE specifically, the company says it is very important to optimise network coverage and reduce interference for the best user experience and optimal usage of radio resources.

Mounir El Aichaoui, the firm's head of market unit North Africa, reckons LTE network optimisation is more inclined towards a capacity driven quality improvement approach. "Initial optimisation is basically about taking care that L1 (antenna azimuths and downtilts) are adequate. In the case of LTE, this only becomes visible as interference and reduces spectral efficiency under higher loading."

Paul Moss,
Senior regional
manager EMEA,
Spirent

"It's no good having the best performing radio network or backhaul if voice, data and video services are not implemented correctly."

He advises operators to ensure that their L1 design is right from the outset, and that they should not just "blindly use" what already exists such as their GSM1800 antennas, for example.

"Across the globe, LTE is currently handled like 'business as usual'. Rules such as monitoring of traffic load and end-user experience, and preparation for mass events also apply to LTE rollouts as they did with 3G rollouts. Many operators are operating on multiple LTE frequencies – load balancing and equalisation therefore play a very critical role."

El Aichaoui adds that new services such as VoLTE should be thoroughly tested before being introduced across the network. "Operators are recommended to prepare and optimise the radio network at least one year prior to the launch of a VoLTE service. By doing so, they will be able to ensure the optimum user experience once it is launched."

Anite's Poisson is in agreement here, and says that before VoLTE is introduced, operators should optimise the quality of their voice service paying particular attention to circuit switched fall-back (CSFB) performance. "In practice, early LTE deployments often led to poor CSFB performance (6-10 seconds typically). Optimisation work is needed to ensure that this is brought as close as possible to three seconds, or even less."

Moss adds to this by saying it is important for an operator to ensure effective CSFB between all its networks in a given market, particularly as it may take considerable time for its entire subscriber base to migrate to the new LTE network and devices.

For data testing, Poisson reiterates that MNOs need to abandon legacy systems such as FTP. Instead, he says they should use smartphones to test widely used social media services and focus their optimisation efforts on enhancing customer experience based on real usage patterns. He also advises cellcos to ensure services are maintained when on the move: "This means not only performing drive tests but also on-train and in-building measurements."

How to test

According to Keysight, physical layer testing is essential as it seeks to determine conformance with the vital parameters essential for the successful transmission of a signal over the air. "Transmit power, the quality of the TX waveform, and the accuracy of the TX frequency, are all key to a mobile station's performance," says Avila.

For transmission quality, she says the emphasis should generally be on the maximum power measurements since these typically present the biggest challenge for high power circuits.

"On the receive side, the ability of the mobile to successfully decode the signal at the lowest and highest signal levels defines its successful operation in the network. Also, a mobile responding linearly to power control commands is critical to network performance."

Avila continues by saying that since it is known that most distortions will be at their worst at high power, the emphasis will be on high power testing

Paul Gowans,
Director of
marketing, RAN
solutions, JDSU



"Interoperability between vendors' equipment is needed more in LTE, so ensuring services run end-to-end is a fundamental requirement."

with probably only a single sample from the mid and low power settings. "The most complex modulation rate will be the most sensitive to distortion. We also recognise that maximum modulation will be used when the mobile is closest to the base station, so max rate modulation is suitable for testing at the low power setting."

JDSU believes operators should "never underestimate" the importance of testing in the lab prior to deployment, particularly emulating real world conditions. "Interoperability between vendors' equipment is needed more in LTE, so ensuring services run end-to-end is a fundamental requirement," says Gowans. "Also, more sites have fibre now in the fronthaul, so being able to test fibre and RF in one instrument to save time, cost and tower climbs will help the operators' business."

But Spirent's Moss adds a caveat here: "MNOs should avoid thinking that just because something worked well in a controlled laboratory environment, or on a relatively unloaded test network, that it will work in the 'real world'. Again, all of the various elements that ultimately need to come together to present a superior user experience should be tested – not just in isolation, but in conjunction with each other."

Nokia has already pointed out that interference plays a more significant role in LTE networks, and controlling it can be more delicate due to frequency reuse. Gowans adds: "Identifying sources of interference can be a major headache, but with new spectrum for LTE and constant re-farming, efficiently hunting for interference will eliminate customer service issues and reduce opex."

Network infrastructure specialist CommScope says that because LTE is a high throughput technology spanning larger spectral bandwidths, it's susceptible to a number of issues. Dr. Mohamed Nadder Hamdy, the company's director of wireless network engineering, says these can include sensitivity to RF path elements, sensitivity to SINR ratios, and degraded PIM performance.

Earlier this year, the vendor launched its *Optical PIM Tester* and claimed that for the first time ever, a single technician could now use a handheld device to connect directly to the base band unit at the bottom

of the tower and perform a 'truly active' PIM test over the CPRI. CommScope says the tester utilises an interface that is not susceptible to creating PIM and thus prevents testing from becoming part of the problem. Using the CPRI, it injects signals into the downlink and looks for PIM products in the uplink, making it easier to identify interference.

While eliminating PIM addresses one aspect of LTE network testing, others argue that what's actually needed is for operators to completely re-think their approach to optimisation.

"LTE has enabled bandwidth hungry services and mass adoption of social media services on smartphones," says Poisson. "Investing more effort on enhancing the service performance is key. This is a profound paradigm shift that results in the deployment of different testing methodologies. Operators need to recognise this and implement the necessary updates so that this is fully understood and supported."

Given the fact that LTE is IP-based, does that facilitate testing solutions that offer greater functionality in terms of remote management capabilities and future scalability?

CommScope's Hamdy says LTE's all IP system has simplified the core network by eliminating the circuit switched part. "It has also simplified and improved the radio access by cancelling

base station controllers and embedding their functionality in the base stations themselves for better latency. This has opened the door for NFV adoption in the EPC and cloud-RAN."

This is likely to chime with Spirent which claims to be a pioneer in the development of software and cloud-based user experience measurement solutions. Moss says these allow for the efficient distribution and centralised remote management of test cases.

"Test cases can be created centrally and distributed automatically to test devices and equipment in the field. Results can be uploaded automatically in real-time, offering reductions in analysis and reporting time, and solutions are becoming ever more scalable – all important factors in a fast-developing mobile communications ecosystem."

But with so much emphasis on data services, Gowans believes solutions are needed today that can manage the scale of deployments. "Networks can very quickly run out of capacity and the operator must deal with the need to optimise the network to cope with customer demand."

JDSU reckons its *ariesoGEO* platform can help here. According to Gowans, this locates, stores and analyses data from billions of mobile connection events, and gives operators a "rich source of intelligence" to help boost network performance and "enrich" user experience. "This solution can provide

intelligence on more than 130 million subscribers on a single network, and can be processing 35 billion events per day – that's eight times more than the number of Google searches in a day," he claims.

Keysight's Avila agrees that cellcos must address the challenge of integrating intelligence at the access edge: "As a greater variety of services and user types cross the mobile network, it is critical to increase network and subscriber intelligence."

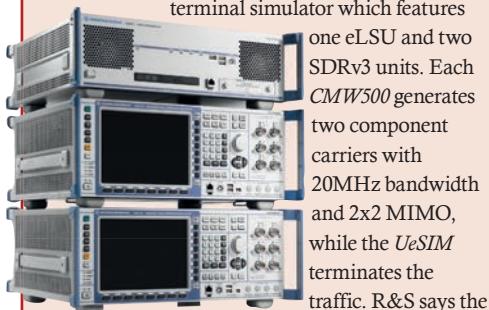
But now a warning. Spirent says the faster data rates enabled by LTE also mean cellcos are experiencing significantly greater competition from the OTT players. Moss says: "If we take the example of VoLTE, it is critical that MNOs are able to objectively and accurately assess voice quality and call reliability, not just compared to their own legacy circuit-switched voice services but also against their competitors' legacy voice and VoLTE services. The same logic can also be applied to competing or complimentary VoWiFi services."

"Furthermore, it's critical to be able to compare the performance of these new IP-based voice services against the OTT services. With such a wide variety of voice services co-existing in the marketplace, it is vital that measurement tools are able to offer support for all legacy and future voice services and devices, regardless of radio bearer, device type or voice carrier." ■

NEW HARDWARE FOR TESTING & OPTIMISING LTE

Rohde & Schwarz (R&S) says it's reached a significant milestone in the commercial evolution of LTE-A. Working with load testing solutions specialist Prisma Telecom, it has successfully completed RF tests for LTE FDD four component carrier aggregation (4CC) in the downlink.

Their solution consists of two R&S *CMW500* wideband radio testers (*pictured below*), the R&S *CMWC* controller, and Prisma's *UeSIM* multi-terminal simulator which features



one eLSU and two SDRv3 units. Each *CMW500* generates two component carriers with 20MHz bandwidth and 2x2 MIMO, while the *UeSIM* terminates the traffic. R&S says the

entire setup can provide downlink rates of 600Mbps – the performance required for testing 3GPP category 11 devices.

In a separate development, R&S claims it has successfully verified combining various frequency bands in TDD and FDD carrier aggregation (CA). During a test that once again featured the *CMW500*, the company simulated an LTE network and says data was successfully transferred to the device under test on multiple aggregated carriers in different duplex modes. R&S says this makes the *CMW500* the only platform to support RF and protocol tests for CA in line with 3GPP Release 12 for TDD/FDD joint operation.

Anite has enhanced its *Propsim F32* LTE-A MIMO radio channel emulator (*pictured right*), enabling users to test new 3GPP features (Release 13 and beyond) in multi-mode base stations and mobile devices. Frequency range support has been extended up to 6GHz so that users can test mobile devices and network equipment for any LTE or LTE-U band, as well as for WLAN frequencies above 5GHz. *Propsim F32* also supports testing of all LTE-A CA schemes defined by 3GPP.

Anite reckons the unit offers the industry's highest RF output power levels and the widest RF signal dynamic range. It says this reduces the need for expensive and sizeable external RF power amplifiers in MIMO OTA anechoic and reverberation chamber installations.

Cobham Wireless' *TM500* range of testers now also support CoMP (coordinated multipoint) transmission/reception, a major feature of 3GPP LTE-A Release 11. The vendor says one of the primary reasons for operators seeing a degraded quality of service with hetnets is poor cell-edge performance due to lack of traffic coordination and interference management between small and macrocells.

The *TM500* already features eICIC to address cell edge interference issues. With the addition of CoMP, it can now coordinate transmission and reception between different cells through the use of load balancing, coordinated scheduling, and the management of signal power and interference.



In the downlink, it's claimed each terminal sees improved data throughput, especially near the cell edges, due to less interference and an increase in received power. For the uplink, RX signal quality and cell edge coverage is improved by simultaneous coordinated reception from different points on the network side.

Late last year, **Keysight Technologies** announced it had verified three component carrier (3CC) end-to-end IP data throughput with its *E7515A UXM* wireless test set (*pictured below*). The *UXM* supports multiple cells, downlink and uplink CA, MIMO up to 4x2, and integrated fading. Utilising three 20MHz component carriers in the downlink for a total aggregated bandwidth of 60MHz, the firm said it had successfully demonstrated 450Mbps downloads/50Mbps uploads (category 9) data rates.

Separately, Keysight's *Signal Studio LTE* software tools now support key features of 3GPP Release 12. The company says they include the latest generation of metrology-grade 256QAM reference signals needed to test physical downlink shared channel and physical multicast channel implementations.

The updates also support the downlink shared channel with limited data rate channel coding for the new category 0 UE as defined by Release 12.



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

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

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

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

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

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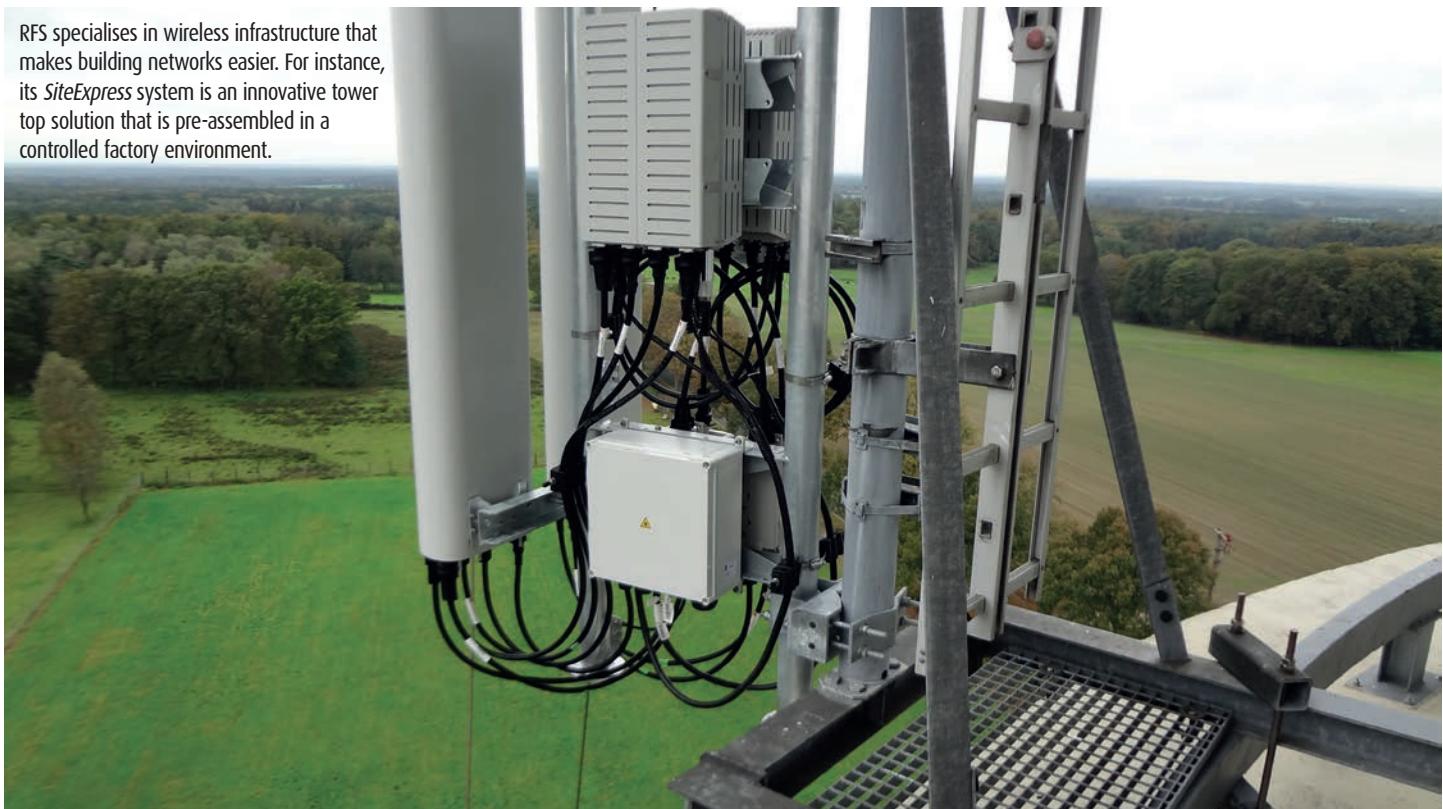
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RFS specialises in wireless infrastructure that makes building networks easier. For instance, its *SiteExpress* system is an innovative tower top solution that is pre-assembled in a controlled factory environment.



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. ■

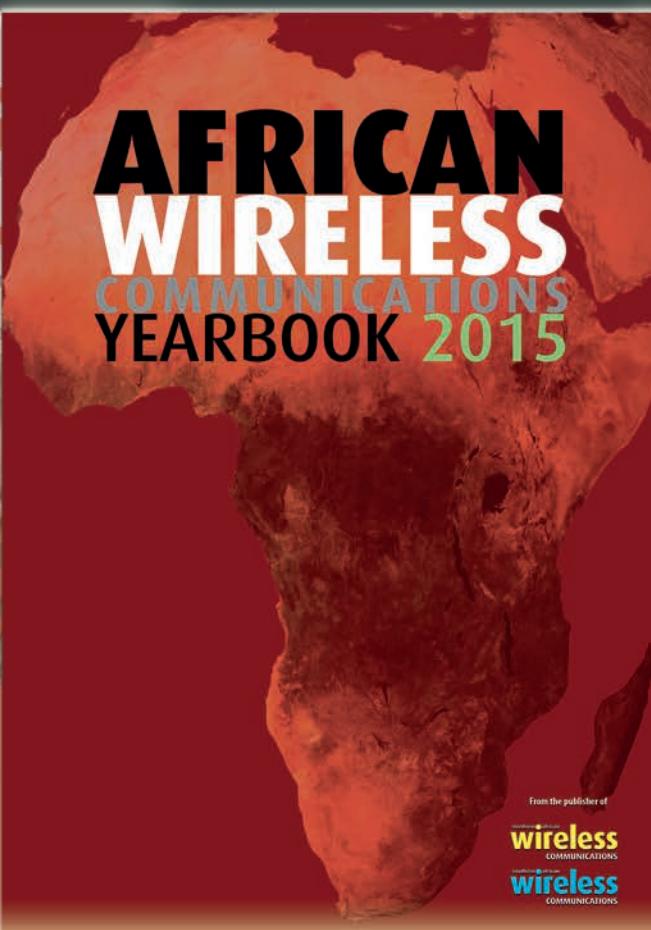
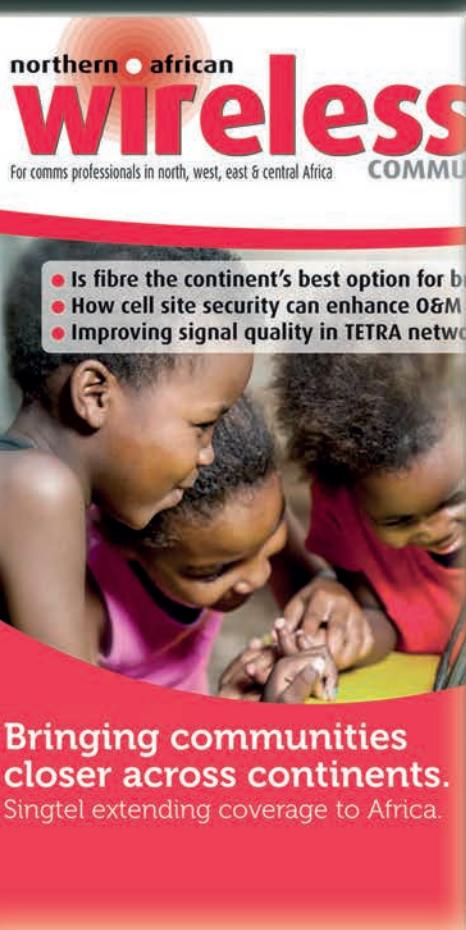


Jean-Louis Hurel,
VP portfolio
& strategy,
RFS

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Dynamic capacity allocation trial first

 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 DAS (distributed antenna systems).

It 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, Dali says resources are only consumed when needed and with elasticity.

Since the network can be dynamically configured with software, the company says 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 its 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.



Dali's *t*-series equipment, including the *RF Router*, *tHost* headend, radio remotes and network management system, was used for the trial.

Bolivian Space Agency certifies Newtec system

 Agencia Boliviana Espacial (Bolivian Space Agency) says it has successfully conducted trials of transmitting more than 500Mbps using 120MHz Ka-band spectrum. The tests demonstrated three main use-case scenarios and leveraged the capabilities of Newtec's *MDM6000* series modems.

As well as being able to transmit up to 425Mbps bi-directionally, Newtec says its modems operate at much lower rates as required for multicarrier applications, and offer support for different standards.

The *MDM6000*s also feature the company's *Clean Channel Technology*. Newtec claims this further improves satellite efficiency by up to 15 per cent compared to the current DVB-S2 standard for IP trunking, backhauling,



ABE's Amachuma teleport is 4,000m above sea level in Bolivia's La Paz region.

and broadcast applications. The Bolivian demos showed how the firm's equipment can be used for applications such as mobile backhaul.

During one test, 2Mbps was transmitted over 1MHz bandwidth using a 1.2m antenna and a 4W hub. It was carried out from the remote to a hub station in Amachuma in Bolivia's La Paz region, and at an elevation of more than 4,000m above sea level.

In another demonstration, 153Mbps was achieved over 36MHz from the hub to the remote station using the same hub and antenna, as well as with a 9m antenna and 200W hub in a set-up typical of VSAT operators.

Newtec says the hub to hub (9m and 200W to 9m) test recorded a result of 257Mbps into 60MHz, an arrangement appropriate for IP trunking, and optical fibre restoration or backup.

Multi-million dollar deal to upgrade GSM-R system on Europe's fastest railway

 Spain's national railway operator has awarded a EUR339m (USD377m) contract for the upgrade of the GSM-R system on its high-speed train networks. Under a 10-year deal, Administrador de Infraestructuras Ferroviarias' (Adif) will work with Nokia Networks, Siemens and Thales.

Nokia will provide its GSM-R core network for geo-redundancy and greater reliability. The company will supply its *Subscriber Data Management*, *Network Directory Server*, *HLR* and *NetAct* management systems. It will also maintain the

communications system, including transport and radio networks, video surveillance, fixed telecoms, and remote power systems.

In addition, the company will supply services for system integration, complete network operations and care, as well as remote management from its global delivery centres.

Siemens will be responsible for maintaining the energy SCADA system of the total network and the fixed communications on the Madrid-Seville line. It will also upgrade the remote terminal units for the switchgear control.

Thales Spain will maintain and modernising the fixed comms and CCTV system on various parts of the high-speed rail network, including the link connecting Madrid, Barcelona and the French Border.

Adif has been offering high-speed rail services in Spain since 1992. The country is said to have the longest high-speed railway network in Europe, and the second-largest in the world after China. Adif says its network now stretches more than 3,100km across Spain, with 300 high-speed trains running every day at an average speed of 222kph.

LG Uplus launches VoLTE roaming service

 Syniverse has helped South Korea's LG Uplus launch the world's first commercial VoLTE roaming service featuring HD voice.

The new service will enable the operator's subscribers to roam on to KDDI's network in Japan, and will also allow LG Uplus to expand coverage to additional markets in the future.

Syniverse installed the VoLTE solution using its IPX network. The firm says this interconnects many of the

world's networks to make LTE roaming possible, and claims it has nearly 800 LTE roaming routes reaching more than 200 operators in 44 countries.

LG Uplus' general manager Hong Jun Choi says: "Because LTE roaming is the pre-requisite to launch VoLTE, Syniverse's reach to nearly every operator that has launched LTE roaming enables us to achieve the critical reach and coverage our subscribers will demand."

According to Syniverse, the three key emerging VoLTE implementation models being implemented by operators include: VoLTE through S8 home routing; local breakout; and VoLTE interconnect.

LG Uplus' VoLTE service uses Syniverse's S8 home-routed platform. It's claimed this allows operators to rapidly deploy VoLTE by leveraging their existing LTE data roaming connections.

"Unprecedented" images of the planet expected from new satellite



The European Space Agency (ESA) has begun its "most ambitious" Earth observation programme to date. Its *Copernicus* mission is based on a constellation of two identical satellites – *Sentinel-2A* was launched in June from the agency's spaceport in French Guiana, while *Sentinel 2B* is scheduled for mid-2016.

Once launched, both satellites will cover all land surfaces, large islands and coastal waters every five days,

optimising global coverage and data delivery for numerous applications.

ESA says each satellite's payload includes an innovative high-resolution camera with 13 spectral bands for a new perspective of the planet's land and vegetation.

"The combination of high resolution, novel spectral capabilities, a field of vision covering 290km, and frequent revisit times will provide unprecedented views of Earth," says the agency.

Amongst its applications, *Copernicus* will provide information for agricultural practices, helping in the management of food security. Images of floods, volcanic eruptions and landslides will contribute to disaster mapping and help humanitarian relief efforts.

The *Sentinels* will also benefit from the ESA's European Data Relay System. This is creating a network for the continuous relay of low-orbit satellite information, and will enable



Sentinel-2A was launched in June via the ESA's spaceport in French Guiana.

data to be transmitted faster using laser links.

Indosat and Smaato claim mobile advertising first



Indonesian operator Indosat and Smaato have teamed up to launch what's claimed to be the world's first digital exchange platform for mobile advertising with real-time bidding.

The Indonesia Mobile Exchange (IMX) provides local and global advertisers with a portal to connect directly with leading publishers in Indonesia and create more personal advertisements for consumers.

To achieve this, it links mobile usage behavioural patterns with existing information processing technology, creating what's described as a "powerful tool" to reach people consuming content on their mobiles.

Smaato is an independent global company specialising in mobile ad real-time bidding. It is said to have partnered with more than 80,000

mobile publishers around the world and is connected to more than 340 partners through its Smaato Exchange (SMX).

IMX will initially partner with the Indonesian Digital Association to reach mobile customers across the country. Indosat says the OTT platform will leverage a variety of mobile networks, including its own, working directly with content owners and providers through leading local publishers such as Kompas Gramedia and OkeZone.

IMX will be supported by Indosat's digital services unit, which also focuses on mobile commerce and mobile payment solutions. Indosat's existing mobile advertising offering, *i-klan*, which currently sits within the unit, will become part of the joint venture with Smaato.

Slovenia telco launches triple-play services via 4G



Telekom Slovenije has developed a solution to provide subscribers with internet, fixed line services and television over its 4G network. The telco launched the solution in areas in Slovenia where broadband cable connections are not possible but LTE is available.

Telekom Slovenije says it is one of the first operators to offer such a solution. Its in-house experts created the entire architecture for the platform, including the network for content provision, systems integration, and the backend systems for service and content management.

To take advantage of the new service, subscribers will receive a modem with SIM-card, an IPTV set-top box, and what's described as a "powerful" set of outdoor antennas. The telco says the user experience

will be comparable to that of using its fixed network, with internet access data rates offering up to 10Mbps for downloads and 2Mbps for uploads.

Telekom Slovenije adds that its aim is to provide 'hybrid coverage'. It says this means it will offer services via a range of paths, both wired and wireless, while the user experience will remain the same, regardless of the technology supporting it.

"Technological advance requires ever greater network convergence," says Matjaž Beričič, director of convergent core network. "The objective of this type of development is to provide reliable, simple and excellent user experience in accessing the desired services – anytime, anywhere – regardless of the technology and network, which can either be fixed or mobile."

IBM claims breakthrough in silicon photonics technology



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.

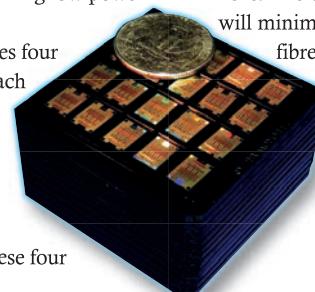
Silicon photonics enables chips to use pulses of light instead of electrical signals over wires to move data at rapid speeds and longer distances.

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

Dutch renew TETRA service

 Critical communications specialist Hytera Mobilfunk has reached a deal with the Netherlands government to renew the country's C2000 emergency services network. C2000 is believed to be one of the first nationwide TETRA networks in Europe, and much of its hardware and software is now reaching its end of life. The renewal consists of three parts: the voice network between control rooms and emergency workers; the paging network for the alarm system; and the radio control for the operations centre.

Small cells in Bahrain

 Batelco is deploying public access 3G enterprise small cells across the Kingdom of Bahrain. As part of a multi-million dollar deal with end-to-end solution provider ip.access, the operator is also covering residential and SoHo indoor deployments across the region. In addition, Batelco has started a 4G trial with the aim of rolling out ip.access LTE small cells later this year. "Small cells provide coverage exactly where our customers need it and mean we can maintain high quality service levels at all times and in all locations," said the operator's CEO, Muna Al Hashemi.

Telenor ends 3G in 2020

 Telenor Norway will shut down its 3G network in 2020, five years before it plans to close 2G. Speaking to investors in early June, CTO Magnus Zetterberg said Telenor's 4G network, which was established in Norway in 2012, now accounts for 60 per cent of all data traffic in the country. He said the company is now targeting a data centric model, and its long-term view is to "dismantle" legacy networks and have 99 per cent of the population covered by 4G.

Improving experience at the individual level



JDSU is helping Japan's SoftBank Mobile (SBM) to improve customer satisfaction by using location intelligence data from its network. The operator will implement the vendor's *ariesoGEO* platform and *GEOperformance* application across its 3G and LTE networks in Tokyo.

JDSU says its geolocation solution is designed for customer-centric RAN planning, optimisation and troubleshooting. The vendor claims *ariesoGEO* is the only solution that



JDSU's Sue Spradley says SoftBank will now be able to maximise the value of geolocated customer data.

supports 2G, 3G and LTE radio access generations.

SBM will leverage the platform's location intelligence features to provide information in near real-time about the customer experience down to the individual subscriber level.

This in turn will enable efficient segmentation and the ability to focus on VIP customer groups, such as corporate accounts.

Sue Spradley, SVP and GM of JDSU's network and service enablement business segment, says: "We will ensure that SoftBank Mobile is able to rapidly adopt new working practices, helping it to maximise the value of geolocated customer data and achieve expected business benefits quickly and seamlessly."

Telefónica and FIEB to apply Internet of Things to biodiversity research



The Internet of Things (IoT) will be used to protect wildlife and ensure animal welfare in Spain as part of an agreement between Telefónica and the Fundación para la Investigación en Etología y Biodiversidad (FIEB; Research Foundation for Biodiversity and Ethology).

Under the partnership, FIEB says it will be able to deploy the most advanced M2M technologies to monitor and analyse the behaviour of the animals kept in its facilities just outside Madrid.

An extensive network of surveillance cameras and numerous environmental sensors will continuously provide the foundation's experts and other researchers with data relating to living conditions, temperature, humidity, sounds, etc. They will also



FIEB will implement a network of surveillance cameras and environmental sensors to monitor animals kept in its facilities just outside Madrid.

be able to remotely observe the physical conditions, typical behaviour, and daily habits of all the animals that live in their enclosures.

Telefónica says that as well as ensuring the animals are kept in ideal living conditions, the systems also keep direct human contact to a minimum. This is said to be a very important factor for certain species, especially if the ultimate aim is to release them into their natural environment.

FIEB president Alejandro Fernández says he wants 2015 to be the year in which the foundation starts to deploy the newest technology and make it available to researchers and conservationists.

"At FIEB we believe that new technologies are one of the greatest allies in the search for research excellence in ethology and biodiversity protection. This goal is made possible, thanks to the agreement reached with Telefónica."

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 programme was unveiled in April by the country's new president, Maithripala Sirisena, who came to 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 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.

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



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.

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