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wireless

For communications professionals in southern Africa

JANUARY/FEBRUARY 2017

Volume 21

Number 5

COMMUNICATIONS

- How to get the best out of the latest satellites
- Connecting the education sector
- Network sharing: boosting performance for MNOs

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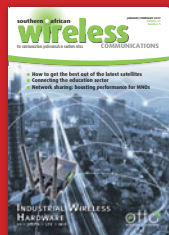
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About Otto Wireless:

Otto Wireless Solutions is a supplier of wireless connectivity hardware, specializing in Industrial GSM, 3G, HSPA and LTE equipment. In addition to supplying industrial modems and routers with back-end management platforms, we also provide GSM and GPS modules, and a variety of other complementary components to OEM design entities.

These product families are well supported by the antennas, RF connectors and locally manufactured custom RF cable assemblies which we supply to the South African Industry.

Our head office is strategically positioned in Randburg, Gauteng, with a sales office in Cape Town. All logistics and stock is managed from our head office.

Our commitment to customer service and technical support has differentiated us in the industry, and set us apart from our peers.

**To find out more about Otto,
turn to page 12**

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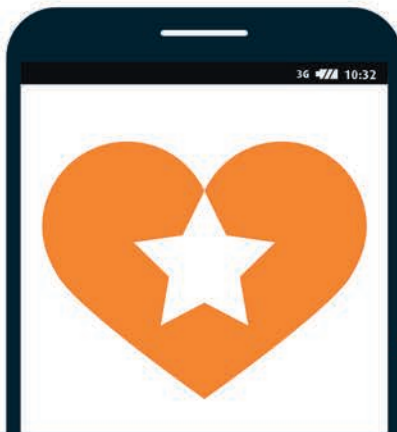
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USSD-based Campaign uses Game Play to Reach and Engage

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

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

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

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

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



About Digitata

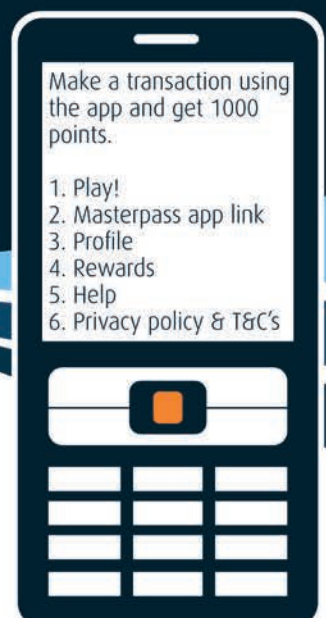
Multinational technology company, Digitata Limited focuses on delivering intelligence in the mobile telecommunications and digital media arenas, enabling mobile operators, brands and agencies to offer their customers greater value and an enhanced user experience.

This is achieved through the application of Machine Learning (ML) and Artificial Intelligence (AI). Our unique technical capabilities with regards to the network, the primary delivery platform in a mobile first world, allows us to manage the delivery of solutions with unprecedented efficiency.

Digitata has a global customer base. Our products have been deployed around the world and are used by millions of subscribers.



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Eutelsat's African broadband "back on track" with Yahsat's help

Following *AMOS-6*'s failure to launch last year, Eutelsat say its African broadband initiative is back on track thanks to an agreement with Yahsat.

Under a multi-year deal signed last October, Eutelsat will use capacity on up to 16 Ka-band spot beams on Yahsat's *IB* satellite in order to roll out broadband services during the first half of 2017. Further expansion will be supported later in the year

using capacity on 18 spot beams on Yahsat's third satellite, *Al Yah 3*, which is scheduled for launch later this year.

The capacity will replace the payload Eutelsat previously contracted on Spacecom's *AMOS-6* which was lost in September following a launchpad explosion (see *News*, Sep-Oct 2016).

Eutelsat originally set up its *Broadband for Africa* initiative in 2015

and re-branded it as *Konnect Africa* last November. By working in close partnership with local partners to promote high-quality broadband at affordable prices for homes and businesses, the company's aim is to accelerate satellite broadband connectivity across the continent.

Under the initiative, Lesotho, Rwanda, South Africa and Swaziland are among the 17 nations that will

be connected this year. They will be joined by seven more countries from 2019, including Angola, Madagascar, Mozambique, Zambia and Zimbabwe, amongst others.

Once *Konnect Africa* is successfully launched during the first four months of 2017, Eutelsat says it will revert to its initial business plan of a revenue contribution of EUR15m in 2017-18 and around EUR25m in 2018-19.

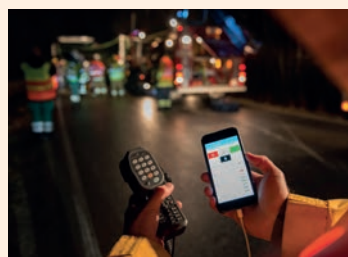
LTE not secure enough for public safety, warns TCCA

The security mechanisms being designed into future LTE standards are not currently at a level to match purpose-designed professional mobile radio standards, warns the TCCA (TETRA and Critical Communications Association).

In a recently published white paper, the TCCA identifies four key focus points for governments to consider if they are looking to implement LTE-based public safety networks.

Among them, it says a review of the security arrangements available in LTE systems and any commercial network that is used should be undertaken by suitably qualified staff.

MNOs already have the ability to



The TCCA says that while there is no simple answer to how mobile broadband should be provided to public safety users, it is essential that any network employed is suited to mission-critical communication.

deliver mobile broadband to public safety services. While many public

safety organisations are already taking advantage of this, the TCCA says it is only for non mission-critical applications, with the traffic carried by a 'best efforts' commercial service.

It adds that for safety critical applications – such as dispatching ambulances, passing on details of terrorist suspects, dealing with major incidents, etc. – it is essential to use networks that are suited to mission-critical communication.

The TCCA also points out that as with any commercial organisation, mobile networks are subject to being bought and sold. As a result, critical national infrastructure could end up being owned by foreign firms. It

advises those responsible for public safety communications to therefore consider national government policy with regard to foreign ownership and operation of telecoms infrastructure.

Spectrum and funding are also highlighted as focus areas in the white paper. The association says the availability of spectrum is essential to enabling choice in the provision of broadband data services. But even if spectrum is secured for public safety agencies, building nationwide infrastructure will be relatively costly in many countries. The TCCA therefore believes that an optimal balance between dedicated and commercial networks will be needed.

Boeing to build new AMOS and GiSAT satellites

Boeing will help expand broadband services in Africa with two new satellites planned for the continent.

In a deal worth USD161m, Spacecom announced in late December 2016 that it had contracted the company to build *AMOS-17*. The new satellite is expected to be launched in 2019 and will cover Africa, the Middle East and Europe.

It will operate from 17°E – the same orbital location that was previously used by *AMOS-5* before all contact with it was suddenly lost at the end of 2015 resulting in its write-off (see *'Rocket Power'* feature, Jan-Feb 2016).

Spacecom said *AMOS-17* will be designed for an in-orbit life of more than 15 years and offer a payload power of around 8.5kW. It will

offer Ka-, Ku- and C-band services, and feature a combination of broad regional beams and high throughput spot beams to maximise throughput and spectral efficiency.

In a separate deal announced in September 2016, Boeing will also build *GiSAT* for Cayman Islands-based Global IP. The spacecraft will be based on Boeing's 702 platform but with a new digital payload offering twice the capacity of previous designs.

Global IP's mission will be to deliver streaming media, digital broadcast and other communications services to sub-Saharan Africa. With a coverage area encompassing 35 countries and 750 million people, it claims *GiSAT* will deliver higher data rates at lower costs than previous

satellites serving the region.

"Our vision for *GiSAT* is to provide end users with connectivity and services that are affordable, rich in local content and truly broadband in nature," said Bahram Pourmand, CEO, Global IP. "With the ability to reconfigure the *GiSAT* on-board processor, the Boeing digital payload will allow us to broadcast different channels to different beams from different locations, providing better service to broadcasters, mobile operators and ISPs."

Scheduled to enter service in 2019, *GiSAT* is designed to operate with more than 10 gateways in Europe and multiple gateways within Africa.

AsiaSat relocates its satellite to cover Spacecom's 4°W orbital position – *Wireless Business*, p15.



GiSAT will feature Boeing's new digital payload technology and provide coverage over sub-Saharan Africa.

Microsoft to use Nominet's TVWS tech

Microsoft and Nominet have teamed up to help ISPs across Africa leverage unused broadcast frequencies and



In Africa, Microsoft is currently supporting TVWS projects in Botswana, Ghana, Kenya, Malawi, amongst others.

deliver low-cost broadband access using TV white space (TVWS) spectrum.

As the available set of TVWS frequencies varies, Nominet has developed a geo-location database that tells devices which spectrum they can use in a particular area, at what power, and for how long. The database allows wireless devices to access TVWS frequencies, and was the first to receive regulatory approval for use in the UK.

As part of its *Affordable Access Initiative*, Microsoft is working with public and private sector partners around the world to develop technologies and business models that will make it easier for billions more people to affordably

get online. The company is currently supporting broadband connectivity programmes in Kenya, Botswana, Malawi, Ghana, amongst others.

To support its goals, Microsoft will use Nominet's TVWS database across its *Azure* cloud platform to enable the deployment of low-cost terrestrial wireless broadband internet to communities across the continent.

It will also leverage Nominet's dynamic spectrum management technology. This has been designed to support two-way communications at relatively high data rates over long distances, and delivers connectivity to large open areas where it would be

difficult to deploy fixed infrastructure.

"Spectrum is a scarce and valuable resource, and demand can outstrip supply," said Adam Leach, R&D director at Nominet. "Dynamic spectrum sharing allows the available spectrum to be used more efficiently than any existing static techniques. Maximising the efficiency of the spectrum usage lowers the barriers to access, enabling more users and devices to get connected."

UK-based Nominet is a global internet company. Since 1996, it has managed and run domain names that end in .uk, and is now said to be one of the world's largest country code registries.

SA radio update plan

South Africa's regulator is updating its National Radio Frequency Plan (NRFP) to ensure efficient use of spectrum.

In early February, the Independent Communications Authority of South Africa (ICASA) said the purpose of the update is to ensure that the NRFP is in line with the latest version of the International Telecommunications Radio Regulations, and reflects the final acts of the *World Radio Conference of 2015 (WRC 15)*.

WRC-15 addressed more than 40 topics related to frequency allocation and sharing for the efficient use of spectrum and orbital resources (*also see News Focus, Jan-Feb 2016*).

Among some of the key decisions taken, delegates agreed on the provision of enhanced capacity for mobile broadband in the 694-790MHz band in ITU Region-1 which comprises Africa, Europe, the Middle East and Central Asia.

ICASA also said an update was necessary to ensure that the NRFP is consistent with SADC's latest frequency allocation plan. This aims to integrate and harmonise spectrum across the community, and was endorsed by its 15 member states in October 2016.

In early February, ICASA invited stakeholders to public hearings which it said will be followed by the development of the Frequency Migration Plan process.

Mobile programme helping to fight HIV

The Vodafone Foundation has announced a pioneering mobile-based HIV programme in Lesotho, where an estimated 23 per cent of the population is HIV positive.

The programme was developed in conjunction with the Lesotho Ministry of Health and has initially been rolled out in the Maseru and Leribe districts.

It combines Vodafone's *M-Pesa* mobile money service with travelling clinics and a smartphone app designed for healthcare professionals which enables the tracking of patients in remote areas. The clinics use a fleet of 4x4 vehicles and provide on-site HIV testing in remote areas as part of a wider effort to provide basic primary healthcare.



The travelling clinics use a special mobile app and fleet of 4x4 vehicles to provide on-site HIV testing in remote areas of Lesotho.

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When people are identified as HIV positive, they are immediately registered with the *M-Pesa* service

and receive the funds needed to pay for transportation to a treatment centre. At the same time, their details are recorded, via mobile, on a central database so that their future treatment and care can be planned and recorded. These details can then be recalled in real-time by healthcare professionals in the field using a smartphone app developed by the Vodafone Foundation and Vodacom Lesotho.

Following the first rollouts, the Lesotho government has now committed to launching the programme across all other districts and integrating it within the country's primary healthcare strategy. It will be fully funded by the government from mid-2017.

Asian telcos to expand in Africa via Djibouti

Two Asian operators will use the Djibouti Data Center (DDC) as a strategic hub for their pan-African expansion.

The DDC serves as a major meeting point for submarine cable systems including the new SEA-ME-WE 5 (Southeast Asia-Middle East – Western Europe) cable which was launched at the end of 2016. Stretching around 20,000km, SEA-ME-WE 5 connects Djibouti with China via 18 landing points including one in Egypt.

Last December, China Telecom Global (CTG) announced that the centre will help facilitate its network expansion in East Africa. CTG is a

founding member of the SEA-ME-WE 5 consortium.

In addition to SEA-ME-WE 5, the DDC provides access to cable systems such as EIG, EASSy, Aden-Djibouti, and Ethiopia-Djibouti. In November 2015, it also announced an agreement with PCCW Global to support the AAE-1 (Asia-Africa-Europe 1) submarine cable network.

Hong Kong-based PCCW Global is a founder consortium member of AAE-1 which spans around 25,000km, uses 100G technology, and has a capacity of more than 40 terabits. The system is due to be ready for service in early 2017.



The Djibouti Data Center is East Africa's first and only Tier 3 carrier-neutral facility with direct access to all major international and regional fibre systems connecting Africa with Europe, the Middle East, and Asia.

About Remote Metering Solutions

Remote Metering Solutions (RMS) is a multi-level organisation, focused solely on the Utilities and Energy Management Environment but also expanding into the Revenue Management sector.

RMS has been active in the Utility Management industry for the past 7 years, the Metering Industry for over 25 years and the Energy Efficiency industry for more than 12 years. They have an exemplary track record with some of the largest listed property funds as well as large private clients.



RMS is one of the few companies globally that have the full range of technology, systems, skills and knowledge to provide a holistic, comprehensive utility management solution across the entire value chain. The strategy is based on the premise that at the end of the day, the customer is only interested in having their problems solved holistically and not in bits and pieces.

Their services include installation and continued utility management for investment properties, gated communities / security complexes, municipal revenue management and meter and consumption information.

With offices in Pretoria, Sandton, Durban and Cape Town and a staff complement in excess of 100 people, RMS is well positioned to manage the entire process across the total client portfolio on a national basis.



Challenges

Jan Dekker, Operations Manager at RMS says monitoring their own field workers has been an issue for the company; "Our meter readers and installers are out in the field for at least a month at a time and so we rarely get to see them.

They mainly use their own transport and we need to know they have been to the correct location, to substantiate their fuel claims we need to know which route they took, and if they have actually read the meter or completed the installation or repair job."

As with all private properties, practically all municipalities are faced with the dilemma of revenue management in terms of being able to account for what has been sold versus what has been supplied. RMS functions as a regulator between the municipality or landlord and the consumer, to insure that every consumer gets billed correctly and fairly.

"Conflict over meter readings and billings are a constant problem across South Africa," Dekker says. "In addition, because we supply and maintain large systems in gated communities, campus buildings, and other properties, we must maintain good relationships and customer service."

"The clock-in/out feature, Google Mapping GPS breadcrumb trail, and web-based reports show us immediately the location of the employee and the route they took. This has eliminated issues about hours worked and reduced fuel costs," says Dekker.



Results

Using Econz Wireless Timecard GPS, Dekker says the company realised some immediate benefits.

"We drew up an employee agreement with the company stating the use of Timecard GPS was a management tool and communicated this to our field staff. Any resistance (which was minor) was perceived as them having something to hide, so we undertook further explanations and communications.

"The clock-in/out feature, and the breadcrumb trail web-based reports show us immediately the location of the employee and the route they took. This has eliminated issues about hours worked and reduced fuel costs," says Dekker.

RMS also uses the Timecard GPS Job Card system and can now send a technician nearest to the customer site to fix whatever problem has been reported. It also issues job numbers.

"Within three months we have seen a real change in attitude in our field workers," Dekker says. "Because there's no time wasted on tagging meters, repairs, installations and travel, the guys are finished quicker and earlier and asking us for extra work! This means everyone benefits and our customer satisfaction has increased. Timecard GPS has delivered what we needed to increase productivity and reduce costs on fuel and time delays."



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Mak Rahnama,
senior technology
analyst,
GlobalData

ON THE NETWORK

Telcos and data centre services

Telcos in sub-Saharan Africa, which have traditionally focused on voice and data connectivity, are increasingly looking to expand their enterprise services portfolio and transition towards offering IT services. Data centres are a key pillar for them to provide colocation, managed platforms, cloud services, amongst others.

The key drivers in the adoption of data centre services in the region include increasing fixed broadband coverage and a growing number of submarine cables providing improved wholesale and international connectivity. This has led to the data centre competitive landscape developing significantly over the past few years, as in addition to telcos and dedicated providers, governments are also launching data centres and selling these services to enterprises.

However, enterprises have limited familiarity with data centre services, making it a key barrier to adoption. Telcos need to address this in their go-to-market strategies by launching targeted awareness campaigns to inform and educate the market about such services.

One commercial strategy deployed by providers of data centre services in sub-Saharan Africa involves using the technical features of their facilities as the main way to differentiate service offerings. These include access to a reliable power supply, a feature that is particularly important in a region plagued by unreliable national electricity grids.

Investment in data centres allows a telco to strategically position itself to cater to the demand for IT services from the enterprise segment. It expands the operator's revenue stream to beyond just connectivity services. Failing to capitalise on the opportunity for data centres would mean telcos risk missing out on a key revenue opportunity and an important component in their enterprise services portfolio.

MTN trials unique PtMP platform in South Africa

Intracom Telecom says it has successfully completed a live field trial of its point-to-multipoint (PtMP) *StreetNode* platform in South Africa.

The trial took place in Johannesburg late last year. According to Greece-based Intracom, the aim was to evaluate *StreetNode*'s "unique capabilities to provide the most advanced high-quality and high-availability services to MTN's enterprise customers".

The platform was tested in both a lab environment and external network.

Software-defined operation allowed activation and reconfiguration in the field in PtMP mode, demonstrating what Intracom describes as "unparalleled flexibility".

StreetNode is based on a self-organising network. According to Intracom, while traditional PtMP technology only allows homing to a single base station, the trial with MTN successfully proved that its platform



automatically reconnects to alternative base stations in the event of the primary base station failing, thus re-establishing connectivity for subscribers rapidly.

It adds that the trial also confirmed that non-technical telecom engineers could install and commission the *StreetNode* unit quickly and easily, even at night, thanks to its unique auto-alignment feature.

RADWIN PtMP in Namibia and Botswana

Windhoek's Police Department in Namibia has replaced its Wi-Fi network with a wireless video surveillance system based on broadband access equipment from RADWIN.

Police spokesperson Cillie Auala said: "Initially, we used a Wi-Fi-based solution for CCTV transmission, but decided to upgrade our legacy network because it did not meet our requirements for high-capacity transmission and our safety and performance standards."

Namibia aims to be the safest African country by 2020. As part of that ambition, RADWIN's point-to-point and point-to-multipoint

(PtMP) systems were installed in dozens of crime hotspots throughout Windhoek. The systems are said to transmit high-quality video from the cameras directly to police headquarters, enabling on-the-spot detection and response to events.

"Now that we are using RADWIN's systems, we're getting the highest video transmission quality with zero video pixilation and low jitter, which is vital for our mission critical operations," said Auala.

Meanwhile east across the border in Botswana, RADWIN said a "massive" broadband network has been deployed using its *JET* beamforming point-to-

multipoint radios. System integrator GDS Botswana is responsible for project implementation. It did not name the client but said that the service provider was a long-standing RADWIN customer that has been using the PtMP radios to serve the government sector.

According to GDS, when the client sought to expand its footprint to deliver best-effort broadband services to unserved homes, analysis showed that *JET* allowed deploying and scaling a new network at a fraction of the cost of implementing DSL. It also claimed that the system delivers "significantly higher" capacity than DSL.

Firms demo first Gigabit Class LTE in Africa

Ericsson and Qualcomm say they have successfully demonstrated Africa's first over-the-air Gigabit Class LTE with the use of licensed spectrum.

Gigabit Class LTE (LTE Category 16) means up to one billion bits of information delivered to a mobile device in one second. It utilises three-carrier aggregation (CA) with 256 QAM, and by applying 4 x 4 MIMO across 40MHz of spectrum.

It's claimed that during the demo, peak data speeds of more than 900Mbps were recorded using Ericsson's RAN equipment and a Qualcomm *Snapdragon X16* LTE modem mobile test device.

The *X16* is Qualcomm's first processor to support LTE-A Pro. According to the firm, the modem



Left: The demo used an LTE modem with Qualcomm's first chipset to support LTE-A Pro. Right: Ericsson has also teamed up with chipmaker MediaTek to bring affordable LTE-A handsets to Africa.

can receive 10 streams of LTE data simultaneously using four antennas. It claims the device uses better signal processing to extract more bits out of every LTE transmission, boosting the throughput of each of the 10 streams to around 100Mbps.

In a separate development, rival mobile chipmaker MediaTek is also working with Ericsson to make LTE-A

features available in mainstream mobile devices across Africa. Mobile devices that can currently support this 4G standard can cost as much as USD800. MediaTek says its chipset technology, which enables consumers to take advantage of the benefits of carrier aggregation, will be available on affordable handsets for the mass market in Africa.

Tablet Comunitário brings the internet to remote communities

Mozambican technology startup company Kamaleon has developed what it believes is an “innovative and engaging” way of promoting digital literacy through a shared platform.

The *Tablet Comunitário* (*Community Tablet*) is a solar powered mobile computer. Built on a trailer to provide internet access to remote areas, it features touchscreen displays and virtual keyboards. Kamaleon is also offering training on how to use the internet to members of the community and the local workforce.

The company's ultimate aim is for the *Community Tablet* to promote digital inclusion and a knowledge-based society in Africa.

It began last November by launching in Mozambique where 24 million people reportedly lack an internet connection. Kamaleon said the system will be used to support

campaigns on various education and health initiatives in partnership with governmental and private organisations. The *Community Tablet* will be used to spread up-to-date messages and interactive lessons that showcase symptoms, prevention and treatment options, thereby replacing the need for leaflet distributions to convey life saving information.

Kamaleon founder and CEO Dayn Amade said: “A few years ago, anyone who could not read and write was considered illiterate. But today, this concept goes further, encompassing people who do not know how to use ICT.

“Health organisations and schools in Africa often face a unique set of obstacles, including a lack of access to much-needed health education and counselling platforms. The *Community Tablet* was created to help solve these problems.”



The solar powered *Community Tablet* is quite literally a mobile device. It is built on a trailer so that it can be towed (top), and features touchscreen displays and virtual keyboards to provide internet access to people in underserved areas (bottom).

USD1m to boost history for Africans by Africans

The MTN Group is supporting a drive by the UN's Educational, Scientific and Cultural Organisation (UNESCO) to rewrite Africa's history from an African perspective.

The groundbreaking General History of Africa (GHA) project began in 1964 and was the first of its type to present the entire history of the African continent, free from discriminatory prejudices. The initiative also aims to ensure that the revised history is commonly known

and accessible to the public at large.

The first phase of the project was completed in 1999. Over a 35-year period, more than 350 of the world's foremost experts on African history, linguistics, fine arts, performing arts, musicology and natural sciences worked to produce eight volumes of content in 12 languages, highlighting the shared heritage of Africa's people.

The second phase, which began in 2009 and is currently running, focuses on the compilation of a ninth

volume. Scientists are also utilising this phase to expand the history curricula and educational materials for primary and secondary schools, based on the first eight volumes already compiled.

MTN is supporting the project with a USD1m donation over two years which will partly be used to fund the compilation of the ninth volume. This will take into account the latest developments in scientific research and the major events that

have occurred in Africa since 1990, as well as the new challenges faced by the continent and its diaspora.

Chris Maroleng, the MTN Group's executive for corporate affairs, describes the GHA project as a “crucial education initiative which is aimed at re-appropriating the interpretation and writing of Africa's history”.

GHA Volumes 1-8 are available on the UNESCO website at <http://tinyurl.com/gu3aq5t>



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ABS-2A goes live



ABS-2A began commercial service on 21 January 2017 following its launch last June and subsequent successful testing. Equipped with 48 Ku-band transponders, the all-electric Boeing-built satellite orbits at 74.725°E and will serve customers in Africa, the Middle East, Russia, South Asia and South East Asia. ABS says it has now completed its investment to build and launch three satellites in three consecutive years.

SENTECH to use *Dialog*



State-owned broadcasting signal distributor SENTECH will use Newtec's *Dialog* multiservice platform, including the MDM2500 IP satellite modem, for 800 of its sites across South Africa. The new system will provide SENTECH with capabilities for DTT signal monitoring, IP multicasting, radio backhaul, point of sale support, and government disaster recovery connectivity. The migration from the current platform to *Dialog* began in November and will use standard Ku-band capacity.

Celebrity connections



Mobile users in Zambia will be able to receive regular updates on their favourite celebrities and sports clubs following Zamtel's launch of Kirusa's *InstaVoice* services. Using the voice blogging feature, celebrities can record voice messages which are delivered instantly to fans, creating what Kirusa describes as a "voice Twitter-like experience". Subscribers can also opt for a sports content service to receive daily football alerts and updates from their favourite clubs. Content include team news, pre- and post-match analysis, and quotes from players and managers.

Indian Ocean Xchange will offer open access

IOX Cable is building its third undersea fibre system to connect Mauritius to Africa and the rest of the world.

Part of Indoi Ltd, the company will work with Mauritius Telecom on building the USD150m extension to the IOX (Indian Ocean Xchange) cable. It will link directly to the existing submarine cable that facilitates connectivity to Madagascar, Réunion, Mauritius and Rodrigues.

Two fibre pairs will connect to an existing cable system near Toliary in Madagascar, while another two



IOX will be the first submarine cable system connecting Rodrigues to Mauritius and the rest of the world.

fibre pairs will provide the option to connect to any new future cable systems off Africa's east coast or as

an extension to South Africa.

IOX claims it will offer the region's first open access cable system, giving any licensed operators the opportunity to benefit from the latest technology and seamless access.

The company adds that by 2019 it will convert Mauritius to an international data hosting centre and key exchange point in the region by connecting links across Indian ocean islands. The IOX cable is expected to be ready for commercial service by the first quarter of 2019.

Angola aims to become regional hub

Angola Cables is hoping to establish its home country as one of Africa's leading hubs for internet connectivity with two new partnership deals.

Last November, it announced the selection of Teraco as the colocation partner to deploy its first point of presence in South Africa. The new POP became operational in December.

In Africa, Angola Cables has focused on SADC's 15 member states. It will also offer direct connectivity to the Americas via Fortaleza in Brazil once the South Atlantic Cable System (SACS) goes live in 2018 (see *News*, Mar-Apr 2016). Angola Cables CEO Antonio

Nunes said: "We're growing a strong IP ecosystem among countries in Southern and Western Africa, as well as in South America."

As well as offering the first South Atlantic route to connect Africa and Americas, SACS will also provide a new route to customers in Asia in the southern hemisphere, as well as a range of connectivity and content services to global organisations.

In a separate deal, Angola Cables will work with Frankfurt-based internet exchange operator DE-CIX to help grow Africa's digital economy. DE-CIX says it is known for building peering bridges from

Europe to Africa and vice versa. By using Angola Cables' IP POPs, its Angonix IPX based in Luanda, or DE-CIX's exchanges in Europe, North America and beyond, it claims customers in the SADC region can now easily connect to more than 1,000 international and national networks.

Commenting on the partnership with DE-CIX, Angola Cables CCO Artur Mendes believes the enterprise mobility technology stack will require cloud services that are able to scale. "By aligning our forces and expertise, we are able to work on closing the productivity gaps that exist in almost all African countries," he said.

Growth in demand for African peering

Workonline Communications says it has seen the demand for remote peering services grow dramatically in Africa since partnering with the London Internet exchange (LINX) in 2015.

Speaking in November, Workonline's business development director Edward Lawrence said: "Since joining the LINX reseller programme a year ago, we have seen a large uptake in requests for remote peering services from sub-Saharan Africa to the LINX. The fact that LINX is a member run internet exchange makes it even more dependable, and ensures that it keeps the interests of the community at heart."

LINX currently has more than 25 members in Africa, ranging from national telecoms providers to ISPs,



Workonline's Edward Lawrence has seen a large uptake of peering services from SSA to LINX.

mobile networks and carriers. It's claimed that through LINX, they are able to reach 80 per cent of the total global internet, and connect with more than 700 members from 70 countries. Workonline said that makes the IXP one of the biggest connection points in the world with traffic peaks of more than 3.3Tbps on its public peering platform alone.

Founded in South Africa in 2006, Workonline is said to run one of the

region's largest IP transit networks. By connecting to LINX, the company said it can lower the number of hops to other networks, and troubleshooting issues will become "less painful".

Workonline also said that the partnership enables it to lower the barrier to entry for networks looking to reach the LINX peering fabric from sub-Saharan Africa.

It further claimed that reaching LINX peers over the Workonline network helps ISPs to make the most of the benefits of peering in London. "Among the benefits for Workonline's clients are reductions in IP transit costs and not having to build and manage their own infrastructure in Europe," stated the firm.

Liquid and GlobalReach launch managed Wi-Fi

Businesses in Africa that want enterprise-grade Wi-Fi without the worries of procuring and managing a WLAN can now benefit from a new managed service from Liquid Telecom and GlobalReach Technology.

It's claimed users ranging from the smallest cafés to the largest shopping malls and hotels will be able to offer Wi-Fi securely to customers without having to incur high installation costs.

According to Liquid, the partnership with UK-based GlobalReach brings the "power and scale" of a global Wi-Fi enabler into its core network and data centres, allowing its customers to benefit from the latest Wi-Fi technology deployed in-country.

The service combines connectivity from Liquid with hardware from Ruckus Wireless and GlobalReach's cloud-based platform which provides authentication, authorisation and accounting. It enables businesses offering Wi-Fi to their guests to connect and engage with them through

customisable and branded captive portals, and tap into new commercial opportunities. The platform is also said to offer "comprehensive" analytics of user demographics and engagement. This will allow businesses to better understand customer behaviour, and

tailor their services accordingly.

Liquid's existing managed Wi-Fi customers, along with its public Wi-Fi networks, will be migrated to the new GlobalReach platform over the coming months. The new service can be bought for a fixed monthly fee



Liquid Telecom said consumers now expect free and reliable Wi-Fi when visiting many public venues.

and is now available in Zimbabwe, Zambia, Rwanda, Uganda, DRC and Kenya, with Tanzania and South Africa following soon.

Ku-band happiness from iWay

iWayAfrica has launched what it describes as a "much needed" pan-continental Ku-band managed retail satellite service.

Jola – which is said to mean 'one who brings happiness' – aims to provide affordable satellite internet to households and businesses in sub-Saharan Africa, including those in areas with limited connectivity options.

According to Ali Bofulo, iWayAfrica's general manager, *Jola*'s pricing is lower than any existing Ku-band satellite services. He adds: "We are offering users true flexibility to select a monthly data allowance and speed that suits their needs."

Some of the features offered include the *Jola SOS* business continuity service, a 1GB emergency data advance for those occasions when a user's data allowance has expired, free night usage, and others.



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Liquid Telecom wins all approvals for ZAR6.55bn Neotel takeover

Liquid Telecom has received unconditional approval from ICASA (Independent Communications Authority of South Africa) for its ZAR6.55bn acquisition of Neotel. This follows approval from South Africa's Competition Commission last October. The deal is expected to close during 1Q17.

Liquid's partner, South African investment group Royal Bafokeng Holdings (RBH), will own a 30 per cent stake in Neotel. RBH CEO Albertinah Kekana says: "Together, we are well positioned to expand through telecommunications infrastructure and services sector in other key markets beyond South Africa."

Liquid Telecom, which is majority-owned by Econet Global, claims that combining its network assets and service platforms with Neotel's will give it "unrivalled" reach across Eastern, Central and Southern Africa. It says this will enable it to offer access, via a single connection, to more than 40,000km of cross-border, national and metro fibre networks across 12 countries.

Since its launch in 2006, Neotel is said to have invested more than ZAR7bn in infrastructure, deploying a nationwide backbone fibre connecting the top 40 cities and towns in South Africa. It's claimed the company connects more than 5,000 businesses and passes close to another 100,000 addresses.

It has fully redundant backhaul fibre to landing stations with access to all five of the international submarine cables serving South Africa (SAT-3, SAFE, SEACOM, EASSy and WACS). Neotel also operates one of Africa's largest Ethernet networks.

The transaction includes two of the company's Tier 3 data centres in Johannesburg and Cape Town. Liquid says the facilities will complement the East Africa Data Centre which it operates in Nairobi.

Getting the green light for its Neotel acquisition follows a period of significant expansion for Liquid. Towards the end of last year it signed a joint venture agreement with the Botswana Power Corporation

(*Wireless Business*, Nov-Dec 2016), and in December it received regulatory approval for the acquisition of Tanzanian ISP Raha.

Raha is said to serve more than 1,500 businesses as well as a growing number of retail customers with a range of connectivity solutions, including fibre, satellite, WiMAX and Wi-Fi. It operates a metro network throughout Dar es Salaam's central business district as well as other areas of the capital.

Liquid says the acquisition – which marks its debut in Tanzania – provides its enterprise and wholesale customers with direct and faster access to the country, as well as to the Eastern, Central and Southern African regions.

Internet Solutions enters consumer market with MWEB acquisition

Pan-African communications service provider Internet Solutions has entered into an agreement to acquire the business of MWEB Connect.

Financial details were not given in the announcement that was made in December through Internet Solutions' parent company Dimension Data. The transaction is subject to approval by South Africa's competition authorities and shareholders, and if successful, it is expected to close during the first quarter of this year.

MWEB is said to be one of South Africa's largest ISPs and has around 325,000 customers. Its successful acquisition will immediately give Internet Solutions a presence in the rapidly growing consumer market.

"For nearly 20 years MWEB has been connecting people and, like Internet Solutions, technology is at the core of our business," said MWEB CEO Derek Hershaw. "MWEB and Internet Solutions have been laying the foundations for a connected world for many years and we have a common vision of providing seamless connectivity for the consumer at home, on the move, in the office, and in public spaces."

Founded in 1997, MWEB is owned by MultiChoice South Africa Holdings, which is 50.7 per cent

owned by black South Africans and is a subsidiary of Naspers.

S&P lowers Cell C rating again

Ratings agency Standards & Poor (S&P) has lowered its long-term corporate credit score for South African MNO Cell C for the second time in recent months. In December 2016, the operator was downgraded from 'B' to 'SD' (selective default). In early February 2017, this fell again to 'D' (default).

At the same time, S&P has also lowered its issue rating from CC to D on Cell C's EUR400m senior secured bonds due in 2018. The agency said it had revised the recovery rating on the debt from 3 to 4 because it expects an approximate 45 per cent recovery in the event of a payment default, and if current restructuring negotiations with lenders are unsuccessful and the company goes into administration.

"The downgrade reflects our view that the delay in concluding the restructuring agreement continues to constrain Cell C's liquidity, and that the company's decision to miss interest payments in January 2017 on its EUR400m senior secured bonds due in 2018 is a default," said S&P.

Currently, Cell C and its shareholders are revising the company's refinancing structure. According to S&P, Cell C had

received waivers from its lenders for missing principal payments through January 2017 on its debt instruments, but it is now beyond the waiver period and has missed interest payments on its senior secured bonds.

It added that Cell C has not sought bankruptcy protection, and is therefore expected to continue to operate and meet its non-debt obligations, including payroll and suppliers.

Cell C and its shareholders are currently revising the company's refinancing structure, but this has been delayed. S&P said the December downgrade reflected this. In a previous update, it had assumed that a ZAR8.5bn (about USD600m) equivalent bond was to be raised in US dollars. This would have been followed by an equity investment of ZAR16bn from 3C Telecommunications (mainly owned by Oger telecom), Blue Label Telecoms, and Cell C's management and staff.

S&P said the revised recovery rating and lower recovery prospects are mainly due to uncertainty over a potential buyer's ability to have unrestricted use of Cell C's spectrum, and the resulting impact to its value in a bankruptcy scenario. If the restructuring negotiations conclude successfully, the agency said it could revise its recovery ratings based on the new capital structure and ownership.

Dandemutande acquires YoAfrica

Zimbabwean broadband internet access provider Dandemutande Investments has purchased local ISP YoAfrica for an undisclosed sum.

Established in 1997, Dandemutande is licensed to use 30MHz paired 2.5GHz spectrum to provide internet services to Zimbabwe's wholesale, corporate and retail markets. In May 2015, it became part of Gondwana International Networks and operates the AfricaOnline, iWayAfrica, uMAX and Utande brands in the country.

It's claimed the acquisition allows the merged companies to harness YoAfrica's "best-in-class" technical expertise with Dandemutande's infrastructure and pan-African reach to provide enterprise customers with a 'one-stop shop' for all their connectivity requirements.

Dandemutande CEO Nhena Nyagura said: "The combined

Dandemutande CEO Nhena Nyagura reckons the merged companies will offer a "formidable mix of solutions and services".



business now possesses a market leading talent pool coupled with a formidable mix of solutions and services that will translate into dynamic growth for Dandemutande.”

The transaction remains subject to regulatory approval. If successful, Dandemutande said it will strengthen its national presence with additional regional POPs and an office in Victoria Falls, and widen YoAfrica's reach for its strong enterprise base. It also claimed that Dandemutande will have the largest VSAT customer base nationally.

YoAfrica shareholder and MD Mark Kalweit will become a member of Dandemutande's executive management team.

Ericsson expects mobile infrastructure market decline in 2017

After last year's dismal financial results which ultimately led to the departure of Hans Vestberg as its CEO last July, Ericsson is trying to reassure backers that it will continue to focus on accelerating its strategy execution and improve performance.

At its annual meeting of investors held in New York last November, the Swedish company said the total addressable market is expected to grow by one to three per cent in 2016-2018, despite an expected decline in the mobile infrastructure market by two to six per cent this calendar year.

Ericsson's strategy for faster business execution is based on a new company structure that was implemented in July 2016 and features three segments: Networks; IT and Cloud; and Media.

Jan Frykhammar – who officially took up his position as Ericsson's new president and CEO on 16 January 2017 – said: “We are forcefully executing our strategy to drive incremental profit improvements through greater efficiency, monetising our installed base in Networks and building new revenue base in IT and Cloud and Media. Current focus is on speed, efficiency and fine tuning of strategy execution.”

Based on its new segment structure with products and services combined,

Ericsson estimated an addressable market for its Networks division of USD100bn in 2016, with -2 to 0 per cent CAGR growth during 2016-2018. For IT and Cloud, it estimated an addressable market of USD100bn in 2016, with five to seven per cent CAGR growth during 2016-2018. And for Media, it estimated an addressable market of USD12bn last year, with nine to 11 per cent CAGR growth over 2016-2018.

Starting 1Q17, the firm will introduce a new financial reporting structure based on the three segments. The restated numbers for 2015 and 2016 will be disclosed ahead of the 1Q17 report. Meantime, it has provided the following high level, unaudited numbers for the new segments based on FY15:

- ❖ Networks: 75 per cent of net sales with mid-teens operating margin, excluding restructuring charges
- ❖ IT and Cloud: 20 per cent of net sales with break-even operating margin, excluding restructuring charges

- ❖ Media: five per cent of net sales with negative low-teens operating margin, excluding restructuring charges

MTN exchanges shares in INT Towers

The MTN Group will exchange its 51 per cent interest in Nigeria Tower InterCo, the parent company of INT Towers, for an additional shareholding in IHS Holding.

As a result of the transaction MTN's interest in the IHS Group will increase from around 15 to approximately 29 per cent. The operator said this will enable it to simplify its tower ownership structure and diversify its tower infrastructure exposure across the IHS Group which operates in a number of markets across Africa. In addition, it said that the transaction will better enable it to “crystallise value” for shareholders in the future.

Until now, MTN's interest in IHS was non-voting. Following the transaction, and to ensure IHS Group's continued independent and

INVESTMENTS, MERGERS & ACQUISITIONS

Date	Buyer	Seller	Item	Price	Notes
20/10/16	Wipro	Appirio	Company	USD500m	Wipro claims its take-over of the US-based global cloud services company will create one of the world's largest cloud transformation practices in today's 'as-a-service' & digital economy.
1/11/16	SpeedCast	Harris CapRock	Company	USD425m	SpeedCast says acquisition strengthens its “already strong” position in maritime industry, in which Harris CapRock has a leading position in the fast-growing cruise sector. The combined entity will service more than 6,200 vessels, hundreds of rigs & platforms, as well as enterprise & government customers around the world.
19/12/16	SoftBank Group	OneWeb	40% stake	USD1bn	The Japanese technology giant has become the biggest stakeholder in OneWeb which is now estimated to be worth USD2.5bn. Softbank founder Masayoshi Son has reportedly told new US president Donald Trump that he will put USD50bn into US businesses & create 50,000 jobs over the next four years.
7/2/17	Wari Group	Millicom	Tigo Senegal	USD129m	Wari Group said combining its platform for digital financial services with the benefits of mobile telephony will offer “more convenient & affordable services to users”.

LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
1/2/17	RSCC	Russia	FY16	RUB	11.4 (bn)	NA	NA	Revenues up 24 per cent compared to 2015's RUB9.2bn. 40% came from international earnings. Entered Latin American in 2016, & “significantly expanded” customer base in South Africa through provision of backbone links, corporate applications & services to MNOs.
1/2/17	Vodacom Group	South Africa	4Q16	ZAR	21,222	NA	NA	International service revenue declined 8.2% (+3.4% normalised) to ZAR4,206m; impacted by customer registration processes & currency volatility. South Africa service revenue grew 5.5% to ZAR13,410m.
2/2/17	Motorola Solutions	US	FY16	USD	6,038	NA	3.17	YoY sales increased 6%. Growth of 33% in Europe, Middle East & Africa region driven by Airwave sales in the UK.
9/2/17	Eutelsat	France	1H16	EUR	755.1	588	NA	Revenues down 0.9% YoY but in line with expectations. Upcoming joint-venture with ViaSat paving the way for future growth in connectivity from 2020s. Secured Ka-band capacity from Yahsat to enable launch of African broadband initiative (<i>Konnect Africa</i>) in H2 2016-17.
9/2/17	Infinera	US	FY16	USD	870.1	NA	(0.17)	Fall in GAAP revenue compared to USD886.7m in 2015. CEO Tom Fallon said “product transition is currently holding back revenue growth” but believes results will improve in 2017 following launch of next gen <i>ICE4</i> products.
14/2/17	Gilat Satellite Networks	Israel	FY16	USD	279.6	19.2	NA	Revenues up 42% from \$197.5m in 2015; growth driven by broadband & in-flight connectivity. Aiming for 2017 revenues of between USD280m to USD300m & adjusted EBITDA of around USD20-24m.
15/2/17	Cisco	US	2Q17	USD	11.6 (bn)	NA	0.47	Total revenue was down 2%, with product revenue down 4% & service revenue up 5%. Revenue by geographic segment was: Americas down 3%, EMEA flat, & APJC down 3%.

competitive proposition, MTN's influence remains significantly constrained by limitations on voting rights, no board representation, and restrictions on access to information.

Intelsat and Sonema to support enterprise networks

Sonema has extended an agreement with Intelsat to provide satellite services to enterprises in Africa.

Monaco-based Sonema is a telecoms service provider which owns and operates two teleports in France. The company said it supports more than 650 VSAT sites for banking and financial institutions across the continent, and the majority of the networks are supported by C-band services from *Intelsat 14* which orbits at 315°E and *Intelsat 904* at 60°E.

Using Intelsat's global infrastructure, Sonema said it will provide "enhanced" communications services to customers on the continent. Jean-Philippe Gillet, Intelsat's VP of EMEA sales, said: "This agreement ensures that Sonema's customers will be able to expand their operations knowing that each of their sites will have access to the same level of reliable broadband connectivity, regardless of location."

Under the multi-year extension, Sonema will integrate C-band connectivity from *Intelsat 33e* to expand services to more remote

regions of Africa. *Intelsat 33e* was successfully launched last August and is the second satellite to use Intelsat's *EpicNG* high throughput system.

Intelsat 33e was due to enter service during 4Q16 but this was delayed due to a malfunction in the primary thruster which meant orbit raising took longer than planned. The satellite eventually entered service on 29 January 2017.

Sonema hopes the combination of Intelsat's *33e* and *14* satellites will enable it to provide customised solutions, with a focus on robustness and high quality of experience.

The firm's MD Catherine Delom said: "The banking sector is a major growth engine for Africa. As such, our customers depend on the highly reliable and secured corporate networks we deploy and maintain for them.

"*EpicNG* will also enable the option to offer our customers new, innovative solutions and services that can be easily delivered via C- and Ku-band spot beams to the most remote locations."

Opengear extends African reach

Opengear has signed a new distribution agreement with Hardware Group to serve channel partners across Southern Africa and Europe.

Based in Johannesburg, the Hardware Group has been operating in South Africa since 2002, and also has offices in the Nordics, UK and

US. The firm is a global provider of IT solutions, services and support, and is said to have accreditations across multiple vendors.

The group has worked with Opengear for six years and this latest agreement expands a distribution deal to cover more of Europe and Southern Africa. It includes the full portfolio of Opengear products which are offered alongside a wider range of accessories and third party add-ons to provide partners with what's claimed to be a "simple and efficient" product acquisition and delivery process.

US-based Opengear specialises in critical infrastructure management solutions through what it describes as advanced console servers, remote management, monitoring, and cellular out-of-band products.

IN BRIEF...



In early February, critical communications specialist Sepura announced that its shareholders had approved a takeover bid by China's Hytera Communications Corporation. Sepura said that the majority of its scheme shareholders who voted, representing 97.07 per cent, voted in favour of the resolution. At the time of writing in mid-February, the companies were still waiting

for approvals from the competition authorities in Spain and Germany.



Bharti Airtel is reportedly looking into consolidating some of its African operations in an effort to reduce company debts of around USD12bn. Speaking to Indian financial news outlet BloombergQuint at the World Economic Forum held in Davos in January, chairman Sunil Bharti Mittal said Airtel was considering either the sale or merger of its businesses on the continent within a year. While he did not give further details about which of the company's 15 African operations could be affected, it has separately been reported that a 50-50 merger with Millicom in Ghana is being discussed.



Hong Kong's Asia Satellite Telecommunications has agreed to relocate *AsiaSat 8* from 105.5°E to Spacecom's 4°W orbital position. It will be co-located with Spacecom's *AMOS-3* for a four-year period and is expected to begin service in 1Q17. Spacecom has an option to extend the agreement for an additional year of service. *AsiaSat 8*'s beams will cover Africa, the Middle East and central Eastern Europe, enabling Spacecom to continue serving its customers at 4°W following the expected end of life of *AMOS-2*.

NEW APPOINTMENTS

Date	Name	New employer	New position	Previous employer	Previous position
31/10/16	Gunter Engling	MTN Group	Deputy CFO	MTN Group	Acting group CFO
1/11/16	Alistair Carwardine	Cerillion	SVP APAC	M2 Group	Technology director
2/11/16	Joel Kibazo	FTI Consulting	MD	African Development Bank	Director of communications & external relations
8/11/16	Amr Kamel	Microsoft Africa	GM for West, East, Central Africa & Indian Ocean Islands region	Microsoft Egypt	Public sector director, WECA region
28/11/16	Kalpak Gude	Dynamic Spectrum Alliance	President	OneWeb	VP, legal & regulatory
7/12/16	Bernice Samuels	MTN Group	Group executive of marketing	SAB Miller	Executive director of strategy & business development
7/12/16	Jens Schulte-Bockum	MTN Group	Group COO	Vodafone Germany	CEO. Replaces Jyoti Desai who is retiring.
8/12/16	Oliver Fortuin	MTN Group	Executive head of business enterprise	BT Global Services sub-Saharan Africa	CEO
8/12/16	Sjoerd De Clerck	Newtec	VP APAC	Barco Capital	Global director
19/12/16	Michel Miglia	Advantech Wireless	Operations director	VP operations	MEP Technologies
21/12/16	Thomas Van den Driessche	Newtec	CEO	Newtec	CCO. Replaces Serge Van Herck who has resigned.
28/12/16	Carlos Caceres	Kirusa	Advisory board member	Digicel Group	Chief customer officer Caribbean & Central America
5/1/17	Herbert Merz	Radio Frequency Systems	President & CEO	Coriant	President
18/1/17	Arun Sarin	Mobileum	Board director	Vodafone Group	CEO
24/1/17	Augusto Argento	Neural Technologies	Director of partners & channels	GM, revenue intelligence	HP Communications & Media Solutions
24/1/17	David Kagan	SpeedCast	COO	Globalstar	President & COO
15/2/17	Andrew Gill	Tait Communications	MD EMEA	Motorola Solutions	VP of growth & alliances for Europe & North Africa

Pioneering solution claims to cut PIM in cell networks

Hughes Electronics has developed what it describes as a “pioneering” new connection system to help

MANUFACTURER:
Hughes Electronics

PRODUCT: WaveWay

MORE INFORMATION:
www.hugheselectronics.co.uk

reduce passive intermodulation (PIM) in cellular networks.

WaveWay is the result of work the company has been carrying out in collaboration with the London South Bank University.

Their investigations revealed that metal connectors are particularly vulnerable to PIM. Researchers found that the universally accepted multiple metal-segment design results in return signal paths and the creation

of multipath transmissions leading to ‘ghost signals’ and harmonics.

Moreover, Hughes Electronics says each conductive segment creates micro-separations in the transmission path forming intra-media signal transition points. This results in reflections, energy loss, distortion, arcing and capacitive junctions, all of which negatively interfere with legitimate signal transmissions.

WaveWay uses a single-piece forward

and return path mechanism. As a result, it’s claimed separations are removed and signals constrained, severely restricting multiple-signal path opportunities and consequent PIM effects.

It is constructed from a non-metal composite material. This is claimed to create an isolation layer from energy fields while at the same time absorbing microphonic vibrations, resulting in significantly reduced PIM readings.



Emergency comms in 10 minutes with compact TETRA

The *Claricor Cell* from Airbus Defence and Space (ADS) is a compact communications network based on TETRA technology. The small system

MANUFACTURER:
Airbus Defence and Space

PRODUCT: Claricor Cell

MORE INFORMATION: www.securelandcommunications.com

has been designed to be quickly set up for vehicle convoys, firefighters or rescue operations in remote regions.

ADS says the fully equipped system works as a standalone solution, or can be easily integrated into existing national or smaller TETRA networks. There are several options for voice and data transmission when using the base station and the TETRA switch in *Claricor Cell*, including fixed line, IP radio link, LTE and satellite.

The system comes in rugged

boxes to enable easy transportation and works in rolling vehicles. ADS says it can be setup by end-users within ten minutes.

Claricor Cell has an IP65 protection rating against dust and water with the covers closed, and IP54 when it’s in use. ADS says the tap-proof TETRA system is pre-configured and has a plug-and-play functionality.

Features and apps include individual and group calls, SDS, and status messages. A single switch system



also includes the following which are integrated in a rugged PC: RCS lite dispatching; MMI; set for parametering the radios; and element monitor.

IP modem transceives DVB-S2X with “utmost efficiency” VSAT services ‘mimic’ high-speed fibre at sea

WORK Microwave reckons its *AX-60* platform provides the high performance necessary for IP trunking and IP network infrastructure applications.

The system includes modem, modulator, and demodulator options. By using the *AX-60*, the Germany-based satcoms equipment specialist claims operators can transmit and receive DVB-S2X signals with “utmost efficiency” and simplify operations. It says the platform is completely customisable



and scalable, and capable of adapting to any throughput, data analysis method and other waveforms beyond DVB-S2X.

By providing operators with a future-proof and flexible system for both standardised DVB-S2X and customised satcoms, WORK reckons the *AX-60* simplifies the transition toward an all-IP environment.

According to the firm, optimal use cases for the modem include high-speed network links over satellite, IP-based SNG, connection to and from LEO satellites for Earth observation, reception and analysis of satcoms, and more.

MANUFACTURER:
WORK Microwave

PRODUCT: AX-60

MORE INFORMATION:
www.work-microwave.com

Mission-critical communications specialist EMC (now part of Global Eagle Entertainment) has launched a new package of connectivity and content for ships at sea. The VSAT services leverage global Ku-band, and are said to be optimised for the latest next-generation high-throughput satellite (HTS) networks.

The package includes EMC’s *SpeedNet* high-speed web browsing technology which works in the background on mobile and desktop browsers and is said to dramatically accelerate page load times.

Using a proprietary intelligent protocol and global backbone, EMC says *SpeedNet* predictively fetches, compresses and pushes multiple layers of websites at once to local servers. It claims the net result for the end-user is a browsing experience that mimics being on high-speed fibre.

In addition, EMC has launched a new back-end billing and account management platform that allows admin and crew networks to be managed separately from a single portal. Individual crew members can even transfer funds to mobile accounts of friends and family at home on more than 400 carriers in more than 100 countries.

The new service also includes live TV using a single satellite antenna on board and the same Ku-band network that delivers voice and data services.

MANUFACTURER: EMC

PRODUCT: Marine VSAT services

MORE INFORMATION:
www.EMCConnected.com

F-Cell tech revolutionises small cell deployment

Bell Labs – which is now part of Nokia following its acquisition of Alcatel-Lucent – reckons it's come up with a "breakthrough" in small cell technology.

It says *F-Cell* eliminates the costly power and backhaul wires and fibres currently required for small cell installation, and enables "drop and forget" deployments anywhere. Bell Labs recently demonstrated the

world's first drone-based delivery of an *F-Cell* to a Nokia office rooftop in California (pictured). It says the unit wirelessly self-powered, self-configured, auto-connected to the network, and instantly began to stream HD video.

The system's architecture comprises a closed loop, 64-antenna Massive MIMO system placed in a centralised location. This is used to form eight beams to eight energy-autonomous (or solar powered) *F-Cells*. Bell Labs says each of these has been redesigned to require minimum processing power so that the solar panel is no larger than the cell itself.

In this way, the firm claims *F-Cell* technology sustainably solves today's small cell and backhaul cabling,



deployment and expense challenges for service providers and enterprises.

It adds that the architecture supports non-line-of-sight wireless networking in FDD or TDD mode, and the parallel operation of up to eight individual 20MHz channels allows for a system throughput rate of around 1Gbps over existing LTE networks.

MANUFACTURER: Nokia

PRODUCT: F-Cell

MORE INFORMATION:
<http://nokia.com>

Zebra APs boost network performance

Zebra Technologies has introduced two access points that promise to offer greater network performance, stronger customer engagement, and support for IoT applications.

By embedding dedicated sensors that collect data across the entire expanse of the network, the vendor

says its new enterprise-class *AP8432* and *AP8533*

access points deliver

actionable insights and secure connections in a cost-effective way. Zebra reckons the 802.11ac devices can deliver a "dramatically higher" density network with the sensors needed to measure, monitor and secure each connection.

Both APs include the company's *Triple Sensor Technology*. It says this can automatically protect against RF interference and security risks, push relevant contextual offers and services to consumers, and provide



strategic-shaping analytics. The technology integrates three sensors to monitor the network, Bluetooth, and RF spectrum. Unlike other sensors that can only scan part-time, Zebra says its dedicated dual-band sensor continuously scans for rogue devices.

In addition, the *AP8432* features built-in PoE-out, enabling it to connect to IP video cameras, wireless temperature sensors or any other third-party IoT network.

MANUFACTURER:
Zebra Technologies

PRODUCT:
AP8432 and *AP8533*

MORE INFORMATION:
www.zebra.com

Wi-Fi workflow solution for field technicians

The *WaveGuide* app from software defined monitoring specialist Mariner xVu aims to enable any field technician to quickly install and certify that a new Wi-Fi network will provide the best service.

Available on *Google Marketplace*, the app allows any field technician to perform four workflow functions: location testing and troubleshooting; optimal access point placement; home certification; and reporting and customer sign-off.

Mariner xVu claims the solution offers a number of unique features and benefits. For instance, it checks for interference, congestion and signal strength coverage around the premises, finding the best location for the AP placement. Using intelligent algorithms, the app analyses the

current configuration against ever changing environmental factors and interferences to recommend optimal configuration.

The company says a guided "drill-down" approach leaves little to no interpretation of the results by the service technicians. It adds that an intuitive user interface makes the process easy.

WaveGuide is also said to be self-healing, and service providers can continuously monitor the configuration and performance metrics of the Wi-Fi network.

MANUFACTURER:
Mariner xVu

PRODUCT: WaveGuide

MORE INFORMATION:
www.marinerxvu.com

ALSO LOOK OUT FOR

Interoperable 400GbE test system unveiled by Ixia and Viavi

Ixia and Viavi Solutions have publicly demonstrated the world's first interoperable system running bi-directional 400GbE line rate traffic with RS-544 FEC as currently defined in the IEEE 802.3bs draft standard.

According to the partners, leading network equipment makers are heavily investing in the development of ASICs and new intellectual property for the next generation of higher speed switches and routers to address growing bandwidth requirements.

They say robust test tools are needed throughout this development to identify potential bugs and eliminate ASIC and hardware re-spins, which waste human resources, increase development costs and delay time to market.

Ixia and Viavi demonstrated full interoperability of their independently developed MAC, PCS, and RS-544 FEC IP (including the critical FEC element that enables 400GbE error-free data packets to be carried over fibre links) on readily available hardware components.

Ixia says its full portfolio of network infrastructure test systems, including the 400GbE test system, offer the same send/receive capabilities on all speed ports, with packet lengths as small as 49B, which is smaller than the minimum Ethernet frame size. It is also capable of sending and receiving a single 400GbE line rate flow at any packet size.

Meanwhile, Viavi says its *Optical Network Tester* has been proven in lab evaluations of 100G components, and now has the industry's first 400G support to include FEC and PAM4 modulation.

As a result, the two firms says high-speed network providers now have a comprehensive, integrated platform for design, development, and validation of 400G technologies including CFP8 pluggable 400G optics.

A man in a blue suit stands with his arms crossed in a server room. The background is dark with rows of server racks and a large satellite dish hanging from the ceiling.

AFRICAN.

We can keep African manufacturing on target.

We believe the more products made in Africa, the better it is for Africa. It's why we've built the continent's largest fibre infrastructure and provide an award-winning satellite network, ensuring manufacturing is as streamlined and efficient as it can possibly be. Because we are not just a telecoms company.

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Building Africa's digital future



As users on the continent begin to leverage the latest satellite platforms, they will need the ground infrastructure and services – such as BICS' and Eutelsat's new backup system – to match.

Next-generation high-throughput satellites continue to connect Africa, but what on Earth can be used to get the very best out of them? SARA FREWEN finds out.

As has been well documented, Africa continues to be the world's fastest-growing mobile phone market. Yet more than 300 million of its 1.13 billion inhabitants still lack access to mobile phones and the internet.

The rapid expansion of the mobile market is changing how media companies deliver content to consumers, and the number of people with smartphones on the continent is reported to have nearly doubled in the past two years to 226 million. Satellite technology, and especially the new generation of high-throughput satellites (HTS), will play a major role in both delivering content to mobile subscribers and connecting consumers who don't yet have service. The latest breed of spacecraft which leverage HTS technology promise higher performance, better economics, and new hardware and services that enable simple access to connectivity.

According to analysis by Euroconsult, the overall use of satellite capacity in sub-Saharan Africa has been increasing along with mobile connectivity. It is growing at an average of 11 per cent annually for the past five years, and is expected to continue at that same rate for the next five.

The biggest innovation in the region's market in 2017 will be the availability of high-throughput beams in both C- and Ku-bands, such as those offered by Intelsat's *IS-33e* and *IS-36*, the first satellites for Africa to use its *EpicNG* HTS platform. The company has always claimed this will enable mobile operators to give customers a fibre-like experience, driving both market expansion and increased data use per customer.

Jean Philippe Gillet, Intelsat's EMEA VP of sales, says increased demand has put extra pressure on operators to extend their networks as well as make them more robust to accommodate added demand from existing customers. He identifies four factors that operators will need to face these challenges: flexibility to quickly adapt to new requirements; a network with performance that will improve over time and stay ahead of user needs without requiring technology replacement; economics that provide a winning business case for the user and the VSAT operator; and simplified access which reduces the technical skill and mechanics of deploying satellite solutions.

"Intelsat works closely with Africa's telecoms operators and has a good understanding of their

requirements of users across continent," says Gillet. "We believe that not only do we need to provide cost-effective options to extend networks, but the operators should also focus on making their networks future-proof so they can react quickly to changing end-user demand."

He goes on to state that this was the driving force behind the design of Intelsat's *EpicNG* platform. "The open architecture and backward compatible design allows operators to seamlessly migrate their existing network onto the platform and realise service improvements with their existing terminals. By delivering more data at lower cost per megabit, *EpicNG* improves the economics of providing bandwidth and cellular backhaul to African telecom providers."

With high-throughput satellites offering three to five times the efficiency of earlier platforms, Intelsat reckons that not only do users gain the assurance of meeting booming demand, but they also see the cost of ownership go down. Thus, it says service providers are able to stay ahead of user demand and even expand their networks into new areas where demand for bandwidth has not been met.

Linking space and Earth

There is no point in developing better satellite hardware if you don't have the equipment on the ground that can take advantage of all the technology that they offer. And perhaps one of the unsung heroes here is the antenna – the key link between space and Earth.

For example, the ASC Signal division of Communications and Power Industries (CPI) has developed a high-wind version of its 2.5 metre *Nomadic* antenna. The trailer mountable, carbon-fibre antenna is said to be ideal for use in remote field deployment applications, and is capable of operation at L-, X-, C-, Ku-, Ka-, Q- and V-bands.

ASC Signal says the 2.5m system combines an “innovative” antenna design with its “state-of-the-art” *Next Generation Controller (NGC)* to provide the industry's highest level of acquisition, tracking accuracy and performance from antenna systems of this size.

Company president Keith Buckley claims that as mobility continues to be a prominent and dominant requirement for remote applications, his firm continues to deliver Earth station antennas that “seamlessly” integrate fixed and mobile systems into the same network architecture. “What is unique about our approach is that we are able to utilise the same antenna controller systems, regardless of the antenna platform, thereby reducing costs to customers and providing uniform operation across the entire network.”

Meanwhile late last year, Canada-based C-COM Satellite Systems revealed it had come up with new Ka-band in-motion antenna technology. Developed in partnership with the University of Waterloo, the company said that the patent-pending calibration method is expected to be used in low-profile two-way phased-array antenna (PAA) systems for land-mobile satcoms.

Speaking at the time, Dr. Safieddin Safavi-Naeini, a professor at the university's department of electrical and computer engineering, said: “The main advantage of this method is that it significantly reduces the calibration time and enhances its accuracy. The entire calibration can be performed during system initialisation in the field.”

PAAs are a growing area of development with companies such as Phasor, Gilat, Boeing and others developing new systems. But so far, they have been more widely used in the military market or within scientific research such as radio astronomy, rather than the commercial sector. Safavi-Naeini says this is largely because of their complexity which has made them cost prohibitive and difficult for private companies to use.

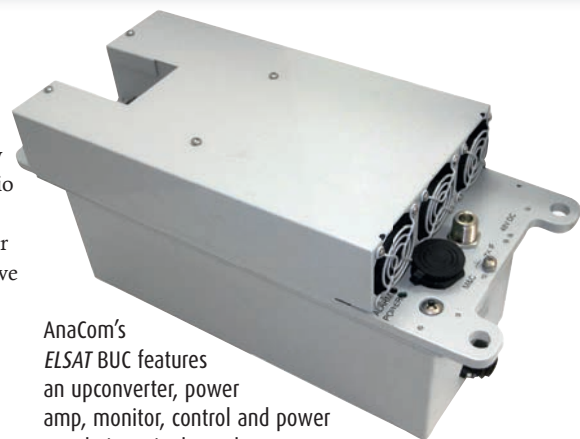
C-COM is working with the University of Waterloo on what it describes as a design that uses a “very advanced” software algorithm to control low-cost modules and calibrate them to work together. Each module will be small and simple, and while thousands will be needed for a single antenna, C-COM reckons scaled production should streamline the cost of development.

The antenna will use a beam-forming calibration algorithm invented by the university, and a beam-forming computer that identifies the whole system, characteristics of each module and records data. “We are not using any exotic technologies,” said Safavi-Naeini. “We use very low-cost microwave technology, low-cost packaging technology and low-cost materials. Because of this, the modules may deviate from their normal ideal parameters, but then we have the beam-forming computer that tracks these modules and also identifies any errors. If a module fails, the central beam-forming computer detects that immediately and redistributes the radiation task to other modules.”

In land mobility, C-COM plans to target HTS services in Ka-band, including those of ViaSat, Hughes, O3b Networks, Inmarsat and others. It says the PAAs could also see use in 5G systems as well as with multibeam radar.

More bang for your BUCs

The block upconverter (BUC) is used in the transmission of signals and represents another vital part of the satcoms ground infrastructure chain. Here, VSAT equipment specialists such as AnaCom come into their own, and one of the latest products it has added to its range is an XKu-band BUC which operates at 12.75-13.25GHz frequencies.



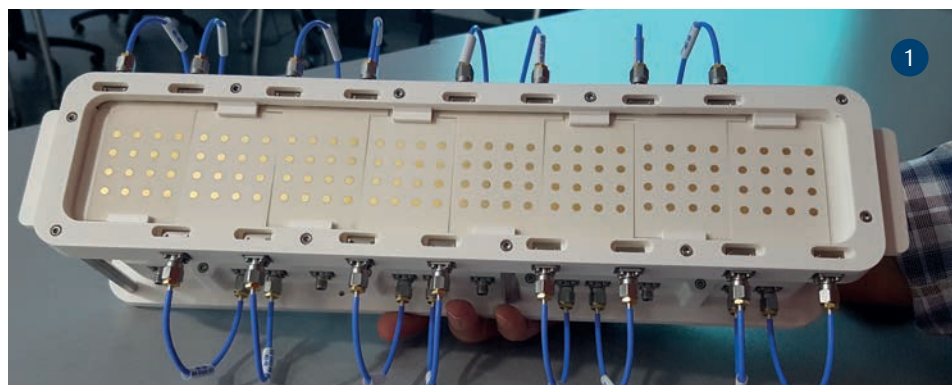
AnaCom's *ELSAT* BUC features an upconverter, power amp, monitor, control and power supply in a single enclosure.

The US-based vendor's *ELSAT* is available in transmitter output levels up to 100W and in single or redundant configurations. The upconverter, power amp, monitor, control and power supply are included in a single enclosure. AnaCom says the only cabling required to indoor equipment are IF connectors.

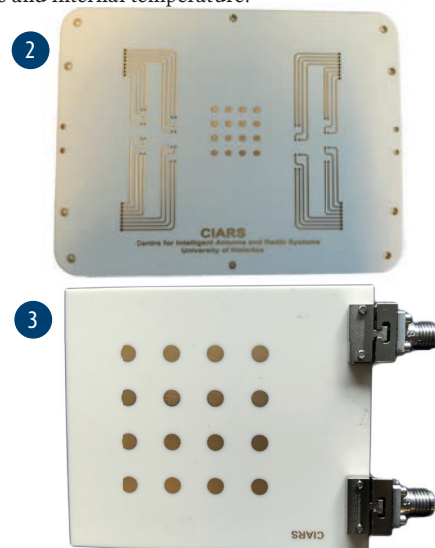
It adds that the units have a rugged construction for continuous outdoor duty in all types of environments, and claims they are particularly suitable for SCPC, MCPC and DAMA applications. An ‘ovenised’ high stability crystal oscillator is used to lock the TX synthesiser, and additional temperature and ageing compensation are provided by an onboard microprocessor.

The BUC features a monitor and control (M&C) system that can be used in combination with the unit's internal metering function to monitor operational parameters. The system also enables users to monitor and control the converter on the same M&C bus as most indoor equipment, such as modems and multiplexers.

Furthermore, AnaCom says the *ELSAT* includes built-in test facilities for improved maintenance and reduced dependence of external test equipment. To improve and simplify maintenance routines, it says the units can be connected to an external computer to monitor critical parameters such as transmitter power output and IF levels, power supply and TX synthesiser voltages, alarm details and internal temperature.



C-COM is working with the University of Waterloo on a phased array antenna design that uses a “very advanced” software algorithm to control low-cost modules and calibrate them to work together. Picture 1 above shows an RX array panel prototype (eight modules of 4 x 4); picture 2 (top, right) a single RX 4 x 4 module; picture 3 (below, right) a single TX 4 x 4 array module.



Other features include remote configuration and access via Ethernet and serial protocols, together with a flash memory so that the BUC always starts up with the same operating conditions it had before it was powered off.

Advantech Wireless is another satellite equipment specialist that includes BUCs in its portfolio. It recently released 125W to 200W Ka-band *UltraLinear* solid state power amplifier (SSPA)/BUC products based on second generation Gallium Nitride (GaN) technology. GaN is a semiconductor compound that makes miniaturised, high-power, wireless transmitters possible. Cristi Damian, Advantech's VP business development, says: "GaN technology allows us to reach power levels that were not possible before, and to serve customers that are looking for solutions in this fast growing market segment."

With weatherproof IP67 rated enclosures, the new *SSPB-4010Ka* series of products have been designed for Ka-band LEO and GEO satellite uplink applications. Advantech claims these latest systems are the "most advanced" GaN based Ka-band units in the market, providing higher power and higher reliability. They convert L- and Ka-Band signals from 27.5GHz to 31GHz (in bands), while the integrated amplifier delivers an output power of 100W to 200W. The integrated units come complete with detachable power supply, phase-locked oscillator, mixer, filter and proprietary cooling mechanism.

Other attributes are said to include high linearity, support for remote monitoring and control, and protection against overdrive, thermal runaway and out-of-lock conditions.

Advantech has also used second generation GaN technology in its *SapphireBlu* SSPA/power block which is designed to service new satellites operating in the 12.75 to 13.25GHz band. The small form factor SSPA is designed to be hub mounted very close to the antenna's flange input, eliminating losses through a waveguide. As a result, the company claims it is now possible to use just a relatively small SSPA on its own to transmit the signal. It adds that because of this efficiency, air conditioned shelters for a Klystron or indoor mounted HPA can be eliminated. Furthermore, instead of needing multiple antennas at a teleport, operators can reduce their number, simplifying operations.

The *SapphireBlu* units have a built-in L-band interface backup converter without separate upconverters. Advantech says they operate as 1:1 redundant or 1+1 phase combined to provide additional power when traffic demands. It claims they are very power efficient, reducing opex for power consumption, and capex from reducing the need for uninterruptible power sizing.

Breaking new ground

Newtec is a well-established vendor of ground infrastructure in the satellite market, and in 2016 it launched what was claimed to be the first DVB-S2X VSAT modem.

Describing the *MDM5000* as its most advanced VSAT modem to date, the company says it is capable of receiving forward carriers of up to 140MHz and processing more than 200Mbps of throughput. With forward symbol rates from 1 to 133 Mbaud and coding up to 256APSK, it's claimed the *MDM5000* will boost efficiency and performance on legacy satellites while "fully unleashing" the potential of next-generation HTS. On the return channel, Newtec says the device supports SCPC, TDMA, and offers its proprietary *Mx-DMA* technology for up to 75Mbps.

The modem is designed to handle a wide range of services, including internet access, VoIP and backhauling, along with video contribution and multicasting. As with Newtec's previous *Dialog* modems, the *MDM5000* incorporates Layer 3 routing, advanced QoS, TCP acceleration, pre-fetching, compression and encryption. It also supports a new Layer 2 mode, facilitating integration with various networking topologies and routing protocols such as MPLS and BGP. Dual demodulators for "seamless" beam switching on future HTS networks are also included.

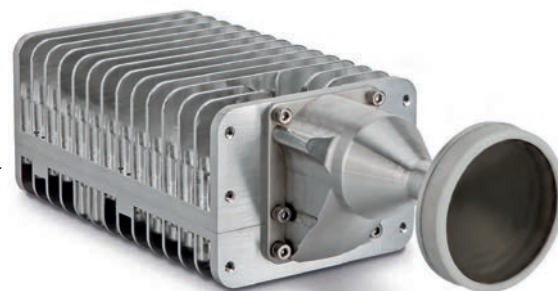
Meanwhile, Gilat Satellite Networks (GSN) has added the *Scorpio* "VSAT-in-a-box" to its range. The company reckons the outdoor terminal incorporates "breakthrough technology", lowering the cost barrier for ubiquitous broadband deployment.

According to GSN, *Scorpio*'s innovative design increases system reliability due to the complete integration of the indoor and outdoor units into a single weatherproof box. It says the solution addresses the cost efficiencies required for residential customers and small businesses worldwide.

The compact and lightweight system has been designed to allow rapid self-installation and easy roof mounting. *Scorpio* connects to the home network with a single Ethernet cable, thus providing, according to GSN, a "simple demarcation point for improved network diagnostics and increased customer satisfaction".

Hagay Katz, head of the VSAT line of business at the company, says: "With our VSAT-in-a-box, ISPs will be able to save in installation and maintenance expenses while internet users will enjoy rapid self-installation and activation, in addition to low power consumption."

Scorpio is part of GSN's complete *SkyEdge II-c* VSAT ground system. This includes the company's



Gilat Satellite Networks claims its *Scorpio* "VSAT-in-a-box" lowers the cost barrier for ubiquitous broadband deployment.

TotalNMS network management system and is designed to facilitate service management via an electronic B2B interface. GSN says it enables ISPs to manage their services totally independent of the satellite network operator, providing a complete management suite. It includes real-time viewing of the service status, events, alarms and statistics, as well as historic/trend analysis of the service over longer periods. *TotalNMS* is also said to provide ISPs with an automated and easy-to-use interface for simple creation, activation and management of end-to-end services with a high level of flexibility.

Shifting away from hardware, BICS and Eutelsat have partnered to deliver satellite-based business continuity solutions for operators in Africa.

Headquartered in Belgium, BICS is a global wholesale carrier for voice, mobile data and capacity services, and has offices on the continent in Accra, Cape Town and Nairobi. It says robust backup capacity is vital in countries where geographic and environmental conditions can jeopardise quality data and voice services. Furthermore, it believes that an operator's ability to ensure the provision of high-quality services distinguishes it from the competition.

The new solution is based on BICS' *RouteFlex* system which automatically detects anomalies and re-routes critical traffic through the best available path. It achieves this by combining C-band capacity on the *EUTELSAT 8 West B* satellite which orbits at 8°W with BICS' teleport in France, IP transit global network, and an automated on-demand solution for IP traffic. The resulting service comes in three product variations: open community, closed community and occasional use.

BICS and Eutelsat claim their new solution will enable operators to offer their end users access to "consistent, cost-effective and high-quality" services at all times, even in the event of a terrestrial network outage.

"BICS is dedicated to supporting customers across the African continent, particularly the 30 per cent of countries that are landlocked and often depend on poor terrestrial connectivity", says Johan Wouters, VP capacity business unit, operations and customer services, BICS. "In countries with limited access to submarine cables, which are often prone to damage or incidents, *RouteFlex* can also change the way operators use satellite to backup their services." ■



Newtec describes the *MDM5000* as the world's first DVB-S2X VSAT modem.

AnaCom, Inc. GaN BUCs

A H I G H E R T I E R O F G a N

AnaCom, Inc. are partnering with Mitsubishi Electric to provide GaN-powered ODUs with remarkably dependable performance and reliability. This next-generation GaN technology will prove that not all GaN powered ODUs are the same.

Discover the benefits of AnaCom's new ODUs, powered by GaN from Mitsubishi Electric:

Minimal Memory Effect

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Remarkably Dependable Performance and Reliability.

See the difference when using a higher standard of GaN technology with the new generation of products from Anacom, Inc. It's GaN power custom tailored for the VSAT Environment.

Visit us at CABSAT and Satellite 2017 to learn more about how we plan to unleash the full potential of GaN.

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The road to success



The 120km long Ain Sokhna Free Road in Egypt has a total of 28 exits that require monitoring 24 hours a day.

How wireless solutions are helping the transport sector deal with traffic.

In recent years, the Egyptian Armed Forces have established what is today known as the National Service's Projects Organisation. In peacetime, the organisation – which has more than ten sub-companies and factories – specialises in public service and civil production to ease the burden on the state and assist in economic development projects across the country. It aims to increase national revenue with a focus on strategic industries, and to develop relationships and cooperation between private and public sector organisations. It also aims to establish key development projects in the provinces of North and South Sinai, South Valley, and the border regions in order to assist their development and to attract new investments into these areas.

One of the organisations run by the Armed Forces is the National Company for Building, Developing and Operating Roads. It required a high-capacity broadband infrastructure to provide real-time surveillance across the strategic Ain Sokhna Free Road, including monitoring of all of its exit junctions and toll gates. The 120km long road has a total of 28 exits that require monitoring 24 hours a day to meet the strict control, safety and security requirements. In addition to this, the road operator also wanted an

easily scalable network that it could add new sites and services to in the future without the need to 'rip and replace' the existing infrastructure.

It approached NextGen Communications to design, implement and commission the entire fixed broadband wireless access (FBWA) network. The Cairo-based system integrator recommended solutions from InfiNet Wireless for their flexibility and easy scalability, with the promise that they could seamlessly carry both video and voice



InfiNet Wireless' InfiLINK 2x2 wireless infrastructure carries traffic from the IP cameras to the main operating centre in Cairo.

traffic with no detriment to network speed.

The vendor's *InfiLINK 2x2 Mmx* and *Smm* point-to-point FBWA wireless infrastructure was selected to provide a series of secure communications links, ranging from 50Mbps to 300Mbps, offering high-speed connectivity to carry the traffic from the IP cameras to the main operating centre in Cairo. All the data transmission channels are combined into a single and manageable platform.

Almost immediately after the initial deployment of the network, the ease of scalability was demonstrated to the road operating company when it needed to implement a new IP telephony system on all exits. InfiNet says its network "simply and smoothly" accommodated the new requirement without the need to add any further hardware or software.

The system now provides the National Company for Building, Developing and Operating Roads with the high capacity needed for real-time video and voice traffic. NextGen general manager Ahmed Abd E-Fattah adds: "Infinet Wireless offers the network stability and performance required to provide safety and security to both staff and users of the Ain Sokhna Free Road."

The “OUTsurance Guys”

Traffic Freeflow is an independent company that owns and manages the *Pointsmen Project* currently operating in the South African cities of Johannesburg, Cape Town and Tshwane. Its aim is to alleviate road congestion by providing highly trained, dedicated and passionate men and women to help guide traffic.

Traffic Freeflow is said to be committed to being the most professional service provider for relief of traffic congestion in South Africa. As well as contributing towards road safety, the company also creates job opportunities in underprivileged communities.

The project was introduced in 2005, and right from the outset it was co-sponsored by municipal authorities as well as insurance firm OUTsurance. As a result, the pointsmen and pointswomen who bring relief to rush hour drivers have become locally known as the “OUTsurance guys”.

Thousands of motorists around South Africa have come to rely on the pointsmen of which there are two types: static and mobile. Static pointsmen are assigned to specific high-traffic intersections, while mobile pointsmen are dispatched on motorcycles to traffic hotspots at a moment's notice. The latter are thus able to respond quickly to major intersections that are experiencing faulty or malfunctioning traffic signals.

Gauteng province (Johannesburg and Tshwane) has one of the country's highest traffic densities and consequently one of the highest road fatality rates. Construction, power outages and accidents have led to massive traffic congestion across the major cities. Working hand-in-glove with their Metro Police stakeholders, more than 200 pointsmen are dispatched to troublesome intersections and hotspots.

“When traffic lights go out, traffic slows down and backs up,” said Traffic Freeflow COO John Kelley. “The pointsmen not only play a crucial role in getting traffic flowing, but as they are often at the same intersections during rush hours, motorists tend to become very fond of them and appreciate the good job they are doing.”

However, he went on to explain that the company's six project managers would each have to drive to each assigned intersection in order to ensure attendance and that every pointsman was presenting themselves as brand ambassadors for the sponsors.

“We were unsure as to the time the pointsman started at the intersection, and if he/she stayed the full shift or, indeed, if they were at the correct place. Other issues included the costs of using six scooters per day, fuel costs and e-tags, and not the least, having our project managers in peak traffic hours twice a day, every day.”

Furthermore, Kelley wanted to be sure the staff were being paid correctly according to the hours worked. As a result, the company needed to know that the pointsmen were in the right place at the right time, how long they were there, and also check times and attendance back at its offices. It called upon ECONZ Wireless, the South Africa-based



An “Outsurance guy” helps Egyptian geese and their goslings cross a busy Cape Town road.

specialist in hosted enterprise mobility applications, and deployed its innovative *Econz Timecard* system.

The solution provides data about the pointsmen, such as the time they arrived for work and departed, their GPS location, and a breadcrumb trail, all captured in a web-based system. ECONZ says Timecard enables real-time tracking so that project managers can be sure that the correct intersections are manned. The data collected also integrates into Traffic Freeflow's payroll system to ensure wages for time spent are accurate.

“Timecard sits right on [the pointsmen's] cellphones and allows them to quickly clock in, and thus they can be tracked at all times,” said Kelley. “We have reduced the need for physical checks by our project managers, thus saving time, costs of the running of the scooters, and keeping our project managers safely out of the rush hour traffic. Now we have visibility at the enterprise level to know who is where and when they arrive and leave.”

eLTE firsts for Africa

Huawei has claimed a couple of firsts for Africa using its eLTE system. It says this is the first LTE broadband trunking solution to provide voice and video dispatching, and claims it “greatly increases” the efficiency of an emergency or control centre. The company says its eLTE systems are based on advanced wireless broadband technology, and provide 100Mbps downlink and 50Mbps uplink throughput. As a result, it says a single network can support multimedia trunking, voice and video scheduling, high-definition video surveillance, ultra-remote data acquisition, and mobile office services. Other features include a compact core network, distributed base stations, and terminal devices that can be used in harsh outdoor environments.

Earlier in 2016, Huawei announced that it had won the bid for a broadband trunking project in Algeria that is said to be the first commercial deployment of an eLTE system at an airport in Africa.

Houari Boumediene Airport in Algiers was using TETRA for routine scheduling and dispatch. But the technology's narrowband system proved insufficient for broadband data transmission, mobile video

surveillance, or multimedia dispatch. What made matters worse was that ground handling services were being carried out in a complicated and noisy environment, making voice dispatch error-prone and thereby increasing security risks.

Huawei provided a system capable of interworking with the existing TETRA platform to improve the accuracy and efficiency of ground dispatch. It supplied an eLTE core network, base stations, trunking terminals, multimedia dispatching, and other devices and systems.

The vendor said its real-time, large-bandwidth eLTE platform will enable the airport to carry out multimedia trunking dispatch, video surveillance, and other applications on a single network that covers both indoor and outdoor working areas for the ground staff. To cope with noise in the airport, Huawei's system supports throat vibration mic earpieces, noise-cancelling headphones, and additional accessories to guarantee voice trunking performance.

The company added that eLTE can offer complete video dispatch and real-time monitoring services through backhaul of onsite images to the command centre. It also provides an open eSDK for interconnection with third-party airport applications.

Huawei claimed another first for eLTE in 2015. After providing the communications systems for the Addis Ababa City Light Rail Transit (AACLRT) project, it claimed that it had become the first company to use LTE in an African metro railway system.

Addis Ababa is Ethiopia's economic centre and transportation hub. It also is the headquarters of the United Nations Economic Commission for Africa and the African Union. However, its outdated transportation infrastructure had become a bottleneck, preventing economic growth in the fast-growing city. Until recently, the main methods of public transportation were overcrowded buses and minibuses. A new metro rail system was therefore envisaged to reduce traffic congestion in Addis Ababa, boost economic growth in Ethiopia, and usher in a new era of urban light rail construction not only in the country but in Eastern Africa.

In 2015, a trial of the Addis Ababa Light Rail, Africa's first modern urban light rail system,

began operations. Built by China Railway Eryuan Engineering Group Company, the first phase of the project involved the construction of two railway lines that span 31km and included one control centre and 39 stations, two of which are underground.

Huawei was contracted to provide several key technologies including end-to-end eLTE and related communication systems for AACLRT's railway line which connects urban centres and industrial areas throughout the capital.

The Ethiopian government wanted the system to be based on advanced technologies that would not become obsolete within the next decade. In addition, the system would need to meet diverse service requirements, facilitate O&M, and reduce costs. A train-to-ground wireless communications system also was required to provide train dispatching and ticket data transmission services.

In order to avoid duplicating network capacity and to minimise the investment required for each device, Huawei says it based the AACLRT's system on a single backbone network that supports multiple services, including communication, signalling, SCADA and fare collection.

Huawei said its eLTE network operates on the dedicated LTE TDD 400MHz frequency band to avoid interference from external wireless signals. The company also claimed it provides more stable trunking services than analogue train dispatch communications systems. It provided eLTE broadband-trunking, handheld terminals and also customised the EV750 vehicle-mounted devices and dispatching systems for train drivers, provided by another project partner, Shenzhen Communication Technology.

Huawei said that just one of its eLTE cells provides a wireless network that covers 1.2km, and requires just four baseband units and nine radio remote units. The vendor added that eLTE's ultra-wideband technology enables wireless dispatching and various other services, including voice trunking and real-time wireless transmission of ticket data over a single-network,



Above: a bus in Algoa Bay equipped with free on-board Wi-Fi, is ready for the road. Right: W-Link's WL-R220 router is at the heart of its wireless system.

thereby reducing the need for trackside devices and lowering maintenance costs.

As urban rail transit systems are increasingly using video applications, Huawei said it created a bespoke version of its integrated *Digital Urban Rail Transportation* solution for the AACLRT. This train-to-ground communication platform uses LTE HD video and optical transmission technologies, and includes all necessary service systems such as: wireless, transport and IP-based fixed networks; communication power supply; telephony; and CCTV.

Free Wi-Fi on South African buses

Whether sourced via LAN, Wi-Fi or mobile, no one can reach the internet without data. But, as South Africa-based RF specialist Otto Wireless Solutions points out, the paradox is that companies who supply data need to make profits from their sales, while consumers using that data to reach the internet want them for free. That results in two forces moving in opposite directions.

According to Otto, the solution is advertising-sponsored free Wi-Fi. This is where suppliers and users of data meet and everyone's needs are

satisfied. And this is where proprietary technology from Moben comes in. The Polish technology specialist has developed *View2Surf (V2S)*, a platform for mobile operators which facilitates advertising while users surf the internet.

Operating out of Bloemfontein in South Africa, Ntosamo is an accredited distributor of V2S. It specialises in selling advertising space on the internet, using Wi-Fi as the medium. It integrates Moben's platform to any Wi-Fi hotspot. Anyone using the hotspot to browse the internet with a mobile device is shown full screen adverts after consuming a certain amount of data. Every time the user clicks on the advert or even skips it, a sale is completed and the data are duly paid for.

Spurred on by its experiences, Ntosamo has now ventured into free public transport Wi-Fi working closely with a number of partners including Udy Net, Otto Wireless Solutions, Algoa Bus Company, Afrihost and W-Link.

When asked about their profitability, business sustainability and how they could attract back younger passengers, bus operating companies revealed that Wi-Fi was seen as a value-added service. Ntosamo, in collaboration with WISP Udy Net, approached W-Link for the supply of a robust bus router that would cater for the encryption of V2S into its software. After a six-month integration and testing phase, W-Link's WL-R220 router was approved for use in a proof of concept. This POC was run with a local bus operator in Bloemfontein for a three-week period, covering major intercity routes in South Africa.

The results were beyond initial expectations, culminating in a commercially viable solution that could be tailored and offered to any public transport company in the country.

The POC findings were taken to Algoa Bus Company in Port Elizabeth and the project to install Wi-Fi into its 410 buses was approved in October 2016. As the local W-Link distributor, Otto Wireless Solutions supplied the routers, while Afrihost supplied the data. Ntosamo is now in advanced discussions with many other public transport operators in South Africa, where corporate sponsorship for the routers from would-be advertisers is currently being discussed. ■



Huawei created an end-to-end eLTE system for the Addis Ababa city light rail transit project.

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Passive infrastructure sharing is a common practice around the world and is a regulatory mandate in some markets. The shared assets can include tower space, equipment cabinets, buildings at the base of the tower, etc.

Getting on top of towering costs

DR. MOHAMED NADDER HAMDY explains how operators can deliver high-quality network service through site sharing.

The practice of network sharing has been a topic of interest since it was introduced in the early 2000s. The first network sharing agreements, introduced in Germany, Australia, the Netherlands and the UK, were conceived as a way to help wireless operators offset the high cost of launching 3G service in hard-to-cover areas.

But despite the potential for capex and opex savings, the initial surge in network sharing quickly declined as most operators opted to build their own 3G networks instead. As more equipment is developed to support active and

passive network sharing, the options available to operators grow, thus increasing the complexity of the decision. This is especially true regarding the base station antenna which is somewhat unique in that it can play a role in either passive or active network sharing arrangements.

The major driver of network sharing continues to be the potential for cost savings. The amount an operator can save depends upon the depth of the sharing arrangement. Options range from passive forms, such as site sharing, to active forms in which a common RAN, spectrum

resources and core networks may be shared among MNOs. The potential cost savings and benefits increase as the depth of the sharing increases – but so do the risks. An overview of the most common network sharing models is illustrated in the table overleaf.

Passive sharing

This model refers to the sharing of passive non-electronic infrastructure and facilities. Shared assets can include the real estate on which a cell

site is located, tower space, equipment cabinets or buildings at the base of the tower, as well as power, lighting and air conditioning systems that support the equipment.

Passive infrastructure sharing is a common practice around the world and, in some markets, has become a regulatory mandate, depending on the specific site location. More on that later.

But whether voluntary or mandatory, passive sharing can save MNOs up to five per cent on capex and as much as 10 per cent on opex over a five-year span.

In Africa, specialist firms such as Eaton Towers, Helios Towers Africa, IHS Towers, and others have invested billions of dollars to acquire passive infrastructure from operators in the hopes of brokering passive sharing agreements with cellcos.

Active sharing

Active RAN sharing is likely to be the next significant evolutionary step in infrastructure sharing, unlocking even greater capex and opex efficiencies than passive RAN sharing.

It refers to the sharing of active electronic infrastructure and radio spectrum. Within active sharing, there are a number of models involving elements in the RF path: antennas, base station equipment, transmission lines, base station operations and maintenance, and radio design and planning.

There are also sharing strategies that take the partnership between MNOs deeper. In these models, operators can share radio spectrum, core network, infrastructure management systems, content platforms, and administrative resources like billing systems and even customer service platforms.

In the past, active infrastructure sharing has been less commonly supported, but is becoming more widely considered – especially because of its potential benefits for rural broadband. The high cost to deploy LTE is also expected to increase the number of active RAN sharing joint ventures between operators.

Ultimately, network sharing is driven by the need to maximise enterprise value. The major benefit from network sharing is a net reduction in network capex and opex, usually in the range from 10 to 40 per cent of the in-scope costs, depending on the sharing option.

National roaming

National roaming agreements between operators inside the same country can reduce investments

by geographically dividing the cost of the necessary infrastructure between cellcos.

It can also allow new MVNOs without physical radio access infrastructure to completely roam on other operators' existing networks. Guest operators can then provide services in new markets without having to deploy additional equipment.

While national roaming is the easiest and least costly model of network sharing, it provides the least amount of control and flexibility for the guest operator. It also consolidates the overall number of mobile networks and homogenises retail offerings and quality of service, making it harder for an operator within a market to differentiate itself from the competition.

In addition, price competition may be restricted, since the retail tariffs charged by the roaming operator will be based, to a large extent, on the wholesale charges paid to the visited operator.

Potential challenges and a solution

Sometimes, on sites with space limitations or because of health and safety regulations, operators are forced to share the same antenna.

Alternatively, to reduce power usage, emissions and aesthetic impact, many countries like Brazil, Canada and Jordan are stipulating that operators seeking to deploy new services must be willing to share passive and/or active elements within the networks, including antennas.

The Middle East Africa region is among the fastest-growing wireless markets in the world. But with explosive growth comes significant challenges, including overloaded towers and rooftops, and few available options for new sites.

There are two basic solutions to antenna sharing: use of multiport antennas or deployment of low-loss combiners.

CommScope recently worked in Tunisia to meet the increased connectivity demanded by one operator's rapid network deployment.

Tunisia was founded in 2002 as Tunisia's first privately-owned telecoms company. Over the years, Qatari telco Ooredoo has increased its stake in the operator culminating in 100 per cent ownership in 2010. Four years later, it re-branded the operation as Ooredoo Tunisia.

Today, the cellco continues to be the country's largest mobile operator. Each day, it claims to deliver a range of pre-paid and post-paid voice and data services to more than five million individuals and businesses across what Ooredoo describes as a "truly national" network. In recent years, Ooredoo has been forced to implement site-



sharing strategies with other carriers, requiring adding new antennas on rooftops or towers. Most of the time, they are facing situations where rooftops are already full of antennas or towers are already overloaded, with serious stability and wind-load issues.

In 2015, the company needed to implement site-sharing strategies with other carriers, requiring adding new antennas on overloaded rooftops and towers. One solution is a same-band combiner – a unit that combines two base stations on the same band (GSM900 and UMTS900 or GSM Op1 and GSM Op2) into a common port to reduce the number of antennas required.

But introducing a passive unit in the RF path usually leads to an insertion loss that reduces the power available for coverage and capacity. To minimise this loss, CommScope has developed a new type of in-band combiner designed to deliver only 0.5dB of insertion loss – that's compared to traditional 'one size fits all' hybrid combiners that lose 3dB and essentially waste most of the power available.

CommScope's low-loss combiners (LLC) can be tailored to the client's spectrum, and offer high spectrum efficiency, with a minimal guard band of 0.6MHz for LLC 900 and 0.7MHz for LLC 1800. Because of their flexibility, they are well suited for site sharing applications where the antenna, jumpers and feeder cables are shared between two or three operators to open up new capacity on existing sites.

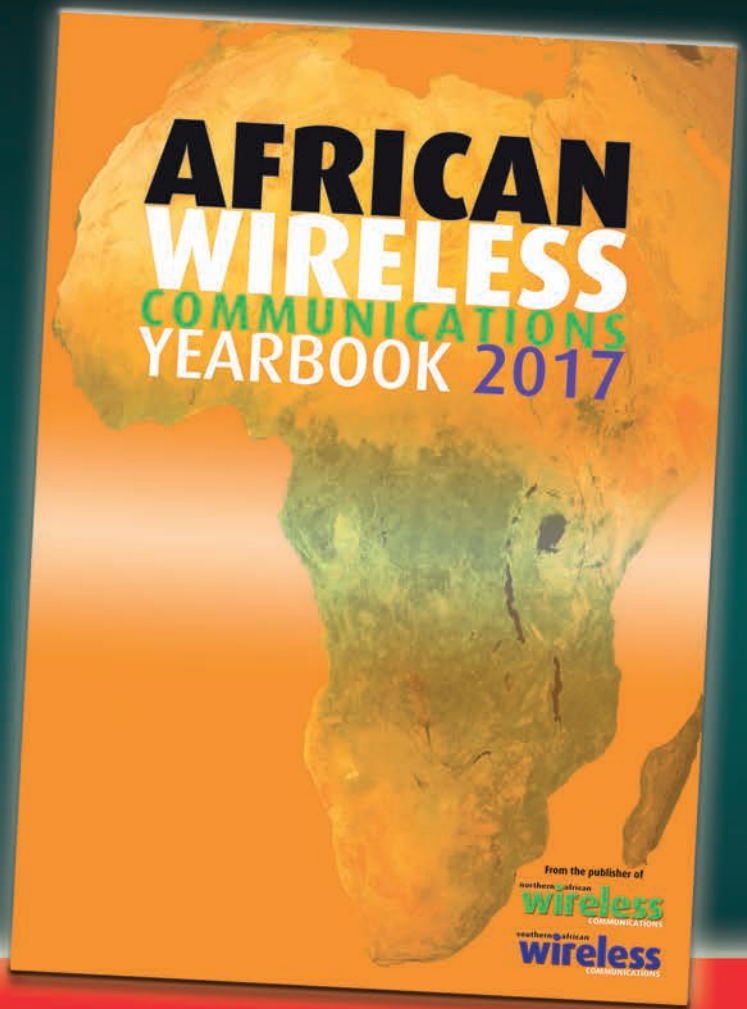
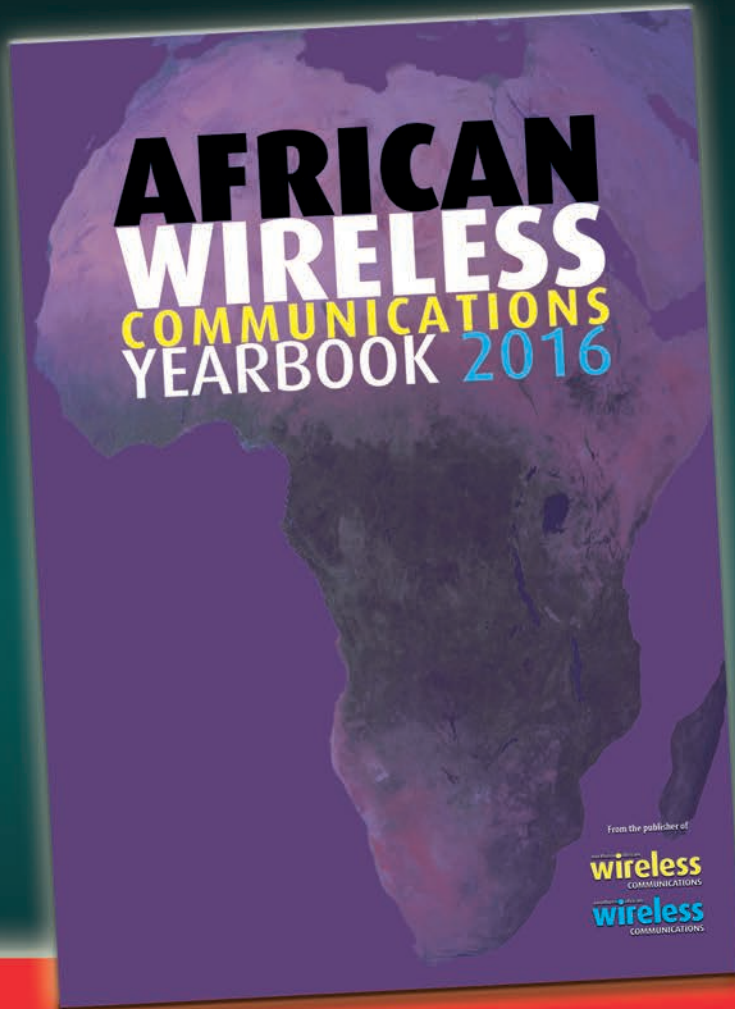
Ooredoo Tunisia executed a successful trial replacing a hybrid 3dB combiner with a CommScope 900MHz low-loss combiner for site sharing with another carrier. Drive tests and analysis indicated that traffic was increased by 50 per cent and received total wideband power was reduced by 20 per cent after the installation. Site revenue was also increased by 50 per cent and improved network performance and quality of experience, while delivering cost reductions due to cost sharing between two operators. The trial was so successful that Ooredoo is planning to use the LLC solution with a 12-port antenna for a three-operator shared site.

The benefits of CommScope's LLC solution include: cost savings from sharing the full RF path as well as the tower structure with associated rent decreases; reduction in tower loading; faster deployment due to easier installation (no need for an additional antenna and feeders for the added sharing operator); faster network rollout by avoiding the lengthy, complicated and often uncertain site acquisition and build phase of deployment. ■

Passive sharing	Site sharing	Civil infrastructure
	Transport	Backhaul
Active sharing	RAN sharing,	Base station
	Multi-operator core network,	Antennas
	Multi-operator RAN	Controllers
		Spectrum
	Gateway core network	Core network

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Aircraft broadband system integrates satellite and terrestrial LTE networks



The European Aviation Network (EAN) has achieved a major milestone following a programme of test flights. Planned for introduction in mid-2017, the EAN is said to be the world's first integrated satellite and air-to-ground network dedicated to providing a true in-flight broadband experience.

The network is said to be unique in terms of the capacity and quality of broadband internet service it brings to the dense European aviation routes. The equipment it uses is very small and lightweight which, it's claimed, typical broadband satellite based solutions cannot offer.

The ground network will use 4G mobile infrastructure combined with satellite frequencies provided by Inmarsat. These are in the S-band spectrum (2-4GHz) that is typically used for weather radar, surface ship radar, and some communication

satellites (particularly those used by NASA for communication with the International Space Station).

The tests were carried out late last year by Inmarsat and Deutsche Telekom together with their technology partners, Nokia and Thales.

The first live connection in the field was accomplished in a broadband video conference with both parties connected via the dedicated EAN LTE mobile network. The flight trial tested the performance of the onboard equipment provided by Thales and the ground network from Deutsche Telekom and Nokia.

The partners say the systems performed multiple successful handovers between sectors and cell towers, and maintained a stable connection.

The LTE ground network for the EAN differs from conventional LTE networks as it needs to work at speeds of up to 1,200kph, and at cruising



Working with Deutsche Telekom, Nokia has adapted its LTE BST and RRH to Inmarsat's S-band frequency and built a specific antenna to cover the sky.

altitudes requiring cells to function across distances of up to 150km. To achieve the live connection to the LTE ground network, Deutsche Telekom and Nokia have adapted Nokia's LTE base stations and remote radio heads to Inmarsat's S-band frequency, and built a specific BST antenna to cover the sky.

Nokia will manage the operations for the network from its global delivery centre in Romania. In addition to the live network, Nokia and Deutsche

Telekom will setup a full end-to-end ground network reference system in Stuttgart, Germany. This will include all components and integrated on-board equipment from Thales to prepare for technical challenges, such as compensation of the Doppler effect due to high aircraft speeds, for example.

Since the EAN's initial announcement in September 2015, Deutsche Telekom and Nokia say they have made steady progress and are on track to deliver the ground component of the project. This includes the rollout of the approximately 300 antenna sites needed across Europe and connecting the network live over-the-air.

In parallel, Inmarsat and Thales are moving forward with implementing satcoms for the EAN, having completed construction and associated sub-system tests of the satellite earlier last year.

Enet offers nationwide open access broadband network



Irish operator Enet has gone live with a backhaul network that connects and further integrates its metropolitan area networks (MANs) into a national telecoms platform.

This latest project for the company brings its total investment to more than EUR100m since it was acquired by specialist technology, media and telecoms investment firm, Granahan McCourt Capital, in late 2013.

Enet's national backhaul network is now fully operational. It includes more than 3,700km of high-capacity fibre and connects 55 towns.

The operator says the deployment marks a major breakthrough as it means a "top class" open access broadband network is now available throughout Ireland.

The company adds that it will also enable it to offer MAN customers access to higher speeds as well as greater network reliability.

Enet says it runs the country's second-largest fibre network. It includes 94 MANs operated on behalf of the government, what's described as a "unique" dark fibre backhaul infrastructure transiting the rail and gas network, and three proprietary metro networks including an 100km fibre ring in Dublin.

CEO Conal Henry says: "The investment in a national backhaul network gives us access to dark fibre for the vast majority of our traffic

sources and offers us a far greater flexibility of how we design and deliver our services to the benefit of our 70 operator customers and their end users."

The company also claims to operate one of the largest licensed wireless networks in Ireland. When combined, Enet says its fibre and wireless infrastructure creates a fully integrated, nationwide network, making it the country's largest open-access network operator.

ABS supports Indonesia's first free-to-view TV service



ABS says SMV's aim is to deliver high-quality entertainment and educational content that is affordable to all.



ABS and licensed DTH broadcast services provider Sarana Media Vision (SMV) will launch Indonesia's first free-to-view platform.

Called *SMV FreeViewSat*, the service will initially broadcast more than 60 television channels nationwide via ABS' satellites. It will be simultaneously available via 75cm Ku-band dishes from 75°E on *ABS-2* and *ABS-2A*, and via 1.6m C-band antennas from 159°E on *ABS-6*. ABS says this gives customers the choice of small dishes or

larger ones with better rain protection.

The partners say the *FreeViewSat* model will promote maximum distribution, and that the set-top box and dish will cost less than USD35. Since Indonesia already has more than 10 million C-band antennas installed, a rapid adoption rate is expected.


"The goal is to deliver high-quality entertainment and educational content affordably to all," says ABS CEO Tom Choi. "For the first time, everybody, not only the affluent or those in the

urban areas, will be able to receive high-quality programming for free, with just a one-time purchase of an STB and dish."

He adds that *FreeViewSat* will also give advertisers the first real opportunity to potentially reach Indonesia's entire population, even in rural areas.

At launch in January 2017, the platform will carry at least 30 local free-to-air channels and more than 30 international channels. The aim is to grow the number of channels to more than 100 in the first six to 12 months.

Singapore to trial 'Li-Fi' for wireless data transmission

 Singapore's Infocomm Media Development Authority (IMDA) will trial emerging technology that utilises light to transmit data wirelessly.

'Li-Fi' (light fidelity) was developed by Scottish company PureLiFi which recently received financial backing from Singaporean investor Temasek. PureLiFi claims its technology can turn every light into a wireless internet access point.

According to researchers, light spectrum is 10,000 times wider than RF spectrum. Li-Fi operates

in visible light frequencies between 400THz and 800THz. As this is at the higher range of the electromagnetic spectrum, the technology is able to deliver higher capacity throughput of up to 1Gbps.

The idea of using off-the-shelf light bulbs for super high-speed transmission initially came from research carried out by Harald Haas, professor of mobile communications at Edinburgh University's School of Engineering/Institute of Digital Communications. In 2012, Haas co-founded PureLiFi and is the

company's chief scientific officer. Since then, the firm has released three iterations of its Li-Fi system. They include the *LiFi-X* which consists of the world's first Li-Fi dongle, and is also available in the form of a LiFi-integrated luminaire developed in partnership with French lighting manufacturer Lucibel.

Last November, Singapore's Minister for Communications and Information Dr. Yaacob Ibrahim said the IMDA will facilitate joint-industry Li-Fi trials by removing some of the regulatory barriers. All frequency



Since launching in 2012, PureLiFi has developed the *LiFi-X* system which consists of the world's first Li-Fi dongle.

fees for technical Li-Fi trials will be waived to encourage interested companies to conduct assessments.

A PureLiFi spokesperson was unable to provide any more details about the trials in Singapore but said: "We are certainly working on bringing our products to the Singaporean market throughout 2017, and the regulator's support is a great stepping stone for that process."

Europe's first mission critical LTE network deployed

 Sepura Group subsidiary Teltronic says it has implemented Europe's first mission critical LTE network.

Already fully operational, the deployment provides complementary broadband services to RESCAN, the private TETRA network of the Canary Islands' public safety agencies whose end users include ambulance, police and environmental services.


Building on an existing Teltronic *NEBULA* platform, the new solution utilises the vendor's *eNEBULA MVC-6000*, a vehicular system capable of integrating different wireless technologies such as TETRA and professional LTE. Teltronic has also supplied rugged commercial LTE handhelds to provide services such as

real-time field-to-control video transmission, internet/intranet access, and customised applications that tackle the agencies' operational challenges.

In accordance with spectrum regulations for public safety users and broadband services laid out in Spain's National Table of Frequency Allocations, the system was implemented in frequency bands below 1GHz, bringing additional benefits in terms of radio propagation and indoor coverage.

"A hybrid TETRA-LTE network expands the range of services available to PMR users, protecting their investment while maintaining the same levels of security, reliability and resilience," says Juan Ferro, Sepura's VP of systems.

Satellite helps monitor water levels in Malaysia

 Applied Satellite Technology (AST) and HDL Solutions are helping the Malaysian government collect and monitor data from the country's flood-prone northern areas.

In 2014, the region was hit by the worst flooding in decades. It affected more than 200,000 people and was responsible for 21 deaths.

Most of the sensors that had been deployed to collect weather monitoring data were destroyed during the disaster. MNOs were forced to shut down their towers which were transmitting monitoring data back to the Malaysian Department of Irrigation and Drainage for analysis and decision-making purposes.

With little or no data available, government agencies were unable to


forecast and predict the water level at dams and rivers.

Working with AST and HDL, a Malaysian company specialising in real-time monitoring systems, the government has now deployed a more robust and reliable system for the continuous monitoring of rainfall and water levels.

It uses environmental monitoring systems from Taiwan-based AQUAS, Inmarsat's satellite network, L-band *BGAN* M2M terminals, and AST's *IRIS Terminal Manager* data and asset management application.

The solution was initially deployed in a few trial areas. After a successful evaluation, it will now be implemented in 300 new sites over the next six months.

Coast guard patrol boats rely on R&S radios

 The Philippine Coast Guard has enhanced the reconnaissance, pursuit and communications capabilities of its ten new Multi-Role Response Vessels (MRRV) with secure radio equipment from Rohde & Schwarz (R&S).

The first MRRVs arrived in the Philippines last August and are now equipped with R&S's *M3SR Series4400* and *Series4100* software defined radios for secure voice and data communications. The *4400s*

provide continuous AM and FM transmission coverage at VHF and UHF frequencies from 100MHz to 512MHz, while the *4100* radios are said to deliver "reliable and easy to set up" shortwave communications.

An automatic message handling system is also part of the package. The MRRVs will have situational awareness through the *Map Track*, email, chat and file transfer features of R&S' *Postman III* software. This has been optimised for communications over HF and VHF/

UHF radio networks with variable data rates. Because the software is IP-based, R&S says it can interface with standard IP infrastructures such as LAN/WAN and satcoms.

The vessels are also equipped with the vendor's *DDF205* which monitors radio emissions from 8kHz to 6GHz and covers direction finding of signals ranging from 20MHz to 3GHz.


R&S says the device combines its new *EB500* monitoring receiver with the accurate correlative interferometer




The *M3SR Series4400* software defined radios are designed to provide continuous AM and FM transmission coverage at VHF and UHF frequencies.

DF method. It claims this unique combination offers precise radio direction finding with sensitive radio monitoring capabilities.


Europe sees first 4.5G

 TIM is the first European operator to offer its customers download speeds of up to 500Mbps on its mobile 4.5G network. The service is currently available in Rome, Palermo and Sanremo via the new Sony *Xperia XZ* smartphone. It is currently being rolled out to Naples and Milan, with other major cities to follow later this year. TIM's 4.5G technology uses new LTE 'L band' frequencies at 1500MHz, along with new coding and modulation techniques and antenna systems evolution to increase spectral efficiency.

New testing initiative

 Cisco, Ericsson, Huawei and Nokia have signed an MoU to create the NFV Interoperability Testing Initiative. NFV-ITI will focus on NFV solutions actually used in service provider networks. It will recommend generic principles, including interoperability test cases, criteria, processes, methods, guidelines, templates and tools. It will also apply best practices from all existing interoperability testing activities in the industry, such as the NVIOT forum efforts. The general guiding principles for NFV-ITI are openness, fairness, reasonableness and non-discriminatory treatment.

Market expanding

 India's wireless subscribers reached 1,049.74 million at the end of September. According to regulator data released in December 2016, 603.80 million of those users are in urban areas while 445.94 million are rural. Of the country's 12 MNOs, Bharti, Vodafone and Idea dominate with 24.76, 19.12 and 17.03 per cent market shares, respectively. The bottom three include state-owned MTNL (0.34 per cent), Sistema (0.64 per cent), and Reliance Jio (1.52 per cent), although the latter only started operations last September.

Iconic building adds Xirrus Wi-Fi network

 The Van Nelle Fabriek complex in Rotterdam has installed a Xirrus Wi-Fi network throughout its office spaces and public areas.

Considered the main industrial monument in the Netherlands, the Van Nelle Fabriek was built between 1927 and 1930 for the production of tobacco, coffee and tea. After the factory stopped manufacturing in 1998, the building was transformed into offices and is now home to more than 80 entrepreneurs and businesses including a variety of new media and design companies. In 2014, it was recognised as a UNESCO World Heritage Site.

Xirrus Wi-Fi will be used across the site as part of a broad infrastructure upgrade. All critical building and facilities management systems across the Van Nelle Fabriek – which spans

more than 68,000m² and is set in around 11 hectares of outdoor space – will be operated and managed via the Wi-Fi.

Businesses will also gain access to a high density 5GHz network that meets current demands for video streaming, cloud-based computing and document sharing – even when the complex plays host to major conferences or other big events.


"Because many creative industries have businesses here, they need to be able to stream high-resolution video, HD photography, and backup their large media files to the cloud for safe keeping or file sharing," says Roger Meertens, GM, Van Nelle Fabriek. "The high-density Wi-Fi offered by Xirrus ensures that companies can always rely on their connection, even at times of extreme usage."



Recognised as a UNESCO World Heritage Site in 2014, the Van Nelle Fabriek in Rotterdam is said to be an iconic example of Europe's Modern Movement.

Meertens adds that thanks to software programmable radios that can easily cope with new Wi-Fi standards, the system also has the capability to adapt to future needs, and means that there will be no need for Van Nelle Fabriek to resort to costly replacement programmes.

Vodafone Hutchison virtualises networks

 Vodafone Hutchison Australia (VHA) is virtualising its networks with the help of Cisco and Ericsson.

Through simplification of its network and infrastructure, it's claimed VHA will benefit from having the tools to become more agile, innovative and more proactive in the way services are brought to market. It's hoped that this will ultimately result in an improved customer engagement experience alongside reductions in opex and capex.

The deal represents the first major collaboration between Ericsson and Cisco on telecom cloud infrastructure since they announced the formation of a global business and technology partnership in November 2015.

The joint architecture solution comprises Ericsson's *Hyperscale Datacenter System* and cloud and SDN software components, together with Cisco's *WAN Automation Engine*, *Network Services Orchestrator* and routers. Cisco is also providing both virtualised and physical security

technologies, along with services and support. Ericsson will be responsible for the integration of its products with Cisco's.


VHA CTO Kevin Millroy says: "The new infrastructure opens the door to new business models and markets, such as Internet of Things, for Vodafone."

Ericsson has already worked with Vodafone Hutchison Australia. In 2014, it replaced and upgraded the cellco's core network, including virtual EPC and virtual IMS/VoLTE.

UK police equipped with body cameras



The police claim the cameras have already shown they can help bring about speedier justice for victims.

 What's believed to be the largest rollout of body-worn cameras by police anywhere in the world has begun in the UK. In a GBP10m project, more than 22,000 frontline officers from the Metropolitan Police Service (MPS) in London will be equipped with body worn video (BWV).

The devices will be attached to officers' uniforms but will not be permanently recording. According to the MPS, this ensures that officers' interactions with the public are not "unnecessarily impeded".

Once the cameras are docked back at the station, all footage is automatically uploaded to secure servers hosting

Microsoft's *Azure* cloud service. The MPS says that BMV recordings are subject to legal safeguards and guidance, and any video not retained as evidence or for policing purposes is automatically deleted within 31 days.

The evidence will be stored in the cloud within the UK after Microsoft opened two new data centres there last September. The firm says these have become part of one of the world's largest online storage infrastructures, supported by more than 100 data centres globally. It adds that these centres hold more than 30 trillion pieces of data, and are backed by billion-dollar investments it has made since 1989.

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