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# wireless

For communications professionals in southern Africa

JULY/AUGUST 2016

Volume 21

Number 2

COMMUNICATIONS

- What's new in microwave?
- Wireless tech in transportation
- Building Carrier Wi-Fi networks

SAF Tehnika

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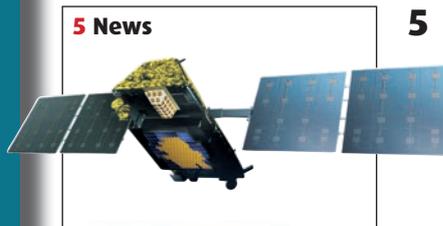
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## INDUSTRIES

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- Military



Terrestrial Microwave Communications

# World's largest commercial satellite constellation ready for lift-off

Testing of the first two satellites that will form Iridium's *NEXT* fleet has been completed. At the time of writing, they were at Vandenberg Air Force Base being processed by SpaceX before their launch which was targeted for 12 September.

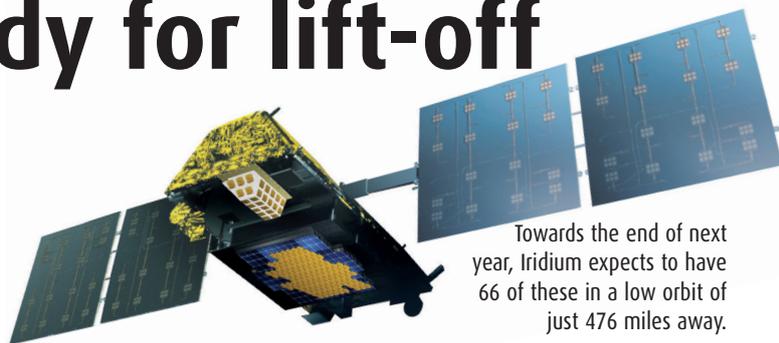
"After more than seven years of effort, the first of our next-generation satellites are finally ready for space," said Iridium CEO Matt Desch.

"This programme replaces the largest commercial satellite constellation in space with state-of-the-art technology and new capabilities, allowing Iridium to support the connectivity needs of today, as well as those yet to be imagined."

*NEXT* will comprise 66 cross-linked satellites in low-Earth orbit to deliver mobile voice and data coverage over the planet's entire surface, including oceans, airways and polar regions.

Each satellite will link-up with four others to ensure a continuous and ubiquitous meshed connection. Iridium says the large number of fast-moving spacecraft with multiple overlapping spot beams minimises missed connections and dropped calls.

It adds that with each satellite orbiting at just 476 miles (780km) away from the surface, transmission paths are shorter and signal attenuation is reduced.



Towards the end of next year, Iridium expects to have 66 of these in a low orbit of just 476 miles away.

Working with sub-contractor Orbital ATK, Thales Alenia Space will build a total of 81 satellites for Iridium. While 66 will form the *NEXT* network, the remainder will serve as ground and on-orbit spares.

As the eight first-launch satellites are completed, they will also be shipped two at a time to Vandenberg

Air Force Base to prepare for lift-off. They represent SpaceX's heaviest payload to date.

All 66 orbiters are expected to be launched by late 2017. Starting in 2018, Iridium said the constellation will enable Aireon's satellite-based system to provide global aircraft surveillance in real time.

## Tigo to connect more schools and women in Africa

Tigo will help connect Tanzania's schools as part of a partnership that represents the first time the country's government and a mobile operator are cooperating on an ICT project of such scale and scope.

Following the recent signing of an MoU with the Ministry of Communications, Works and Infrastructure, Tigo will facilitate the rollout of internet access points in the country's secondary schools over the next two years. The ministry will identify and provide a list of schools without computer labs to be connected, while Tigo will sponsor the infrastructural development that



will include wiring classrooms and the installation of WLANs.

Tigo says the agreement with the government is part of its *e-Schools Project*. Under this social investment initiative, the operator says it has been able to deliver internet connectivity to 31 public secondary

The permanent secretary in the Ministry of Communications, Works and Infrastructure, Prof. Faustine Kamuzora (seated left), and Tigo CCO Shavkat Berdiev (seated right) sign an MoU under which Tigo will provide internet access to Tanzania's secondary schools through the *e-Schools Project*.

schools in Tanzania, and plans to connect 50 more this year.

In a separate announcement made earlier in July, Millicom's Tigo operations and Zanzibar Telecom (Zantel) have joined the GSMA's *Connected Women Commitment Initiative* (Millicom, Tigo's parent

company, acquired Zantel last year – see *Wireless Business*, May-Jun 2015). The GSMA's aim is to reduce the gender gap in mobile internet and mobile money services.

Tigo says its operations in Chad, Senegal, Tanzania, Ghana and Zanzibar will now follow the lead of Tigo Rwanda which became the first African operator to commit to the initiative in February.

They will all work to increase the proportion of their female customers using mobile financial services. Tigo Chad has also committed to increase the proportion of female customers using the mobile internet.

## Intelsat launches first high throughput satellite for Africa



*Intelsat 33e* is unloaded from an Antonov 124 transport plane after arriving in French Guiana on 22 July.

Intelsat has successfully launched the first satellite for Africa that uses its *EpicNG* high throughput system. *Intelsat 33e* was launched by Arianespace from French Guiana together with *Intelsat 36* on 24 August.

Built by Boeing and equipped with what's claimed to be the "most advanced" digital payload on a commercial spacecraft, *IS-33e* will extend Intelsat's high throughput capacity in both C- and Ku-band from the Americas to include Europe, Africa, the Middle East, Asia Pacific, the Mediterranean and Indian Ocean regions.

The company says *IS-33e* is the first multi spot beam, Ku-band high throughput satellite to serve these regions, and will be its second to use *EpicNG* following *IS-29e*'s launch earlier this year for coverage across the Americas and North Atlantic.

According to Intelsat, *EpicNG* is designed for higher performance, better economics and simplified access. It claims that with increasing broadband requirements and a growing number of smartphone users, the flexible and open architecture of its platform will enable mobile and

fixed line operators to cost-effectively extend their networks and meet the surges in demand for services.

Select customers have already committed to take advantage of *Intelsat 33e*. In Africa, they include Telkom South Africa, Orange, IP Planet, Vodacom, Djibouti Telecom, Africell and MultiChoice.

*IS-33e* will be located at 60°E where it will undergo in-orbit testing before going into service at the end of 2016. *IS-36* will be colocated with *IS-20* at 68.5°E, and has a Ku-band payload that was built to support MultiChoice.

## Telkom "sabotaged" in Limpopo

On 2 August, thousands of mobile and fixed line customers in Limpopo were left without connectivity following a serious incident of sabotage to the Telkom network. The operator immediately sent its engineers to the sites where fibre cables had been cut. They worked through the night to restore connectivity.

"Three significant cable breaks occurred, but this was not cable theft," said Telkom Group spokesperson Jacqui O'Sullivan. "This was the targeted and considered action of a person or persons who knew where to go, how to access the fibre, and how to do the most damage. This was sabotage."

She added that South Africa's Criminal Matters Amendment Act has created a new offence to criminalise damage to essential infrastructure or interfering with the functioning of basic services through criminal activity.

Telkom is now cooperating with the authorities to share all information that could be used to identify the saboteurs. In the meantime, security has been immediately bolstered at key communication points by state security services.

The operator has also announced a ZAR250,000 reward for information leading to the successful prosecution of the perpetrators.

# "Giant step forward" for cost-effective connectivity

AfricaOnline and Intelsat have teamed-up to deliver a managed broadband internet service for sub-Saharan Africa.

Under the agreement, Intelsat will provide satellite services via *Intelsat 28* located at 33°E, while AfricaOnline will provide ground support and network management services from its facilities at Hartebeesthoek in South Africa.

The two companies will work together to offer a "high-quality" Ku-band broadband service on a virtual network operator basis.

AfricaOnline is a wholly-owned subsidiary of communications solutions specialist Gondwana International Networks. Its CEO, Mathew Welthagen, says: "The upfront capital commitment

and ongoing fixed operating cost structure of Ku-band VSAT has constrained expansion of services in Africa. A managed VNO platform allows for increased economies of scale, both in terms of capex and opex, and is a giant step forward in bringing cost-effective connectivity to Africa."

The partners believe their VNO model reduces minimum capacity obligations, and cuts both the initial outlay needed by the region's VSAT operators for infrastructure as well as their operational costs.

They add that this is beneficial to operators, distributors and end-users alike. The firms say it enables VSAT service providers to focus on their



The partners say that up until now the costs of building and running Ku-band VSAT infrastructure has hindered the growth of services in Africa.

customers, rather than network infrastructure.

## Cmsol claims South African first with high-speed open access network launch

Cmsol has launched what it says is South Africa's first and only nationwide open access high-speed carrier grade data network.

*Cmsol Fibre Connect* combines a fibre optic backbone with a high-speed, fully licensed wireless infrastructure to provide what's said to be "near blanket" coverage of metros, cities and district councils.

According to Cmsol, its network will enable telcos, carriers and service providers to connect their customers in just six working days with speeds ranging from 2Mbps up to 1Gbps.

It claims the key advantage of its network is that customers are guaranteed connectivity of a high capacity, uncontended product, underpinned by a carrier grade SLA.

The first elements of the network have already been rolled out and are fully operational.

In addition to extensive coverage in the major metros, cities and district councils, Cmsol promises to connect more than 200 towns and cities across South Africa. Deployment in outlying areas has begun, with the majority of towns due to be connected by December.

*Cmsol Fibre Connect* is backed by Convergence Partners, Nedbank Private Equity, and the Industrial Development Corporation (IDC) as investment partners. The private equity arm of Nedbank Corporate and Investment Banking has become a 25 per cent shareholder in Cmsol.

In addition to the initial funding which equates to more than half a billion rand, Cmsol expects to re-invest and spend a further ZAR1bn on existing fibre infrastructure and leased fibre. The firm believes this will create a "massive opportunity" for existing fibre players in the market.

## Econz Timecard GPS enables network strength testing



Metro's field teams drive along specific network routes each day to check signal strength for mobile operators.

Metro Telworks is using a GPS-based tracking system provided by Econz Wireless to monitor its engineers.

Formed in 2004, Metro Telworks provides RF and network optimisation services to various companies, and its South African branch covers several countries on the continent.

The bulk of the company's work is performed by field engineers who are driven each day along specific network routes to check signal strength for 2G, 3G, and 4G on behalf of operators such as Vodacom and Cell C.

Each team consists of a vehicle, driver and engineer. Because they are out in the field for long periods of time, Metro needed to know where they were, if they used the correct route, and which hours they worked. Other issues for the company involved speeding, robberies of expensive equipment from the vehicles, misreported hours worked (especially overtime), damage to vehicles, and accidents.

By using Econz Wireless *Timecard GPS* system, Metro has now been able to solve these issues. While the solution

works on a variety of mobile OS, including *iOS* and *Android*, clocking in and out is performed by the engineer on his device, thus saving Metro the costs of individual subscriptions for two separate phones. Up to 45 team members can be clocked in/out on one device.

The system's *Speed Trigger* feature allows head office to see speeding reports, location, and if it lead to an accident. These reports fulfil insurance requirements which then enables the company to penalise the driver and to recoup costs.



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Rob Miller,  
senior security  
consultant,  
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## ON THE NETWORK

### Building a secure LoRa solution

Long range radio protocols, like GSM and Wi-Fi, draw a lot of power which makes them unsuitable for smaller or remote devices. In contrast, low power solutions, such as ZigBee or BTLE, are limited in range to tens of metres. So there is a need for a long range solution that only sends occasional, small amounts of data that could run off a battery for years.

LoRa, and its primary protocol LoRaWAN, addresses this gap in the market. It is intended for systems that require the ability to send and receive low amounts of data over a wide range without high power costs.

But whilst several effective security features are designed into LoRa, companies should not consider the protocol secure out of the box. Simply stating that a technology "uses AES-128 encryption" does not mean it is therefore secure. It should be clear to all developers of LoRa solutions that using the protocol does not guarantee security. Instead, they should build LoRa solutions with the potential attacks in mind.

Given that LoRa will form part of a complex IT solution, security vulnerabilities are likely to occur during development. Similarly, given that LoRa solutions are being used in applications ranging from home security through to monitoring and controller infrastructure, attacks and development of exploits against these systems are also likely.

Secure systems can be developed by understanding LoRa's security features as long as developers accept that they are not a silver bullet. A solution can be developed by considering cyber security at every stage. Knowing the different ways that an LPWAN solution can be attacked allows a system to be developed that is built to defend, detect and respond to cyber attacks.

# Africa passes half a billion unique mobile subscribers

More than half a billion people across the continent are now subscribed to mobile services, according to the GSMA.

The *Mobile Economy: Africa 2016* study published at the end of July revealed that there were 557 million unique subscribers across the continent at the end of 2015, equivalent to 46 per cent of the population. The GSMA said this makes Africa the second largest but least penetrated mobile market in the world.

The region's three largest markets – Egypt, Nigeria and South Africa – together accounted for around a third of the total subscriber base.

Mobile broadband (3G/4G) made up just over a quarter of total



In *The Mobile Economy: Africa 2016* report, the GSMA said Africa is now the world's second largest but least penetrated mobile market.

connections (including M2M) at the end of 2015, but the GSMA expects this to be responsible for almost two-thirds by 2020.

The number of unique mobile subscribers is forecast to reach 725 million by 2020, accounting for 54 per cent of the expected population.

The study also found that the use of mobile technologies and services across Africa generated USD153bn in economic value last year, equivalent to 6.7 per cent of the region's GDP. This contribution is forecast to rise to USD214bn by 2020, or 7.6 per cent of GDP.

## ITA uses RADWIN's sub-6GHz broadband

Internet Technologies Angola (ITA) has deployed a national network using RADWIN's point-to-multipoint solutions in the 2.2GHz to 2.3GHz band.

ITA CEO Rolf Mendelsohn said: "We sought a solution in the unique 2.2-2.3GHz band that could co-exist with the high transmit power of the 3G cellular network in our capital Luanda and other cities."

He said ITA evaluated several technologies, including WiMAX, before opting for the bespoke carrier-grade wireless broadband solution provided by RADWIN. "Today we can provide high-speed connectivity of 50Mbps and upwards with low latency and guaranteed SLAs."



ITA said its new, multimillion dollar HQ means it is now totally independent from an infrastructure perspective.

RADWIN said ITA has deployed "hundreds" of its 5000 JET PiMP radios to provide a WiMAX replacement in a "tough" radio band. The firm claims the devices offer fibre-like connectivity and

scalability at a price point that beats other technologies, including fibre.

ITA provides business-class services to many of Angola's largest corporations. Earlier this year, it opened its new state-of-the-art head office building at Lar do Patriota in Luanda which makes it totally self-sufficient in its infrastructure.

Covering an area of 2,300m<sup>2</sup>, the USD12m facility includes: a data centre with systems for redundancy; a network operations centre; a teleport; and a transmission and a power room. The new headquarters also has two fuel tanks with a total capacity of 20,000 litres, and three 700kVA generators.

## Telkom facilitates free and fair elections

Telkom provided the ICT services that supported South Africa's recently held municipal elections.

On 3 August, more than 26 million South Africans headed to polling stations. Telkom provided a variety of ICT solutions to connect every point of the electoral chain to enable the delivery of ballot results from more than 22,000 polling stations around the country to the national results operation centre in Tshwane. They were connected via nearly 350 munic-

ipal election offices, nine provincial results operation centres, and the Independent Electoral Commission's (IEC) headquarters in Centurion.

The solution included access for the IEC's WAN through Telkom's VPN services platform. This uses multiple access technologies such as satellite, metro LAN, ADSL, amongst others.

As part of a disaster recovery and business continuity solution, all data activities at the IEC's HQ were replicated at Telkom's data centre in

Centurion in real time. This ensured that in the event of a disaster at IEC HQ, the recovery site would take over all activities allowing the elections to proceed uninterrupted.

In addition to the services it provided for the electoral commission, Telkom also setup a network of open access free Wi-Fi hotspots in almost 1,000 voting stations nationwide. The pilot programme was used to showcase Telkom's 4G services and is likely to be expanded for future elections.

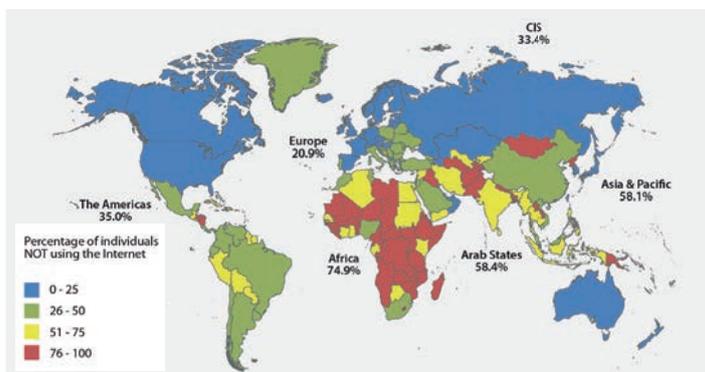
# Digital divide: billions still offline

By the end of 2016, 3.9 billion people around the world will still remain cut-off from the internet, according to recent ITU data.

In its latest *ICT Facts and Figures 2016* report published in July, the union said that while almost one billion households in the world now have internet access, 84 per cent of them are connected in Europe compared to 15.4 per cent in Africa.

The report revealed that mobile phone coverage is now near-ubiquitous, with an estimated 95 per cent of the world's population (around seven billion people) living in an area covered by a basic 2G network.

It added that advanced mobile-broadband networks (4G) have spread quickly over the last three years and reach almost four billion people today.



The ITU forecasts that 3.9 billion people will still not have internet access by the end of this year. Almost 75 per cent of Africa's population will be non-users.

Globally, the ITU expects the total number of mobile-broadband subscriptions to reach 3.6 billion by end 2016, compared with 3.2 billion at end 2015. In developing countries, the number of subscriptions

continues to grow at double digit rates, reaching a penetration rate of close to 41 per cent. But in Africa, the report stated that there are only 29.3 mobile broadband subscribers per 100 inhabitants.

The ITU also found that internet penetration rates are higher for men than for women in all regions of the world. The global internet user gender gap grew from 11 per cent in 2013 to 12 per cent in 2016. The regional gender gap is largest in Africa at 23 per cent, and smallest in the Americas at two per cent.

In terms of capacity, the report said that by early 2016, international internet bandwidth had reached 185,000Gbps, up from a low of 30,000 gigabits in 2008. But it also revealed that bandwidth is unequally distributed worldwide.

A lack of bandwidth remains a major bottleneck to improved connectivity in many developing and Least Developed Countries. The latter currently includes 48 nations of which 34 are in Africa.

## Malawi to develop national cyber security strategy

Malawi's ICT minister has called for collaboration in securing the country against cyber threats.

Speaking in July at a workshop aimed at developing a national cyber security strategy, Patricia Kaliati said that as Malawi is opening up to increasing online transactions, it is now more prone to cyber crime. She pointed out that the nation cannot tackle cyber crime on its own as the problem is borderless, and criminals threaten the country from across the world.

"We have heard stories of how we lost some of our young girls and boys through human trafficking initiated over cyberspace," said Kaliati. "We have experienced attacks on

government departments' websites by some unscrupulous hackers causing interruption to the smooth flow of information for vital services."

She told the high level gathering of more than 100 participants from academia, civil society organisations, telecom operators, banks, security agencies and government departments that it was now time to tackle cyber crime head on and make Malawi one of the most secure places in the world to conduct online business.

"The government is therefore committed to ensuring that law enforcement agents have the powers they need to investigate cyber crimes," said Kaliati. "We need to consider how

these competencies can be delivered for the benefit of the citizens."

The five-day workshop in Lilongwe was organised by the Commonwealth Telecommunications Organisation in close collaboration with Malawi's regulator MACRA. Godfrey Itaye, the latter's DG, said that in the absence of specific cyber security laws, the regulator was grateful that the government has come up with legislation such as the Electronic Transaction Bill which is expected to be tabled in the National Assembly soon.

"Our optimism is on this bill as it will address promotion of e-transactions and e-commerce, facilitate the use of e-application in public sector and

ICT minister Patricia Kaliati said Malawi cannot tackle cyber crime on its own as the problem is borderless.



deal with online liability," he said.

Itaye also highlighted other aspects of the bill such as the recognition of digital data in rules of evidence, e-signatures, cryptography for authentication, and establishment of the Computer Emergency Response Team. He described these as "great steps" towards addressing cyber threat issues in Malawi.

## Orange Money transfers possible from France to Africa



Orange Money users in France can now transfer funds to the cellco's operations in Africa.

Orange has launched its mobile money service in France. Users will not only be able to make fund transfers via their handsets to other Orange Money customers in metropolitan areas of the country, but also to its mobile money users in Africa.

The operator says the launch comes in response to "strong demand" from its customers with family or friends in Africa. It says the service will develop gradually and that it intends to increase the number of points of sale in France. There are already 41 across

the country, including newsagents, call shops, local grocery stores and tobacconists, as well as an Orange Money store in Paris that was used in the pilot network that ran in July 2015.

This first store was fitted with technical solutions developed and managed by Aleda, Orange's long-standing wholesale partner for the distribution of pre-paid telephone offers. As part of the trial network, Aleda provided around 4,000 independent close-to-the-customer points of sale for paperless transactions

such as mobile top-ups, electronic money codes, or money transfer.

The launch of Orange Money in France is also supported by W-HA, an Orange subsidiary which is authorised to issue and manage electronic money.

The operator plans to release an Orange Money app in France soon, and adds that it will also look to expand the money transfer offer to other countries over time. The initial launch in Africa covers Côte d'Ivoire, Mali and Senegal.

## Connecting Tanzania



Airtel, Millicom and Vodacom have launched

East Africa's first active infrastructure sharing initiative. Working with the GSMA, the operators will launch six 3G pilot sites to test the sustainable provision of mobile broadband services to 13 million underserved people across rural Tanzania. The GSMA says operators have so far been able to deploy their 2G networks to up to 85 per cent of the country's population, while 3G network deployment is mostly limited to urban areas. This has resulted in only 35 per cent of Tanzania's people being able to access the mobile internet.

## Epsilon hub for BringCom



Epsilon will deliver a complete communications

hub for BringCom, providing interconnection with more than 500 operators across the globe. BringCom manages the Djibouti Teleport through a joint venture with Djibouti Telecom, and its MPLS network connects 17 countries in Africa. With an outsourced solution, Epsilon says the operator will be able to focus on developing its satellite and fibre infrastructure in emerging markets in Africa, the Middle East and the Caribbean.

## Huawei joins SAA



Huawei has joined the Smart Africa Alliance (SAA) as ICT advisor and 'Platinum' member. Smart Africa is a commitment from African heads of state and government to accelerate sustainable socio-economic development on the continent through affordable access to broadband and ICT usage. Huawei has been working in Africa since 1998. It will support Smart Africa through the deployment of flagship projects, experience-sharing, and talent cultivation.

# SEACOM adds peering in Europe and Africa

SEACOM has become the first African carrier to peer at Netnod in Stockholm. Netnod is an independent, non-profit IXP that operates five IXPs in Sweden and Denmark.

"The majority of internet traffic into and out of Africa goes to Europe, which is why we're investing in connectivity on [that] continent," says Mark Tinka, SEACOM's head of engineering.

"We are the only African carrier with a direct physical presence in Stockholm, which means that we can help our service provider and network operator clients deliver a superior level of service to clients connecting to internet services in Scandinavia."

Over the last few months, SEACOM has been expanding the list of European IXPs at which it peers. It has recently added France Internet Exchange (France-IX) in Paris to PoPs it now has in Europe's five busiest centres for internet traffic: Stockholm, Amsterdam, London, Frankfurt and Marseille.

Marseille is said to one of the key landing points in Europe for most of the marine cables coming in from Asia, Middle East and Africa.

SEACOM has also added new internet exchange points to its roster of peering agreements in Africa. They include Kampala (UIXP), Nairobi (KIXP) and Durban (NAPAfrica).



SEACOM's head of engineering Mark Tinka says most of Africa's internet traffic comes from and goes to Europe.

The firm says all these new peering agreements will further enhance the performance and reduce the latency its clients will experience when they connect to web services in Europe and across Africa. It also claims its IP transit network now offers African service providers direct connectivity to a range of small, medium and large partner networks in Europe.

## Broadlink adds wires to wireless network

Licensed telecoms provider Broadlink says its upgraded network expansion project has begun, and that more than 40 new high sites are now live in South Africa.

To complement its existing radio network, the company has launched a last-mile fibre access network which it says will ultimately have national coverage across the country.

Broadlink is a subsidiary of WBS Holdings which was recently acquired by Multisource. It is perhaps better known for its provision of wireless and satellite connectivity

solutions, and says that adding fibre solutions was partly in response to growing enterprise demand for fibre-based internet access.

The company reckons this new approach will enable it to increase its client base on either radio or fibre solutions using what is already a "proven" telecoms network.

It adds that it seemed logical to diversify into fibre given that the group already utilises 8,000km of fibre which is used exclusively for Broadlink's microwave high sites and backhaul requirements.

"With this footprint, and the fact that Broadlink reaches over 3,000 businesses, it made sense to offer customers access to both fibre and microwave," says CEO Mike Brown.

"We have partnered with numerous well-established fibre providers of metro and long-haul telecoms traffic in South Africa. This collaboration will bring a very competitive offering to the market as it continues to grow at unprecedented rates."

The firm has initially lit its fibre in Gauteng, Durban, Bloemfontein and Cape Town, with other areas to follow.

## Tigo Insurance reaches new milestone

Tigo says its mobile insurance service has now reached around 2.7 million active users across Africa.

*Tigo Insurance* products are available in Ghana, Senegal and Tanzania, and are delivered in partnership with mobile micro-insurance specialist BIMA. They are designed specifically to give lower income segments of the population access to life, hospitalisation and personal accident insurance.

Tigo says that 99 per cent of its insurance customers in Africa live on less than USD10 per day, and that around 73 per cent are new to insurance. The operator believes *Tigo Insurance* has "positively disrupted"



Tigo Insurance agents have signed up almost three million users in Africa.

the continent's traditional insurance industry, driving financial inclusion and bringing mobile micro insurance to customers who otherwise would not be able to afford it.

For example in Ghana it's claimed *Tigo Insurance* has seen considerable

success, having recently paid out its 10,000th claim. On average per month, *Tigo Insurance* is said to pay more than 300 claims through *Tigo Cash*, with valid claims going out within 72 hours after the submission of documents.

"Mobile network operators such as Tigo have the power to open the door to an entirely new and previously underserved market," says Paddy Partridge, regional manager for Africa, BIMA. "And the close partnership between Tigo and mobile insurance experts such as BIMA, guarantees that access is combined with high-quality education, technical delivery and claims support in providing these vital services."



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# The next generation microwave radio system

One of the leading European microwave radio equipment manufacturers SAF Tehnika has recently launched the second generation of its best-selling microwave radio system The Integra.

SAF Integra series products are among the latest technological developments in the field of microwave data transmission from SAF Tehnika. This innovative next generation microwave radio platform combines the radio part, mounting brackets, and modem interfaces into a single unit making it one of the most cost-efficient and easy-to-install radios on the market, superior in terms of build-quality and performance.

The radio can be purchased in three different modifications:

- As a single radio unit that is compatible with any manufacturer's antenna systems
- Radio + integrated antenna that is made from innovative, corrosion-resistant materials
- As a dedicated solution for wideband applications

Integra series radios have a capacity of up to 1Gbps throughput with header compression in 1+0 configuration. The latest modem technology solution enables covering longer distances due to better system gain at 256QAM and hitless ACM switching up to 2048QAM. With optional ETSI Class 4 antennas Integra is the perfect radio to be deployed in a dense microwave



environment. The bandwidth range goes from 3.5MHz up to 112MHz in single hardware design. Integra series products are the most universal fit for a variety of applications – from last-mile to backbone connectivity. Besides, direct radio and antenna integration (Integra-G) allows saving the time usually spent on radio-to-antenna assembly and sealing.

Integra radios are unbelievably light, energy efficient carrier-grade systems that exemplify an outstanding return on smart engineering - the synergy of high competence in radio electronics and materials science. All Integra products are made from an innovative EMC-compliant plastic material ensuring complete corrosion resistance surpassing that of the classic microwave antennas.

The mounting bracket is optimized for wind-load reduction, ensuring a considerably higher wind resistance, which keeps the radio link up even in rugged weather. Another significant addition is the software controlled LED, which indicates whether the radio has been synchronized with the remote end and is operating properly.

Built-in multi-core network packet processor enables Carrier Ethernet performance with features like Synchronous Ethernet, header compression, and RADIUS authentication. Three Gigabit Ethernet ports per radio allow using the built-in high performance Gigabit switch in all-outdoor environment and avoid additional cost of expensive rack-mount switches and facilitate shelter-free installations.

Key benefits of the Integra series radios:

- All-Outdoor radio (inc. modem, Ethernet network processor, PoE splitter and surge arrester) with an integrated antenna in a single-unit compact design
- Bandwidth support from 3.5MHz up to 112MHz. Integra products are a perfect fit for a variety of applications – from last-mile to backbone connectivity
- In case of Integra-G, the direct radio and antenna integration allows saving time usually spent on radio to antenna assembly and sealing

Currently Integra is available in six different configurations, each offering different solutions to solve a particular problem a project might face. If you are interested in learning more about these solutions and the different Integra variations, visit SAF Tehnika's website at [www.saftehnika.com](http://www.saftehnika.com)

SAF Tehnika will participate at this year's Africa Com exhibition that takes place in Cape Town International Convention Centre, South Africa from November 15th till November 17th. SAF's team will be there to provide an even more detailed description of Integra series radios and other SAF solutions.

Visit SAF booth #F22 and/or arrange a meeting by writing to [info@saftehnika.com](mailto:info@saftehnika.com)



# Vestberg goes as Ericsson reports dismal second quarter in 2016

Hans Vestberg has stepped down as Ericsson's president and CEO with immediate effect. His departure was announced on 27 July and came amidst shareholders reportedly calling for him to go following poor results for the second quarter of this year.

Vestberg leaves Ericsson after 28 years, the last seven of which saw him at the company's helm. EVP and CFO Jan Frykhammar will replace him until a successor is found, while Carl Mellander has been appointed acting CFO.

Board chairman Leif Johansson said: "In the current environment and as the company accelerates its strategy execution, the Board of Directors has decided that the time is right for a new leader to drive the next phase in Ericsson's development."

Just a week before announcing Vestberg's departure, Ericsson revealed its 2Q16 results (see table, p15) and reported an 11 per cent drop in YoY sales. It said further actions have now been initiated as part of a cost and efficiency programme

which targets a new annual run rate of operating expenses (excluding restructuring charges) of SEK53bn in the second half of 2017.

Writing the CEO's comments in what has now turned out to be his final earnings report for Ericsson, Vestberg said: "Negative industry trends from the first quarter have intensified, impacting demand for mobile broadband, especially in markets with a weak macro-economic environment."

In sub-Saharan Africa, sales for the company's Networks, Global Services and Support Solutions divisions decreased

Jan Frykhammar - Ericsson's current EVP and CFO - will take over as CEO until a successor to Vestberg is found. Frykhammar has apparently told the board that he is "not aspiring" to permanently take on the role.



by 13 per cent YoY. Ericsson said the decline was mainly due to a lower level of investments, impacted by lower oil prices, and the ramping down of a sizeable mobile broadband project in South Africa. The company said the floating of the Nigerian currency resulted in a devaluation of more than 40 per cent in June, and this also impacted investment decisions negatively.

However, it added that mobile broadband sales increased somewhat as certain markets are investing in network improvements and

introducing 4G.

Elsewhere, there was some good news for the Swedish vendor with the signing of a software deal worth more than USD1bn with VimpelCom.

The partnership

encompasses a complete overhaul of VimpelCom's IT infrastructure across 11 countries on a scale that is claimed to be the "largest and most ambitious" in the industry's history.

Under a seven-year deal, Ericsson will digitalise and globalise VimpelCom's BSS infrastructure using new software and cloud technologies

The operator says this Digital Stack will accelerate product and service development, enabling it to fast-track its digital innovation strategy, particularly in the areas of mobile entertainment, communication, IoT, and mobile financial services.

Ericsson adds that the delivery and use of near real-time analytics will allow greater personalisation of services for subscribers.

VimpelCom expects the move to result in a significant reduction in opex across the group. Going forward, the operator says that by year three it will reduce its IT expenses (opex and capex) by more than 50 per cent down to a ratio of around two per cent of total revenue.

## Avanti open to takeover bid

Avanti Communications Group is looking for a buyer.

In early July, the UK-based operator of the HYLAS satellite fleet announced its intention to engage in discussions with a number of potential investors to address its funding requirements.

In parallel to considering an equity raise, the company's directors are conducting a wider strategic review to explore additional opportunities. This includes a corporate transaction such as a merger with, or offer for, the group by a third party, or a sale of its businesses.

"The Board therefore intends to pursue all of these possible alternatives to ensure the best outcome for its shareholders," said an Avanti press statement.

Any discussions in relation to a merger with a third party or a sale will take place within the framework of a "formal sale process" in accordance with the UK's City Code on Takeovers and Mergers. This means Avanti's board will be able

to have discussions with interested parties on a confidential basis, and they will not be required to be publicly identified.

The company has already been in talks with some unnamed entities. This has led to some speculation that one of the interested parties is Inmarsat. But it has said that it has "no intention" to make an offer to acquire Avanti.

In an online statement dated 1 August, the firm said: "Inmarsat confirms that it was contacted by Avanti's advisers following the announcement by that company of a strategic review and formal sale process on 11 July 2016, and responded to that contact. Inmarsat confirms it has withdrawn from Avanti's announced process and it is not considering an offer for the shares of Avanti."

## Eutelsat's African broadband venture backed by Inframed

InfraMed has become a shareholder in Broadband for Africa, the venture

set up by Eutelsat to provide satellite broadband services on the continent.

InfraMed is a EUR385m investment vehicle dedicated to infrastructure in the southern and eastern Mediterranean. It was created in 2010 by Cassa Depositi e Prestiti, Caisse des Dépôts et de Consignations, the European Investment Bank, Caisse de Dépôts et de Gestion, and EFG Hermes.

The organisation has acquired around 21 per cent of Broadband for Africa. The value of the deal has not been disclosed. By investing in the venture, InfraMed says it is pursuing its strategy to focus on opportunities in regions characterised by dynamic demographics and infrastructure insufficiency.

Set up by Eutelsat in 2015, Broadband for Africa's mission is to provide affordable, high-quality broadband connectivity in Africa. The operator will lease Ka-band capacity on Spacecom's AMOS-6 which is due to be launched later this year. During the second phase,

Eutelsat will use resources on its own dedicated high throughput satellite which is expected in 2019.

## Vantage releases further funding for Vumatel's fibre rollout

Vantage Capital, which describes itself as Africa's largest mezzanine fund manager, has disbursed the second and final tranche of a ZAR250m (USD16.6m) expansion capital facility to Vumatel. The company will use the funding for the ongoing expansion of its FTTH network in a growing number of Johannesburg and Cape Town suburbs.

The Vantage mezzanine facility was structured in two equal tranches of ZAR125m (USD8.3m). Vumatel was able to draw upon these following the achievement of certain operational and financial milestones. Vantage says that since concluding the transaction in April this year, Vumatel has rapidly expanded its network and has exceeded the milestones required to draw down both tranches.

Established in 2014, Vumatel's aim is to supply affordable high-speed fibre optic network connectivity to homes in South Africa. Since first deploying open access FTTH in Parkhurst area of Johannesburg, the company says it has expanded its network to cover 22 suburbs, reaching more than 33,000 homes.

**Saffelberg Investments acquires strategic stake in Effortel**

Saffelberg Investments, one of the largest and most active Belgian private equity funds, has become a strategic investor in global mobile virtual network enabler Effortel.

Saffelberg Investments CEO Jos Sluys says: "Effortel's success in launching, developing and running efficient mobile virtual operators around the globe, as well proven technology and ability to operate in high-growth developing markets, attracted our attention."

The value of the deal has not been disclosed, but Sluys says Saffelberg will provide Effortel with an opportunity to grow and expand even faster: "The pipeline of opportunities looks good, and Effortel's technology proves both

highly competitive and differentiating in its specialised markets."

Brussels-based Effortel provides turnkey telecom solutions for non-telecos and brands that want to launch their own mobile services. It is said to be the only MVNE worldwide that has deployed and is running a centralised real-time IN system.

The firm is currently integrated with mobile operators in seven countries. In Africa, they include Equity Bank in Kenya which became the continent's first bank to become an MVNO after launching services on Airtel's network in July 2015.

**Tigo distributes millions in latest quarterly profit share**

In mid-August, Tigo announced a quarterly payment of TZS46.6bn (USD2,570,120), the ninth time in a row that it is distributing profits to users of its mobile financial service.

The operator said it has now paid *Tigo Pesa* customers a total of TZS46.2bn (USD21,203,490) in quarterly payments since launching the platform in July 2014. The profit share is payable to individual customers, retail agents, and other Tigo business

partners who each receive payment based on the average daily balance stored in their mobile wallets.

Ruan Swanepoel, Tigo's head of mobile financial services, said this year's second quarterly profit share recorded a growth of eight per cent. He attributed the surge to favourable interest rates on the trust funds placed with various commercial banks.

Swanepoel also cited the company's increased profitability (see Millicom's results in table on opposite page), improved market condition, and steady growth in the number of *Tigo Pesa* users as major drivers to the significant increase in profit share, especially from the merchant segment. With more than 50,000 merchants, it's claimed *Tigo Pesa* currently has the largest retailer network in Tanzania.

**GSMA launches innovation fund**

The GSM Association has launched its Ecosystem Accelerator Innovation Fund to help identify innovations with the greatest potential for growth, and provide best practices for stakeholders on the ways in which they can use mobile to drive socio-economic impact.

The fund is open to new companies from and operating in Africa, as well as selected countries in Asia. It will provide financing, mobile-focused mentoring, and technical assistance to selected start-ups, and establish partnerships between them and operators to increase the reach of innovative mobile services.

The fund will run several rounds between 2016 and 2020, with each having specific areas of focus. The first round will disburse around GBP2m. As well as being supported by the GSMA and its members, the initiative is backed by the UK Department for International Development (DFID).

**IN BRIEF...**

 South African operator Cell C says its partnership with various MVNOs, such as FNB and Virgin for example, has now brought in more than one million customers. The company says it is currently the country's only mobile operator to offer a dedicated mobile virtual network operator and enablement platform, and believes MVNOs bring much needed competition and value to the telecoms industry.

**INVESTMENTS, MERGERS & ACQUISITIONS**

Date	Buyer	Seller	Item	Price	Notes
13/7/16	Helios Towers DRC	Standard Bank of South Africa & DEG	Loan	USD105m	Funding facility will partly finance both the acquisition of Bharti Airtel's tower portfolio & HTD's organic growth & operational programme across the DRC.
8/8/16	SpeedCast International	Eutelsat	WINS Limited	EUR60m	SpeedCast says acquisition of Eutelsat's 70 per cent stake in WINS gives it a "strong local presence in Germany, a major maritime market, as well as expertise in the cruise industry in Europe".

**NEW APPOINTMENTS**

Date	Name	New employer	New position	Previous employer	Previous position
23/6/16	Christian Queffelec	Astellia	Chairman	Astellia	CEO
23/6/16	Nick Avill	Simoco Group	Business development director, EMEA utilities	Bender UK	UK industrial sales manager
12/7/16	Gary Aitkenhead	Sapura	VP devices	Motorola	VP of global managed services
12/7/16	Michelle Lamprecht	Sapura	VP marketing	The MathWorks	Marketing manager Northern Europe
14/7/16	Eran Yoran	-	-	Gilat Satcom	Chief marketing & business development officer - stepping down
1/8/16	Antony Siph Sibanda	COO	Unnamed critical comms specialist in Africa	Emcom Wireless	Executive director business development
29/7/16	Vivek Badrinath	Vodafone Group	Chief executive for Africa, Middle East, Asia-Pacific	AccorHotels	Deputy chief executive
4/8/16	Kjell Morten Johnsen	VimpelCom	Head of major markets	Telenor	Head of Europe
8/8/16	David Orloff	Small Cell Forum	Chair	-	The director of RAN product introduction at AT&T replaces outgoing chair Alan Law

 Paul Taylor has left Botswana Telecommunications Corporation Limited (BTCL) as MD following the end of his contract on 19 July. In thanking him for his work over the last five years, the company's board of directors said Taylor's contributions included revenue growth of nearly 50 per cent, and integration of three separate businesses – beMOBILE, BTCL Home and Office, and Botsnet – into one converged organisation. CCO Anthony Masunga has taken over as acting managing director until a permanent successor is found.

 The Independent Communications Authority of South Africa plans to increase the allocated bandwidth of 567MHz IMT spectrum. On 15 July, the regulator issued an invitation for applicants interested in providing mobile broadband wireless access services for urban and rural areas using the complimentary 700MHz, 800MHz and 2600MHz bands.

 MTN was the sole bidder in Nigeria's recent auction of 2.6GHz spectrum. In late May, the

operator was provisionally awarded a 10-year license for 2 x 70MHz in the 2.6GHz band at a cost of USD96m. MTN said the spectrum will guarantee "superior performance" for wireless networks, especially LTE. It also plans to use FDD networks in addition to its existing WiMAX over TDD networks as this, says MTN, provides for greater consistency with existing 2G and 3G deployments.

 Telkom claims it has seen rises of 18.4 per cent in mobile voice and subscriptions, and

more than 70 per cent in mobile data traffic in recent months. The South African telco said the "exceptional" increase has led to congestion on parts of its 2300MHz LTE network in some of busier metro areas. However, it pointed out that this is the "exception: as currently over 80 per cent of its BSTs are delivering speeds of 10Mbps and higher. Telkom added that all the affected areas have all been identified and that it is working with its provider, Huawei, to speed up the implementation of additional capacity in its core, backhaul and radio networks.

### LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
29/6/16	NuRAN Wireless	Canada	1Q16	CAD	1.51	0.0037	NA	Revenue decrease of around 27% from 2Q15 partly attributable to a temporary shift of resources towards acquisition of key technology. In late May, the rural connectivity specialist opened its first office on the continent (Windhoek, Namibia) & appointed Bradley Shaw as regional manager for MEA.
19/6/16	Ericsson	Sweden	2Q16	SEK	54.1 (bn)	4.22 (bn)	0.48	Overall sales down by -11% YoY. In sub-Saharan Africa, sales declined due to lower investment levels, impacted by slump in oil prices & ramping down of a "sizable" mobile broadband project in South Africa.
21/7/16	Millicom	Luxembourg	2Q16	USD	1,572	560	0.04	In Africa, Q2 reported organic revenue growth of 9.2% to \$222m with service revenue growing 9.8%. Gained 171,000 subscribers in Africa, mainly from Tanzania and Senegal.
27/7/16	Bharti Airtel	India	1Q16	INR	255,465	95,913	3.66	Total African revenues of INR62,493m reported for fiscal first quarter that ended in June. That compares to INR61,595m for 1Q15. Devaluation of Nigerian naira by 42.1% during the quarter resulted in forex losses of INR7,479m (net of minority interest).
27/7/16	Infinera	US	2Q16	USD	258.8	12,787	0.08	GAAP revenue for quarter up compared to \$244.8m in previous quarter & \$207.3m 2Q15. But CEO Tom Fallon warned: "Demand is softening in certain areas of our business & we face a difficult near-term revenue outlook."
27/7/16	Intelsat	US	2Q16	USD	542.0	403.6	0.98	Compared to 2Q15, Network Services revenue decreased 16%, Media revenue is down 5%, & Government revenues declined 2%. CEO Spengler said results are "consistent" with expectation for 2016.
29/7/16	Eutelsat	France	FY16	EUR	1,529.0	1,164.6	1.10	Revenues up 0.2% on like-for-like basis – 64% of this is from video applications which increased 2.3% to €943.6m. This reflected sustained growth in MENA & sub-Saharan Africa with the entry into service of new capacity on EUTELSAT 8 West B in October 2015 & EUTELSAT 36C in February 2016, as well as growth at 16°E (SSA & Central Europe) & 7°E (MENA).
4/8/16	Motorola Solutions	US	2Q16	USD	1,430 (bn)	NA	0.61	Sales increased 5%, including \$146m in sales associated with the acquisition of Airwave in the UK. Continues to expect revenue to increase 5 to 7% & non-GAAP EPS from continuing operations in the range of \$4.45 to \$4.65 per share.
5/8/16	MTN Group	South Africa	1H16	ZAR	78,878	29,273	2.50	Revenues increased 1.5% at constant currency but results significantly impacted by the Nigerian regulatory fine which has now been settled. Group subscribers remained flat at 232.6 million from 31 December 2015.
4/8/16	Sierra Wireless	Canada	2Q16	USD	156.2	12.1	0.20	Earnings declined 1.1% compared to \$158m for 2Q15. Completed acquisition of fleet management & asset tracking specialist GenX on 3 Aug for total cash consideration of \$7.8m.
10/8/16	Gilat Satellite Networks	Israel	2Q16	USD	67.9	987 ('000s)	(0.16)	Revenues increased 53% from \$44.3m in 2Q15, & 29% compared to 1Q16. Loss on a GAAP basis decreased to \$3.7m compared to a loss of \$9.1m in 2Q15.

# Cambium platform promises fibre-like throughput

The *PMP 450m* is the first product to feature Cambium Networks' *cnMedusa* technology. This has been developed

to enable operators to offer what's claimed to be 5G-like speeds surpassing DSL and cable while offering throughput comparable to fibre.

According to the firm, *cnMedusa* is the first commercially available Massive Multi-user (MU) MIMO platform for fixed wireless broadband. It says the technology's 14x14 integrated antenna array exceeds both 802.11AC Wave 2 and LTE-A planned implementation of

8x8, and yields the ability to support up to seven simultaneous carrier chains. Cambium adds that the integrated sector antenna cuts capex as well as opex in installation and recurring tower fees.

It goes on to say that the *cnMedusa*-enabled *PMP 450m* offers "unprecedented" spectral efficiency of more than 20bps/Hz, and more than 40bps/Hz when deployed in frequency re-use configurations.



Cambium also says the platform offers a three- to four-fold increase in network capacity, with more than 400Mbps in a 20MHz channel.

The new *PMP 450m* works with existing *PMP 450* subscriber modules and only requires changing out the access point. Cambium adds that the entire system can be managed via a single pane of glass in the cloud.

**MANUFACTURER:**  
Cambium Networks

**PRODUCT:** PMP 450m

**MORE INFORMATION:**  
[www.cambiumnetworks.com](http://www.cambiumnetworks.com)

# MicroPoP offers fast wireless broadband to urban areas

Mimosa reckons its *Micro Point-of-Presence (MicroPoP)* network architecture enables service providers to deliver gigabit wireless broadband and achieve the same

speeds as fibre for a fraction of the cost. The system combines Mimosa's new *A5* access point and the *C5* client device.

With its "unique" quad-sector antennas and massive MIMO technology, the compact *A5* is claimed to be the industry's fastest multipoint solution purpose-built for high-density deployments, and offers more than 1Gbps of aggregate capacity. It can be deployed in a central point within

a neighbourhood to provide wireless broadband connections to subscribers within 500 metres.

Both the *A5* and the *C5* feature GPS sync-enabled TDMA. This ensures that each client device precisely receives and transmits under the AP's timing control. Mimosa says this also eliminates the possibility of interference from other *A5s* in the vicinity.

The *C5* endpoint is also MU-MIMO capable which means that



multiple clients on the same AP can be coordinated to simultaneously share spectrum, thus improving scaling and spectral efficiency.

With protection from harsh environmental conditions and a wide-range of mounting options, Mimosa adds that the units are suitable for "any deployment situation".

**MANUFACTURER:** Mimosa

**PRODUCT:** MicroPoP

**MORE INFORMATION:**  
<http://mimosa.co>

# EtherHaul-500 "ideal" for congested 5GHz networks

Siklu, which specialises in millimetre wave wireless solutions, has launched what it describes as an "affordable" V-band radio for interference-free connectivity on the street. Operating in the 60GHz band, the new *EtherHaul-500* is claimed to be "perfect" for upgrading congested 5GHz networks.

The radio is designed to provide 200Mbps of real time connectivity. It utilises the ample 9GHz-wide V-Band spectrum with 11 non-overlapping full-capacity channels, which are also user-selectable. According to Siklu, the 60GHz band is characterised



by abundant license-free spectrum, minimal reflections, and narrow beamwidth. It says all this enables dense link deployment.

The spectrum also provides predictable performance as it experiences no beam interference. The firm says this is an advantage for mission-critical environments, such as transmitting data from HD/4K video surveillance cameras and other safe city sensors.

**MANUFACTURER:** Siklu

**PRODUCT:** EtherHaul-500

**MORE INFORMATION:**  
[www.siklu.com](http://www.siklu.com)

# Planning tool saves time and money on rollouts

Ranplan has released a new version of its all-in-one planning, optimisation and simulation tool for indoor and outdoor radio networks.

*iBuildNet 3.1* adds a range of new features including carrier aggregation, HSPA+, enhanced Wi-Fi planning capabilities, Smart CAD functions, and support for LTE-A key standards such as MU-MIMO and CoMP.

The enhanced tool is said to allow users to perform cross-system design and simulation with accurate modelling of coverage, traffic steering and handover between LTE and Wi-Fi systems.

According to Ranplan, this means indoor and outdoor Wi-Fi and cellular networks can be planned in co-ordination, reducing the time and cost of deployment and ensuring support for future heterogeneous technologies and standards.

The Smart CAD features include automatic extraction of walls, doors, windows and floors from complex CAD files to create more accurate building models. It's claimed this new capability alone can reduce the time it takes to model the building environment by more than 50 per cent.

*iBuildNet's* material database has also been enhanced to enable the design of networks operating in spectrum up to 6GHz. And with the advanced *Wireless Network Simulator*, engineers can now plan a user-centric model rather than a cell-centric one.

**MANUFACTURER:** Ranplan

**PRODUCT:** iBuildNet 3.1

**MORE INFORMATION:**  
[www.ranplan.co.uk](http://www.ranplan.co.uk)

# DMR simulcast system needs just one pair of frequencies

Hytera says its latest DMR solution offers a cost-effective option for suppliers, local public transport networks and municipalities to modernise their radio systems.

The *DS-6310 Simulcast* system has been developed using the DMR Tier II standard. It consists of a mobile switching office (MSO), base station

(pictured), dispatch system, a central network management system, service terminals and bearer network. Hytera says one MSO supports up to 100 base stations or 200 carriers, while a single DMR simulcast base station can support up to two carriers.

The company says a simulcast technique means that only a single pair of frequencies is needed (one for TX and one for RX) regardless of the number of base stations in the network. The DMR standard's two-slot TDMA technique supports two simultaneous communications on a single 12.5kHz channel which makes it possible to hold two conversations at the same time on a single frequency.



The platform's IP-based architecture is said to enable flexible networking. Multiple transmission links can be used between base stations and the MSO, such as IP, E1, microwave, wireless bridge, etc. Standard SIP and RTP are used to interconnect with other systems such as those used for PSTN and DMR trunking.

**MANUFACTURER:** Hytera

**PRODUCT:**  
DS-6310 Simulcast

**MORE INFORMATION:**  
[www.hytera.com](http://www.hytera.com)

# Proxim launches long-range PTP link

Proxim Wireless has developed a long-range version of its carrier class *Tsunami QuickBridge* backhaul product.

The new *Tsunami QB-10150-LKL* features a 28dBi high gain integrated antenna that is claimed to allow links

in excess of 35km to be deployed. Proxim adds that compared to rival products with lower antenna gain, shorter range connections will also benefit from the *QB-10150-LKL*'s higher modulation rates and resulting higher data throughput.

The new version continues to support all the key features of the company's *QB 10100* series. This includes: high capacity usable throughput of 650Mbps; the ability for customers to select a wide frequency range from 5.15GHz to 5.85GHz in a single model; and *WORP*, Proxim's software that allows multiple traffic streams with varying



QoS needs to be bundled into one link.

In addition, the *QB-10150-LKL* supports IEEE 1588 pass through and Jumbo Frames, which are common carrier requirements.

Like all *Tsunami* radio products, the device also uses *Proxim ClearConnect* which helps it to withstand all but the most hostile RF environments. The *QB-10150-LKL* can operate in temperature ranges from -40°C to +60°C, and is contained in an IP67 rated enclosure.

**MANUFACTURER:**  
Proxim Wireless

**PRODUCT:**  
Tsunami QB-10150-LKL

**MORE INFORMATION:**  
[www.proxim.com](http://www.proxim.com)

# RFS introduces next-gen combiner range

Radio Frequency Systems (RFS) has enhanced its range of *ShareLite* combiners. The new models support additional wideband frequencies and include features such as DC sensing-AISG bypass and compatibility with the 4.3-10 standard.

RFS reckons its combiners are

"ideal" tools for any feeder or antenna sharing solution and help wireless operators adapt their infrastructure for 4G technologies. It says the combiners are compact and lightweight for easy handling, and their rugged design allows for outdoor use and increases product longevity.

According to the firm, automatic DC sensing and AISG bypass bring increased flexibility to site installations. It says they allow combiners to automatically adjust to site requirements and route DC and control signals through the antenna



line system as appropriate, thereby ensuring the right bypass for any installation.

RFS adds that the latest models in its *ShareLite* portfolio have extremely low insertion loss and a high level of rejection between bands for maximised performance. They

also accommodate many new frequencies as well as combined ones.

The entire range is available with the vendor's 4.3-10-style connectors, allowing operators to achieve the highest performance with the new interface standard.

**MANUFACTURER:**  
Radio Frequency Systems

**PRODUCT:** ShareLite

**MORE INFORMATION:**  
[www.rfsworld.com](http://www.rfsworld.com)

## ALSO LOOK OUT FOR

### Qualcomm unveils 5G sub-6GHz prototype system

Qualcomm Technologies has developed a 5G 'New Radio' (NR) prototype system and trial platform that operates in the sub-6GHz bands.

The company says the aim is to create a unified and more capable 5G air interface. It says designs implemented on its prototype system will be used to drive 3GPP standardisation for a new, OFDM-based 5G NR air interface.

The system will closely track 3GPP progress to help achieve timely 5G NR trials with operators, infrastructure vendors and other industry players, as well as future 5G NR commercial network launches.

The platform itself consists of both a base station and user equipment, serving as a testbed for verifying 5G NR capabilities. Qualcomm says it supports wide RF bandwidths over 100MHz that are capable of delivering multi-gigabit per second data rates.

It also supports a new integrated subframe design for what's claimed to be "significantly" lower over-the-air latency than what is possible in today's LTE network.

5G will make the best use of a wide range of spectrum and, according to Qualcomm, utilising frequencies below 6GHz is a critical part of allowing for flexible deployments with ubiquitous coverage and a many use cases.

The firm says the prototype system continues the development and testing of its 5G designs which are contributing to 5G NR 3GPP standardisation. The 3GPP 5G NR study item has begun as part of Release 14 and will feed into Release 15 work items.

The prototype adds to Qualcomm's existing 5G mmWave prototype system. This operates at 28GHz and is said to be capable of "robust" mobile broadband communications in non-line-of-sight environments, utilising advanced beamforming and beam-steering techniques.



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CCS says each of its *Metnet* nodes has a wide field of view. This means that only one unit is required per lamppost which is far more acceptable to urban planners.

# Still at the top of the tower

Despite the prospect of fibre, small cells and high throughput satellites as wireless backhaul technologies, RAHIEL NASIR discovers that microwave's power is unlikely to diminish over the foreseeable future.

In a report published at the end of last year, MarketsandMarkets estimated that the global mobile and wireless backhaul market will grow from USD17.85bn in 2015 to USD33.15bn by 2020, a CAGR of 13.18 per cent. According to the research firm, while microwave has dominated the wireless backhaul market, it is slowly losing share because of the growing adoption of millimetre wave (MMW) equipment.

ETSI (European Telecommunications Standards Institute) defines MMW spectrum as frequencies in the 30GHz to 300GHz range, with wavelengths from 10mm to 1mm. Small cell equipment uses V-band (57GHz to 66GHz) or E-band (71GHz to 76GHz, and 81GHz to 86GHz) frequencies for applications such as backhauling mobile networks.

But as ETSI points out, there are barriers to using MMW spectrum. It says regulations for millimetre wave radio differ greatly from country to country, ranging from no rules to full regulation. The institute adds: "There is a lack of key components leading to high equipment costs. There is huge variety in the types of equipment and applications using this spectrum and there is still a lack of confidence in the technology."

Nonetheless, the outdoor small cell backhaul market is forecast to be worth more than USD2.2bn

by 2020. In a research note issued in June 2016, IHS Technology said: "Outdoor small cell deployments were off to a slow start, but are now showing signs that they will grow significantly over the next several years, driven mostly by mobile operators' common need to enhance saturated macro cellular networks and improve the mobile broadband experience by adding capacity through dense low power node deployments."

IHS believes the real rise will begin in 2017, with steady growth through 2020 as deployments proliferate. As a result, it said a cumulative USD6.4bn will be spent worldwide on outdoor small cell backhaul equipment between 2016 and 2020.

The analyst added: "Although most deployments to date have been in urban and metro areas, there is life in the rural segment too: Vodafone and other operators are using small cells for outdoor coverage in rural areas, where the backhaul is not difficult and usually wireline."

Will the rise of small cells therefore lead to the decline of microwave as a backhaul technology? Far from it – perhaps even the reverse if vendors such as Ericsson are to be believed. In its *Microwave Towards 2020* report published in 2014, it said that even as the total number of connections grows, microwave's share of the market will remain fairly

constant. “By 2019, it will still account for around 50 per cent of all base stations (macro and outdoor small cells), and play a key role in last-mile access and a complementary role the aggregation part of the network,” said the report.

It added that microwave’s overall share of the backhaul market may decrease over the coming years, but the volume of macro and small cell base stations will continue to increase, ensuring that the total number of microwave-connected base stations will rise.

## Riding the millimetre wave

CBNL, a well-established player in the microwave backhaul market, has come up with a 39GHz variant of its *VectaStar* platform. The company said that as spectrum becomes an increasingly scarce resource, its new solution unlocks the huge potential of MMW to offer a more efficient route to transform last-mile throughput to multiple gigabits per second.

According to CBNL, the 39GHz *VectaStar* is an “ideal” solution to support high-capacity applications such as backhaul. Offering up to 13.2Gbps per hub site in the US where it has initially been deployed, the company says the platform enables rapid deployment of guaranteed bandwidth that can easily scale as demand grows. It claims that *VectaStar*’s point-to-multipoint architecture can be deployed faster than licensed point-to-point systems, and with up to 50 per cent cost savings.

Earlier this year, Ericsson signed a global reseller agreement with Cambridge Communication Systems (CCS). It will use the UK-based company’s *Metnet* system as a complementary small cell backhaul system.

CCS claims *Metnet*, which was unveiled in February, is the world’s first self-organising small cell microwave backhaul platform. According to the vendor, the system has a “unique” multipoint-to-multipoint architecture, with self-organising, self-healing links. It says *Metnet* operates in a single frequency channel with no radio planning required, and that each unit has a wide 270° field of view and supports multiple connections, so there’s no need for manual alignment and only one is required per site. Each node supports connections to up to 16 others, and is also capable of providing GPS-derived local master synchronisation, with distributed timing recovery in the event of GPS failures.

By 2020, Ericsson believes high-capacity base stations will require backhaul in the 1Gbps range, whereas low capacity will be within the 100Mbps range. The company said microwave and fibre are the main types of transmission media that will meet these capacity requirements, and that a combination of the two is needed for networks on the road to 5G. The company reckons that it has the right solution to achieve this combination in the form of its *Router 6000* series and *MINI-LINK* radio units.

The *Router 6000* family is an IP access and aggregation portfolio that is SDN-enabled. The range includes small cell site routers to larger aggregation devices, optimised for 10G and 100G capacities.

Earlier this year, Orange Egypt (formerly Mobinil) became the world’s first operator to deploy the *MINI-LINK* system. It is using the *MINI-LINK 6352*, an outdoor unit for E-band supporting 5.5Gbps capacity over 750MHz channel. It features an embedded L2 switch to enable full aggregation and switching between all traffic ports. Ericsson said this makes it ideal for multiple combinations of mobile backhaul solutions.

By combining *MINI-LINK* outdoor units and indoor units, the firm said all network scenarios are supported. The portfolio spans all transport technologies (IP, MPLS, Ethernet and TDM) and all frequency bands (from 4GHz to 80 GHz), all under a common management system. It also supports both line-of-sight as well as and non-line-of-sight (NLOS) configurations.

## “Hop-in-a-box”

Proxim Wireless has certainly had a busy year so far with a number of new launches. They include the *ORINOCO Quickbridge 9100* which is billed as the first wireless solution that combines a 2.4GHz access point and 5GHz backhaul.

The ruggedised enclosure features a WLAN access point with a carrier class wireless point-to-point backhaul radio for outdoor deployments. The company said combining the two functions into a single unit means a smaller hardware footprint, as well as reduced capital outlay and recurring site rental costs.

Proxim has also developed a long range version of its carrier class *Tsunami QuickBridge* backhaul radio. The *Tsunami QB-10150-LKL* features



Ericsson’s *MINI-LINK 6352* is an outdoor unit for E-band. It features an embedded L2 switch, enabling full aggregation and switching between all traffic ports. The vendor claims this makes it ideal for multiple combinations of mobile backhaul solutions.

a 28dBi high gain integrated antenna that is claimed to allow links in excess of 35km to be deployed. The company added that compared to rival products with lower antenna gain, shorter range connections will also benefit from the *QB-10150-LKL*’s higher modulation rates and resulting higher data throughput.

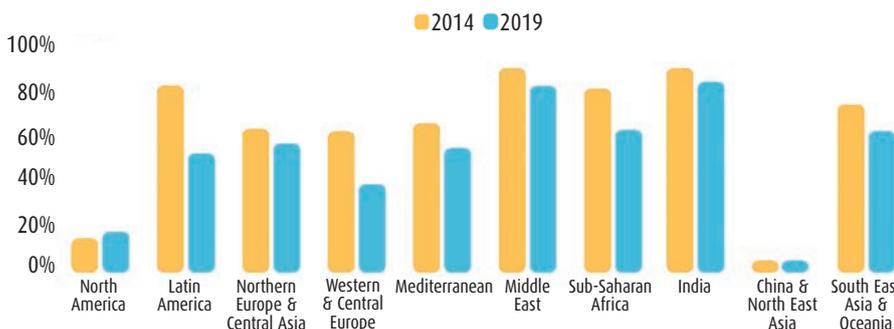
The new version continues to support all the key features of the company’s *QB 10100* series. This includes: high capacity usable throughput of 650Mbps; the ability for customers to select a wide frequency range from 5.15 to 5.85GHz in a single model; and *WORP*, Proxim’s software that allows multiple traffic streams with varying QoS needs to be bundled into one link. In addition, the *QB-10150-LKL* supports IEEE 1588 pass through and Jumbo Frames, which are common carrier requirements.

The device uses *Proxim ClearConnect* which is designed to help all *Tsunami* radio products withstand all but the most hostile RF environments. The *QB-10150-LKL* can operate in temperature ranges from -40°C to +60°C, and is contained in an IP67 rated enclosure.

Meanwhile, the firm described the *Tsunami QB-826* series as an ultra compact, 1000Mbps, point-to-point backhaul link. Operating in the 5.900GHz to 6.425GHz band, the unit measures 126 x 219 x 65.5mm (to each end point) and comes as a complete “hop-in-a-box” outdoor unit delivering up to 100Mbps throughput.

It offers what’s claimed to be “unprecedented ease of installation”. Proxim added that a 2x2 MIMO high power radio capable of 25dBm transmit power eases deployment in challenging areas, while NLOS capability is provided through the use of advanced OFDM.

DragonWave is promising the lowest cost per bit over microwave with *Harmony Enhanced MC*, a carrier-grade packet microwave solution that operates in licensed or unlicensed spectrum from 6GHz to 42GHz.



A 2014 study by Ericsson showed wide variation in the proportion of radio base stations connected by microwave in different parts of the world – ranging from single-digit percentages in China and North America, to around 90 per cent in India and the Middle East.

SOURCE: ERICSSON



**Above left:** Proxim Wireless' *ORINOCO Quickbridge 9100* combines a 2.4GHz access point and 5GHz backhaul, while its *Tsunami QB-10150-LKL* (centre) has high gain antenna that enables links in excess of 35km to be deployed. **Above right:** DragonWave says the *Harmony Enhanced MC* can deliver capacities of up to 4Gbps in a single radio.

Designed for applications such as mobile backhaul, leased line replacement and last-mile fibre extension, it delivers a multi-carrier channel system thereby doubling the capacity available in a single outdoor unit. And because the radio and modem are integrated into a single highly compact ODU, DragonWave said *Harmony Enhanced MC* offers a zero footprint solution which cuts rack congestion and colocation space.

The unit also features ultra high power which is said to increase the overall system gain and allows for deployment of smaller dishes, higher order modulations, or increased link availability. Using the company's *Bandwidth Accelerator+* technology, it's claimed the device achieves the "highest degree" of spectral efficiency (through 4096 QAM, 4x4 MIMO and wider channels). DragonWave said this enables it to deliver capacities up to 4Gbps in a single radio and 8Gbps in a single channel with MIMO or a single antenna with XPIC.

Ceragon is also making bold claims for its recently announced *FibeAir IP-20 Assured Platform*. It said the system has received FIPS 140-2 validation by the US National Institute of Standards and Technology, and provides a "premium" wireless backhaul solution for enhanced security. Ceragon said the platform helps public safety organisations, utility companies and service providers increase their operational efficiency, and build highly reliable networks with high standards of encryption and security. Most importantly, according to the company, it keeps first responders and other mission-critical customers connected.

It's claimed that the *IP-20* features unique multicore technology that delivers multiple Gbps wireless backhaul for LMR, LTE and other secured access technology networks. At the same time, the device is said to use just a fraction of the spectrum otherwise required.

The platform is available across all wireless backhaul frequencies from 6GHz to 86 GHz. Ceragon said it offers highly redundant and secured wireless backhaul with over-the-air encryption, enabling network operators to meet service availability demands by providing physical and

virtual security, advanced identity management, as well as a secured product architecture.

Like Ceragon, Cambium Networks also has security for mission-critical users uppermost in its mind. It has given its *PTP 700* product line a high-capacity multipoint (HCMP) software upgrade, enabling defence, industrial and public safety professionals to deploy a secure, high-efficiency multipoint system with up to eight locations.

The *PTP 700* with HCMP technology is designed to withstand rugged conditions and harsh weather. It is described as ideal for quickly establishing temporary, nomadic networks for first responder emergency response and stationary networks for defence agencies, as well as permanent deployments for border security, video surveillance and communications backhaul.

Cambium said that deploying multipoint connectivity in a remote environment previously required multiple channel allocations and

multiple sets of point-to-point radio links. But by using HCMP, it reckons these missions can be deployed more quickly with fewer radios and less spectrum. "As an ultra-wideband radio, every *PTP 700* is ready for use virtually anywhere in the world supporting every band from 4.4 to 5.925GHz," stated the firm. "And now with HCMP, every *PTP 700* can deploy as a point-to-point, multi-point hub or subscriber radio, as dictated by the next mission."

Other key features for Cambium's NIST FIPS 140-2 validated platform include: 450Mbps throughput; over-the-air re-keying for increased security and reduced maintenance efforts by automatically refreshing encryption keys in a hitless fashion; the vendor's *Dynamic Spectrum Optimization* capability that automatically samples and changes channels to avoid interference without affecting link service; and a portfolio of omni and sector antennas optimised for HCMP missions. ■

## MICROWAVE PATH ALIGNMENT IN "MINUTES NOT HOURS"

Sunsight Instruments has developed a *Microwave Path Alignment Kit* to make microwave antenna installations fast and accurate, thus saving valuable time and money for operators.

According to the company, current methods for microwave backhaul alignment take tower crews hours and sometimes even days to find the main lobe. Sunsight claimed its kit cuts that time down to minutes.

It explained that the system does not need to wait to find the signal from the opposite side, and uses "very accurate" GPS positioning and dual communicating units to sync both sides and relay the precise position.

Sunsight said its system takes into account, height and curvature of the Earth, and that azimuth, tilt/roll, height and geographic coordinates can be captured and recorded.

Site engineers can send reports with all antenna measurements using any mobile device (*Android*,



*iOS*, *Windows*, etc.), and powering down or removal of radios is not necessary for pathing microwave link. Kit units can also be used independently for RF panel antenna alignment.

The firm added that no additional software, post processing, or cables are needed, and that its all-inclusive kit is tested and proven to align antennas up to 150 miles apart.



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Project Isizwe has enabled the installation of free Wi-Fi on board buses operated by A Re Yeng in Tshwane, South Africa.

From road and rail to sea and air, wireless communications travel across huge distances to keep man and machine connected.

**G**eneva-based Cotecna specialises in solutions that help governments combat fraud, protect customs revenue, maintain internal security, and facilitate lawful commercial exchanges at national borders. It also provides the private sector with a wide range of testing, inspection and certification services, as well as assistance in trade finance services and e-documentation.

Over the last few years, the company says its business has expanded significantly in the private sector. To stay competitive, it developed a five-year digital transformation plan to simplify and reduce the administrative work of customs agents.

With its network at the core of this plan, Cotecna needed a partner with a global footprint that could reach remote sites, particularly in Africa. It contracted Orange Business Services (OBS) and now uses the company's hybrid network solution that incorporates satellite connectivity. It comprises a business VPN with



Orange M2M devices are attached to Cotecna's vehicles and allowing quasi-real-time monitoring to ensure boxes in transit remain unopened and vehicles stay on schedule.

satellite and internet for 53 Cotecna sites in 29 countries across Africa, Asia and Europe.

In addition to the hybrid network, OBS has also helped Cotecna extend its *Cotrack* system into Burkina Faso and Senegal with local machine-to-machine connectivity. The system uses what's described as a "best-in-class" M2M track and trace solution that keeps goods secure and monitored wherever they are.

Cotecna wanted to enhance its transit monitoring services by using M2M technology to give its clients, such as customs authorities, greater reassurance and increased security when monitoring their goods.

According to OBS, legacy customs transit monitoring solutions were unable to prevent modern fraud techniques. It says the industry lacked adapted technologies that could track and monitor vehicles or merchandise along specific routes. What Cotecna needed was a solution that could monitor vehicles and cargo across borders, and could offer more than just basic fleet management capabilities to customs.

To address this, the company partnered with OBS to develop and implement a comprehensive system that monitors all transit operations per specific customs requirements.

With more than 200 dedicated M2M experts on hand offering expertise in consulting, design, innovation, integration, project management and service management, OBS says it was able to demonstrate to Cotecna that it had the skills required to design, build and operate an end-to-end solution. The purpose-built track and trace

system it developed builds on the *Orange Intelligent Apps Enabler* platform and supplies best-of-breed hardware and software. M2M devices are attached to vehicles or containers passing through customs, allowing quasi-real-time monitoring of goods to ensure boxes remain unopened and vehicles stay on schedule. Orange is also responsible for integrating the solution into local GSM and internet networks.

The M2M track and trace solution has resulted in a reduction in the number of false transits. That means more goods become legally available for consumption, and it also increases competitiveness for countries engaged in international trade by reducing non-tariff barriers.

Under a long-term partnership, Cotecna and OBS will roll out the tailored track and trace solution to organisations with transit monitoring needs in developing countries. They also plan to co-market the system across other territories.

### Arik Air takes off with Hytera DMR

Established in 2006, Arik Air now has a fleet of 26 aircraft including two Airbus A340-500s and offers flights to 28 different domestic, regional and international destinations. The firm operates from two main points in Nigeria: Murtala Muhammad International Airport in Lagos, and Nnamdi Azikiwe International Airport in the state of Abuja.

In order to guarantee flight safety and quality of services, Arik Air needs to carry out bridging, catering, chocking, comprehensive checks, maintenance, etc., after its aircraft is parked.



Arik Air operates a fleet of 26 aircraft including two Airbus A340-500s. Its airport operations in Nigeria rely on Hytera's DMR RD98X repeaters (below) and PD70X portable radios (left).



The workflow is complex and needs coordination from different departments. It therefore needed a reliable wireless communication system to provide unified communication and improve efficiency.

With its wide experience of deploying comms systems to the aviation industry, Arik Air chose Hytera to provide the solution. The company provided a DMR conventional system that include three of its RD98X repeaters and 140 PD70X portable radios.

The repeaters were installed at the two airports in Nigeria and interconnected by IP link. With Hytera's DMR conventional system, staff from different departments and different airports are able to communicate with each other, share information instantly, and take effective action as appropriate.

With the combined application of narrowband codec and digital error-correction technologies, Hytera says its DMR products provide large area coverage between the two airports, and claims that they ensure "superior" voice quality even in the noisy airport environments. Security is said to be guaranteed with the advanced intrinsic encryption of DMR's digital technology, thus ensuring confidentiality of every call for Arik Air.

Hytera says that because DMR benefits from TDMA technology, it doubles the channels based on the same spectrum resource. The system can therefore use Arik Air's existing frequencies and no other site is required, resulting in cost savings for the airline.

The vendor also says that thanks to its compliance with IP 67 and MIL-STD-810C/D/E/F/G, the PD70X ensures "outstanding performance" even in harsh environments. It adds that the radio's large colour display and programmable keys make operation more convenient, while a 2000mAh long-life battery means higher efficiency without the need for frequent recharging and also saves on battery replacement costs.

## Wireless overcomes network security challenges at Dakar Port

Dubai Port World (DPW) runs 49 terminals in 27 countries, and ranks amongst the world's four largest container terminal operators.

In June 2007, it was awarded the concession to operate and further develop the four existing container terminals at the Port of Dakar in Senegal, with the aim of more than doubling their capacity.

As part of this, DPW decided to improve security coverage across the Dakar Port site in order to enhance the processes for control and

access, as well as health and safety. The need for real-time video-surveillance across the site was identified as a priority. This included covering the main access point; improvement here would not only enhance the overall security of goods and services entering the site, but also act as a safety mechanism for employees as this was also the location where they were paid their wages.

Three factors were considered key to the surveillance solution. Firstly, a central video and security control point, manned round the clock, needed to be setup towards the centre of the site.

Secondly, given the nature of the facility where large bulk cargo and containers are regularly moved and reorganised to cope with the differing volumes and types of port traffic, the solution had to be wireless based.

And thirdly, the solution had to offer blanket coverage of the four terminals; this was not only important for theft prevention, but also for health and safety and to ensure that employees operating machinery are aware of any obstacles or others working throughout the site.

But in order to fulfil these objectives, DPW had to factor cost considerations into the system's initial design, as well as overcome a number of technical hurdles. For instance, because the central security control facility needed to be located at the heart of the site, the distance to the nearest video surveillance cameras/wireless points would be less than 30 metres – a challenge for wireless broadband systems.

In addition, the layout of the port (which has four distinct zones which make up the different terminals) meant that a combination of point-to-point/multipoint wireless solutions would be needed.

A third issue was the height and obstruction of the containers: 16 metres was the maximum height for a camera location and this therefore posed a potential problem for the provision of line-of-sight radio links.



Installing a line-of-sight video surveillance system at the Port of Dakar's four container terminals proved challenging as 16 metres was the maximum height available for camera locations.



DriveProfilers' *MHub* device plugs directly into a vehicle's diagnostics port and automatically sends driver-behaviour data to an insurance company. The device uses Telit's *GE865* M2M module

## Usage-based insurance "ideal showcase" for M2M

Telit specialises in helping organisations leverage the Internet of Things (IoT) with a portfolio of integrated products that includes platforms, services, and a range of modules that address all cellular communication technologies, GNSS, and short-to-long range wireless applications.

In South Africa, the company's modules have been used in DriveProfilers' *MHub* system to show how M2M technology can help the motor insurance industry.

DriveProfilers is a telematics solution provider and offers a range of hardware and software solutions as well as industry-specific consulting and advisory services. The company is a division of Scope Technologies which was established in 1999 and has a presence in over 60 countries.

Its *MHub* telematics device plugs into a vehicle's on-board diagnostics port and incorporates Scope's patents including the self-calibrating accelerometer, driver behaviour pattern recognition, and advanced accident telemetry data (such as vehicle impact zone, impact angle and magnitude, for example). DriveProfilers says *MHub* was developed for consumer connected car solutions, fleet management and insurance telematics, and it reckons usage-based insurance (UBI) in particular is the "ideal showcase" for M2M.

According to the company, motor insurers have long suffered from very high claim ratios, low profits, and an inability to separate high-risk drivers from low-risk ones. It says an M2M-powered insurance telematics device such as the *MHub* automatically sends driver-behaviour data to an insurance company delivering immense value for the insurer and insured alike.

Once installed, the unit collects vehicle activity trip data, driver behaviour, in-vehicle network data (such as fault codes, fuel consumption, due services, etc.), detects accidents and sends reconstruction data, odometer values, BLE sensor data (such as driver ID, input status, driver's bio feedback, etc.), and manages user defined geofence activities.

DriveProfilers says that one of the topics that typically comes up in discussion with insurance companies investigating insurance telematics is whether a smartphone can be an effective data-

collection device. The firm believes that whilst it is tempting to be attracted by the ubiquity of such devices, there are many major drawbacks to using them to collect driver-behaviour data.

For instance, drivers will need to ensure that they have their phones on every journey and not just on the ones where they know they have to 'behave' for insurance purposes. Also, there is no guarantee that the device being used belongs to the driver rather than a passenger. And of course, it has to be charged.

Other questions DriveProfilers raises about using smartphones for insurance telematics rather than a dedicated and installed device include:

- ❖ Are the sensors on the phone good enough to ensure accurate data collection?
- ❖ How can you ensure drivers are tracked only when they are driving and not at other times?
- ❖ Who owns the data collected by the smartphone?
- ❖ How safe are the driver-behaviour data on the smartphone – can they be accessed by any other apps that could be unauthorised?

"In summary, the smartphone may at first appear to have some advantages to a motor insurer looking to deploy usage-based insurance," states the firm. "However, only a dedicated telematics device with embedded M2M can really deliver the reliability, accuracy and privacy controls insurers and their customers demand.

"By leveraging over six years of UBI experience with real insurers selling real UBI insurance policies, DriveProfilers' insurance customers can reduce fraud and accurately price their customers' driving behaviour.

## No traffic jams with free Wi-Fi on buses

Project Isizwe was co-founded in South Africa by former Mxit and iBurst CEO Alan Knott Craig Jr. The project's coordinators work with local, provincial and national government to provide free Wi-Fi in low-income communities for the purpose of education, economic development and social inclusion. They use low-cost and low-maintenance Wi-Fi equipment, under-utilised fibre that's already in the ground, and semi-skilled technicians and labourers.

Project Isizwe is continuing to deploy its Free Wi-Fi systems in South Africa's Western Cape region, rolling out capacity for 40,000 users around schools in Atlantis and Robertson. But it was first introduced in the city of Tshwane in November 2013 where users can now access the for free via 752 public hotspots. In July 2016, Project Isizwe said it planned to increase these by a further 700 sites across the city.

In Tshwane, the project has enabled a number of value-added services, including free Wi-Fi on board local buses operated by A Re Yeng. Here, RADWIN's *FiberinMotion* systems were chosen to provide the wireless mobile connectivity.

In phase I of the project, the system's high-capacity base stations were deployed along the A Re Yeng route from Pretoria Central to Hatfield. RADWIN's *Vehicular Mobile Units* were installed on board buses with two antennas mounted on the roof and the *FiberinMotion Tool* is used to monitor network performance in real-time.

The company says its base stations provide continuous coverage and broadband connectivity to the buses in motion. The base stations are being used in Diversity mode to deliver up to 100Mbps but can go up to 250Mbps in MIMO mode.

RADWIN says *FiberinMotion* offers long range coverage of up to 10km between base stations, thus reducing infrastructure costs. It adds that "seamless" handover is guaranteed ensuring service continuity even at speeds of up to 250kph.

From December 2014 to June 2015, RADWIN says the free Wi-Fi on board Tshwane's buses attracted 208,402 unique users who were responsible for more than 9.5 million online sessions and a total data usage of 30TB. ■



RADWIN's base stations provide continuous coverage and broadband connectivity to the buses in motion. The stations deliver up to 100Mbps but can go up to 250Mbps in MIMO mode.

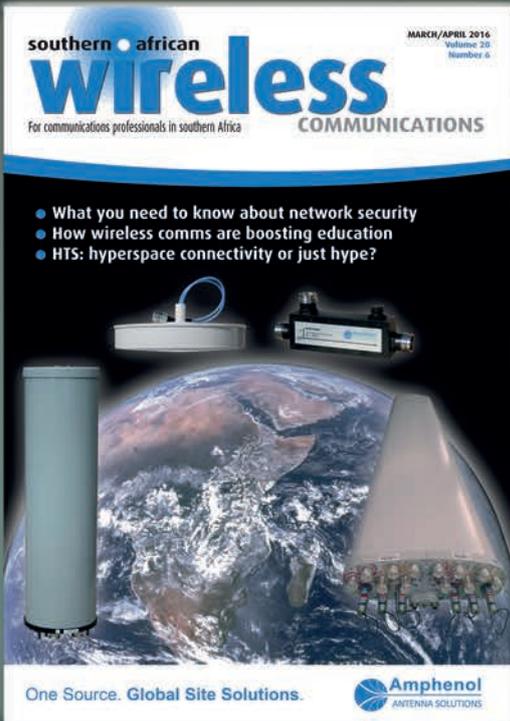
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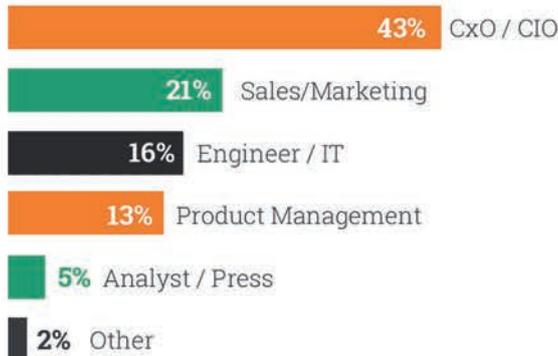


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VAST Networks believes one of the main challenges in the industry is debunking the myth that Wi-Fi is and should be free.

# Shop (but don't let the signal drop)

GRANT MARAIS and KHETAN GAJJAR describe the challenges and drivers of building a reliable Wi-Fi network that is suitable for internet access, media streaming, and capable of delivering future-proof services.

**V**AST Networks, South Africa's first open-access Wi-Fi network, was launched in June 2015. Earlier this year, the company announced that it had successfully built the continent's largest shopping centre Wi-Fi installation with a deployment at the 130,000m<sup>2</sup> Mall of Africa in Johannesburg (see *News*, Mar-Apr 2016).

Overall, the company currently covers a total of 6.5 million square metres of indoor space with Wi-Fi, has more than 2,000 operational Wi-Fi locations across the country, and continues to grow the footprint daily.

VAST deliberately uses the term "locations" rather than "access points" or "hotspots". Other operators use the term hotspots to count the amount of equipment they deploy – but users should be interested in a location that is covered and not how much equipment is utilised to achieve that ubiquitous coverage.

## Wi-Fi for all

One of the main challenges within the industry is debunking the myth that Wi-Fi is and should

be free. Many end-users are unaware that the Wi-Fi they are using is being paid for – either by their employer, the location owner, or indeed themselves through their own broadband subscription or mobile service.

Despite it being one of the cheapest forms of communication, prices for public Wi-Fi access are sometimes artificially hiked, either by the landowners or the landlords who try to 'tax' telecoms services being provided in their buildings. This makes Wi-Fi artificially more expensive than it really ought to be and in some cases unaffordable.

When setting up a Wi-Fi network, location and building design play a vital role in determining the type of installation and the equipment needed. In dense, high traffic areas such as shopping malls, more hardware is needed to provide the end user with a high-quality, reliable and seamless experience.

South Africa remains one of the biggest mobile handset-using countries on the continent; VAST seeks to assist mobile-centric users by giving them a means to go online and experience world class internet service on their devices. Internet access can become the social fabric that binds and enables communities as they move along their digital path to social and economic development. It empowers people to learn, connect, and understand the world around them, making them global citizens. Wi-Fi is a cost-effective way of delivering internet access to users, often being a fraction of the cost of other means such as mobile data, for example.

As well as benefiting consumers, internet access is essential when it comes to participating in the modern economy. Businesses need to promote access to information, markets, people and opportunities through a great Wi-Fi experience that is affordable.

The largest commercial barriers that VAST faces is the cost of backhaul, access to facilities, and rights of way. These are all factors to consider when implementing the network and equipment. The company operates well within the framework of what is required from a legal and regulatory perspective.

Because VAST has multiple ISP-type tenants on its infrastructure, the commercial case for being in a specific location or geography is accelerated. While traditional single-operator networks build a commercial case based on just the usage of their own subscribers, our company has the advantage of multiple user bases and multiple user profiles to more quickly close a commercial case.



Carrier-grade switching and termination equipment used to power VAST's Wi-Fi network. The firm says it continually investigates a variety of technologies, such as DAS, LTE-U, LAA and LWA.

Grant Marais,  
CEO,  
VAST Networks



Being connected also enables other services to be delivered, such as OTT and VOD, for the benefit of South Africa's social and economic development.

## LTE-U and Wi-Fi

The equipment VAST Networks has deployed includes 802.11-based Wi-Fi access points while new sites are built using dual-band radios that comply with the 802.11ac specification. The bulk of our network has been implemented with 802.11n-compatible access points in 2.4GHz.

However, the company continually investigates a variety of technologies, including DAS, LTE-U, LAA and LWA, and as appropriate may deploy network technologies other than 802.11-based Wi-Fi.

Having said that, the company believes that the majority of usage for the next 5-7 years will still be dominated by 802.11-based Wi-Fi, as the standard has been ratified and included in most devices by default for more than a decade. This means that user terminals or devices are freely available, and it's almost impossible today to buy a device that doesn't have Wi-Fi built-in. Where it is not built-in, Wi-Fi dongles and adapters are now in the sub-USD10 range, and unaffordability for most consumers therefore doesn't apply.

Technologies such as DAS, LTE-U and LWA still pre-suppose that a carrier has access to licensed spectrum, and the overhead of licensing costs, technology and signalling infrastructure will always be higher than a pure-play Wi-Fi network operator.

We reckon VAST Networks is currently South Africa's most developed and seamless Wi-Fi ecosystem. With download and upload speeds of up to 500Mbps live in the network today, the company is able to deliver a consistent and repeatable experience to its end-users on devices that have been commonplace for at least five years.

The company's ecosystem operates on a fully redundant fibre optic backbone. This is capable of supporting secured connections to deliver a suite of services and applications that provide customers and end-users with a superior Wi-Fi experience across multiple and complex environments.

South African mobile operators who are testing LTE-U technology in their laboratories are reporting speeds of up to 1GB per second. While not available to consumers, its arrival is anticipated within the next three years. This is of particular concern to Wi-Fi providers, as LTE-U technology intrinsically muscles-in on the (unlicensed) spectrum that Wi-Fi operates in, leaving less capacity available for Wi-Fi.

Wi-Fi operators have consistently (and since inception) driven down internet connectivity pricing using this spectrum. It is a fair assumption

Khetan Gajjar,  
CTO,  
VAST Networks



that mobile network operators – who are not well-known for providing cost-effective services – will not encroach on this spectrum with the same mindset as Wi-Fi operators. So ultimately, consumers will end up paying more, and the cost of internet access will remain high.

Some Wi-Fi users have even expressed concern about whether LTE-U will interfere with the speed and performance of Wi-Fi hotspots. Ultimately, spectrum will be too congested once LTE-U has been introduced and fully functional. Many operators and chipset manufacturers are still searching for a way where LTE-U and Wi-Fi can co-operate fairly. The proposed LTE-U set of standards offer the user no better experience than Wi-Fi as provided by VAST.

The telecoms space is rapidly growing in South Africa and Wi-Fi in particular is becoming more accessible. In 2015, mobile phones accounted for 61 per cent of web traffic in the country, while desktop computers and laptops made up the rest.

Today's internet-driven economy means that more consumers require reliable internet on the go at an affordable rate. People want to stay connected wherever they are. An example of this could be in a retail environment where shoppers want to search for the latest deals and offers, and share interesting things they see with family and friends. Retailers are also looking at more innovative ways of promoting products and services to customers and a Wi-Fi network at a mall is the perfect platform to do so.

## The future

Without doubt, users will want seamless connectivity. This means a continuous connectivity experience across a variety of network equipment manufactures and technologies.

Wi-Fi as a bearer has not fundamentally shifted in its approach; it is a technology built from the ground-up to compete with other emitting devices in its band, and its interference mitigation is still vastly superior to other licensed band technologies. VAST Networks is open to working with operators, either on a commercial basis as a provider to them, or as co-inhabitants of the same spectrum band(s).

The company is also currently exploring technologies like Hotspot 2.0 release 2, 802.11ac Wave 2 and carrier-band aggregation to deliver an easy to use and cost-effective service. In addition, it is closely following the regulatory regime change around CBRS (3GHz) in the US; as regulatory and policy changes occur, the company will adapt and adjust its course of business to match market requirements. ■

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# World's first LoRa-based IoT network goes live in Netherlands

 Dutch telco KPN has unveiled the world's first IoT network based on LoRa (long range) WAN technology. It will use the *ThingPark Wireless* platform from French specialist

Activity to connect a wide range of objects in markets as diverse as agriculture, smart building, transport infrastructure and healthcare applications. The two firms have been working closely together since November 2015 and have now installed several hundred

LoRa antennas across the country. Around mid-July it was announced that KPN's IoT network had gone live, initially in Rotterdam and The Hague.

Activity says its *ThingPark Wireless* system provides long-range coverage for low-power consumption sensors. The platform offers a variety of features including storage for sensor data, embedded software and cloud solutions to connect devices, and a dedicated online marketplace for

IoT sensors, applications, etc.

Earlier this year in June, Activity also announced the launch of *ThingPark* in China. It has partnered with Foxconn Technology Group to offer end-to-end IoT services from sensors and gateways to network management and SaaS. *ThingPark* China will begin business operations in the third quarter of 2016.

"China is an opportunity like no other IoT market," said Activity CEO

Activity CEO Mike Mulica said KPN has "made good" on its ambition to turn The Netherlands into a smart nation.



Mike Mulica. "It's growing 30 per cent a year, and a third of the world's 15 billion connected things in 2020 will be in China."

## Satellite use expands in French Polynesia to meet growing broadband demands

 The Office des Postes et Telecommunications of French Polynesia (OPT) has signed a new and expanded contract with Intelsat for connectivity on *Intelsat 18*.

State-owned OPT delivers fixed line and postal services to more than 80 inhabited islands covering an area of a five million square kilometres. It has three wholly owned subsidiaries: Vini for mobile, internet services, TV content and network solutions; ISS for software and electronics services and accessories; and Tahiti Nui Telecoms for data centre and hosted infrastructure.

In 2008, OPT commissioned Intelsat to design a Ku-band beam

on *Intelsat 18*, which orbits at 180°E, so that it could provide coverage to all of French Polynesia, including the Cook Islands.

Under a recently signed multi-year agreement, OPT will be able to further expand its wireless infrastructure to meet the fast-growing mobile broadband and internet needs of businesses and communities on the more remote islands located in the South Pacific.

OPT president and CEO Jean-François Martin says: "The optimised performance of *Intelsat 18* provides a complement to our terrestrial infrastructure which will enable OPT

to further extend its network, increase its business and, more importantly, provide reliable internet connectivity to the citizens of French Polynesia, reducing the digital divide between Tahiti and the remote islands."

OPT says Intelsat's satellite solutions have enabled it to scale its network as the demands for internet and mobile broadband connectivity have continued to rise. Intelsat adds that given the terrain of French Polynesia, satellite is the only way to connect remote islands to the mainland, and help telecom providers scale their networks to meet growing business demands.

## SK rolls out nationwide LPWAN

 South Korea Telecom plans to invest more than KRW100bn (around USD84m) over the next two years to boost its IoT business. It will build a nationwide low-power WAN within this year, develop IoT-dedicated modules, and upgrade its IoT platform, *ThingPlug*.

The operator says its plans are in step with the Korean Government's move towards promoting new industries. For instance, the Ministry of Science, ICT and Future Planning has now revised the maximum transmit power for the 900MHz frequency band from 10mW to 200mW to nurture the IoT industry. This will help the country's operators overcome limitations caused by the low transmit power and to secure the basis for many new IoT services.

Along with the nationwide LPWAN, SK Telecom will also establish an IoT control centre to monitor the real-time status of the nationwide network and all connected devices to optimise operation.

Moreover, the operator says it will develop IoT-dedicated modules that can be embedded into appropriate devices. The modules will have open APIs, and to further support startups and SMEs SK Telecom says it will provide them free of charge.

The operator is a member of the LoRa Alliance which promotes the LoRa protocol (LoRaWAN) as a global and open standard for IoT.

## Longest rail tunnel safer with Tetrapol

 The world's longest railway tunnel, the 57km Gotthard Base Tunnel (GBT) in Switzerland, is using the Polycom radio system which is based on Tetrapol.

Covering Switzerland and Liechtenstein, Polycom is used by public rescue and safety organisations as well as by operators of critical infrastructures. The system's Tetrapol technology is supplied by Airbus Defence and Space (ADS).

The company explains that the system in each of Gotthard's two single-track tunnels consists of two overlapping cells for both tubes. Each cell works independently and is based on nine transceiver stations. Coverage in the tunnel is ensured by a radiating feeder cable that receives the radio signal



In addition to Tetrapol, Gotthard also has a vast data network connecting 152km of passages, main and access tunnels.

from two directions. According to ADS, communication would therefore still be possible on both sides even if parts of the system became damaged by fire.

Following an initial construction phase which began 17 years ago, the GBT began operations at the start of June 2016. It connects northern and southern Europe through the Alps,

and journey times for passenger trains between Zürich-Lugano-Milan have been cut by about an hour.

As well as being the world's longest rail tunnel, Gotthard is also the deepest – in some places it is separated from the Earth's surface by around two kilometres of rock.

In addition to Tetrapol, the GBT also has a vast data network based on more than 450 Alcatel-Lucent *OmniSwitch 6855* switches. The network connects tunnel lights, racks, power systems, doors, drainage and ventilation systems.

Data gathered by sensors, monitors and surveillance equipment in the GBT's 152km of main and access tunnels, and cross passages are transmitted to two control centres at the tunnel's north and south ends.

## Lenovo debuts first Tango-enabled smartphone



Lenovo has unveiled the world's first smartphone that uses Google's *Tango* augmented reality (AR) technology.

The *PHAB2 Pro* features sensors and software that map its surroundings to enable various AR experiences. For example, one of the first *Tango*-enabled apps is from home improvement company Lowe. *Vision* enables customers to measure spaces and visualise how appliances, décor, counter tops, tiles, etc., will all look and fit together in a room.

There are three core technologies behind *Tango*: firstly, by using motion tracking the *PHAB2 Pro*'s 'eye' sees its own location in 3D; secondly, area learning tells the smartphone its location; and thirdly, depth perception enables the device to analyse the shape of the world around it by detecting surfaces and obstacles.

"Now for the first time ever, your smartphone can visualise and understand its surrounding objects and environment via sensors that capture more than 250,000 measurements a second," says Lenovo.

All the data simultaneously received from multiple camera sensors, the gyro and accelerometer are processed and time stamped by Qualcomm's *Snapdragon 652*. Lenovo reckons this results in a fast and smooth augmented reality experience, where 3D AR overlays track more naturally to the physical surroundings.

Other features include LTE connectivity, a 6.4-inch display with QHD (2,560 x 1,440) resolution, six megapixel camera that supports 4K video recording, and Dolby playback and surround sound recording.

The *PHAB2 Pro* uses Google's *Tango* system to create various augmented reality experiences.



# TETRA expanding globally but Europe dominates



Europe is expected to remain the world's largest market for TETRA and will continue to rise, according to IHS.

In its latest global report and analysis, the critical communications industry specialist says the global market for the technology is "healthy" with growth expected in all regions.

Eastern Europe in particular is projected to see rapid expansion. Here, IHS forecasts new terminal shipments in the industrial sector to increase by almost 50 per cent, and in transport by nearly 27 per cent. And Western Europe is expected to remain the

largest global market for active TETRA radios with a 53 per cent share of the installed base as at the end of 2015.

Phil Kidner, CEO of the TETRA and Critical Communications Association, said: "2015 has been an exceptional year for TETRA in Europe, with the completion of the nationwide networks in Germany and Norway. We are also seeing re-investment in existing TETRA networks, with a huge amount of activity in renewing both infrastructure and terminals."

Although Europe remains the largest market, IHS believes it will be challenged by the end of 2020

as the installed base increases in other regions including Middle East and Africa, and the Americas. The American installed base is forecast to be led by Latin America, although North America is also forecast to grow substantially.

Mission-critical applications continue to make up a major part of the TETRA market, with public safety and security representing more than 56 per cent of the installed base. However, over the next five years, IHS predicts that business-critical applications will see the most growth, including sectors such as utilities and industrial.

## Small cell system for data-hungry London



CCS (Cambridge Communication Systems) and Luminet plan to rollout a small cell network across London. The partners say this will provide mobile operators with readily-available wireless backhaul for their small cell deployments, and enable enterprises to receive up to 1Gbps internet access.

According to CCS, although small cells are recognised as the ideal solution for operators to cope with the increase in mobile data, deployment is often hindered by site acquisition and associated planning approvals.

The firm aims to address this through its partnership with managed

service provider and ISP Luminet. The latter already has more than 1,900 sites in London via its fixed wireless access infrastructure. It also has two 112MHz frequency channels in perpetuity at 28GHz which will be used by CCS' *Metnet* self-organising wireless backhaul system. Luminet has integrated its 3D mapping and site database into the *Metnet* planning tool in an effort to simplify the design and planning stage of each London small cell deployment.

The 3D map data provided by Luminet will identify demand hotspots in the capital for on-net delivery. It is claimed to be "highly accurate", with a resolution of less than one metre,



CCS says its *Metnet* small cell system has been designed for discreet street installation on lamp posts, walls, rooftops, etc.

allowing for reliable one-by-one or mass predictions without the need for physical site surveys.

The partners say their wireless backhaul network is planned for 23 partitions and 250 polygons across 1,050 small cell sites, enabling a transit capacity of 0.012 GkM (Gbps/km<sup>2</sup>/MHz).

## SIMs helping to monitor fuel tanks



Sensile Technologies will use 25,000 SIM cards from Orange Business Services (OBS) to monitor more than 60,000 oil and gas tanks across 60 countries.

Previously, the Switzerland-based IoT specialist used 2G compatible devices to power its telemetry solutions: *GASLink* and *NETRIS 2*. In a three-year deal, OBS will support the two systems worldwide, extending their coverage to include 3G/4G devices.

*GASLink* and *NETRIS 2* are installed directly in an oil or propane tank and regularly send level measurements via GSM to Sensile's *Oil Link* cloud. Merchants and their hauliers receive the data directly in their ERP systems



As well as using 2G (SMS) to transmit data, the *NETRIS 2* remote tank monitoring system can also use 3G and 4G, as well as create a short-distance RF connection.

to trigger deliveries automatically.

Thanks to the optimisation of deliveries based on live data, OBS says they can lower their logistics costs by at least 25 per cent, without the risk of customers running dry. In

addition, customers can access the *Oil Link* web portal on smartphones to monitor consumption.

According to estimates by Berg Insight, global M2M SIM shipments increased by 19.4 per cent in 2015 to reach a new record of 96 million. East Asia, North America and Western Europe were the main markets in 2015, accounting for around 75 per cent of the total demand.

The analyst believes the latest 3GPP standards for LTE will contribute "substantially" to growth in the next coming five years. It predicts that M2M device shipments will increase at a CAGR of 21.7 per cent to reach 256 million by 2020.

## True deploys 4T4R

 True Corporation has deployed what's claimed to be the world's largest 4T4R (four transmission four receiver) commercial network. The Thai operator's rollout is currently ongoing, and as at June 2016 it had implemented more than 6,300 sites. It is using Huawei's SingleRAN 4T4R solution to usher in 4.5G. The vendor says that compared to traditional 2T2R networks, the downlink throughput of 4T4R at the cell edge with commercial devices has increased by more than 38 per cent, while uplink throughput has increased by 50 per cent.

## Telenor sole 4G bidder

 The Pakistan Telecommunication Authority (PTA) only received a single bid in its recent spectrum auction for next-generation mobile services. The authority was hoping to attract international as well as domestic operators. It said that in accordance with the timelines of the auction process, it held an information session with possible bidders in May. Telenor was the only firm to submit a bid by the deadline which expired on 1 June. It will pay USD395m for a 10MHz block of 850MHz, and joins China Mobile's subsidiary Zong as the only licensed 4G network provider in Pakistan.

## Arqiva in-flight Wi-Fi

 Comms infrastructure specialist Arqiva has been selected by Panasonic Avionics Corporation to provide its hosting, connectivity and teleport uplink services via Telesat's new high throughput satellite, *Telstar 12 VANTAGE*. The multi-year deal will see Arqiva deliver a range of mobility services for Panasonic, including inflight Wi-Fi, which will operate round the clock from its Chalfont Grove teleport site near London. Signals are extended to the Panasonic Network over Arqiva's 2.5Tbps core transmission network.

# ZTE claims new record for 800G long-haul network

 ZTE reckons it's set a new transmission record for a single-carrier 800G long-haul network. In a demonstration carried out earlier this year in China, the company said it successfully transmitted 120Gbaud WDM 16QAM signals over 1,200km terrestrial fibre links. It's claimed this is the highest symbol rate reported so far for 16QAM signals based on ETDM (electrical time division multiplexing). In the demo, ZTE used 12 x 150GHz WDM channels. Each was loaded with 960Gbps (800Gbps data signals and 20 per cent FEC emulated overhead bits) over a 1,200km link based on 100km spans of *TeraWave* optical fibre.

ZTE said the achieved data rate interface ensured spectral efficiency of 5.33b/s/Hz. It added that both the transmitter-side, and the optical pre-emphasis and receiver-side MLSE (maximum likelihood sequence estimation) were utilised to mitigate the narrow filtering effect caused by bandwidth limitation of the opto-electronic components.

"Thanks to the high baud rate signals generation, transport interfaces with bit-rates of up to 1Tbps will be achieved in the near future," said Dr. Jianjun Yu, chief scientist at ZTE US Optical Lab. "We can expect that bit rates beyond 1Tbps, such

as 1.6Tbps, will be introduced as Ethernet standard rates since it would be a logical upward path rate from the 400Gb Ethernet interface, which is based on high baud rate signals and high order modulation formats."

Over the last few years, ZTE has carried out extensive R&D on single carrier transmissions. For example in 2013, it completed data signalling at speeds of 400Gbps over a distance of more than 5,000km. In 2015, the company collaborated with OFS America to realise a 400Gbps single-carrier PDM-QPSK signal transmission over 10,000km. This was said to be a world record for 400G transmission.

## eLTE broadband trunking at Algiers airport

 Algeria will see the first commercial deployment of an eLTE system at an airport in Africa. Huawei will be responsible for the broadband trunking project at the Houari Boumediene Airport in Algiers. It will provide an eLTE core network, base stations, trunking terminals, multimedia dispatching, as well as other devices and systems.

The airport currently uses TETRA for routine scheduling and dispatch. But its narrowband system is insufficient for broadband data transmission, mobile video surveillance,

or multimedia dispatch. Furthermore, ground handling services take place in a complicated and noisy environment, making voice dispatch error-prone and increasing security risks.

Huawei will deliver a system that is capable of interworking with the existing TETRA platform to improve the accuracy and efficiency of ground dispatch. The vendor says 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 says its system supports throat vibration mic earpieces, noise-cancelling headphones, and additional accessories to guarantee voice trunking performance.

The company adds 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.

## Cloud-based platform helps connect cars

 Car manufacturers can now offer owners cloud-based embedded software maintenance and the latest capability upgrades over their vehicle's entire lifecycle, thanks to a partnership between the Movimento Group and Sierra Wireless.

US-based Movimento specialises in technologies such as vehicle re-flash services and innovations in over-the-air (OTA) software to help realise what it describes as the "Software-Defined Car". The firm's customers in the automotive industry include Ford, GM and Volvo, amongst others.

Under the new partnership, Movimento will integrate its OTA technology with Sierra Wireless' device-to-cloud solution to provide

what's claimed to be the industry's first commercially available cloud-based platform to maintain connected cars.

All vehicles have numerous software programs running on a network of electronic control units (ECUs) that need to be individually managed and maintained. Sierra and Movimento say their solution enables automotive OEMs to update software for all ECUs simultaneously over-the-air.

Movimento's software update client runs on the *Legato* Linux embedded application framework available on Sierra's 4G automotive modules. Using the vendor's *AirVantage* cloud platform, it's claimed carmakers can "seamlessly" upgrade all vehicle software by simply logging into the dashboard over a

CTO Mahbul Alam says Movimento has created a centralised solution from car to cloud.

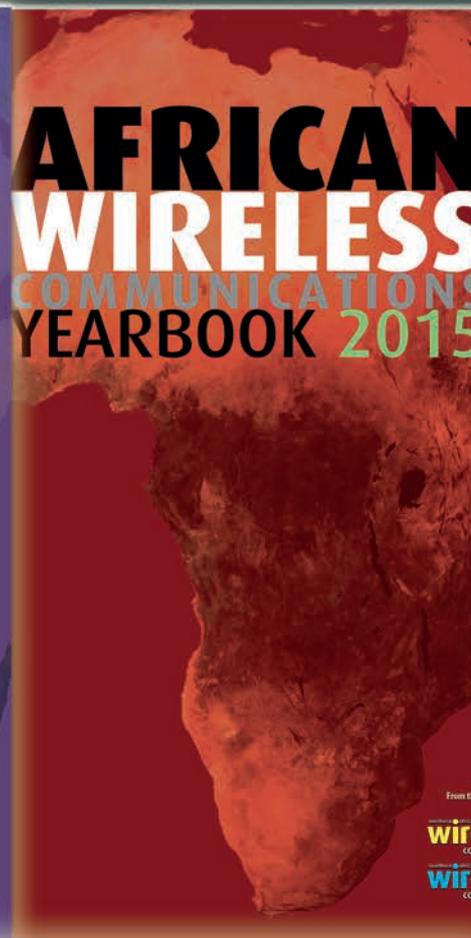
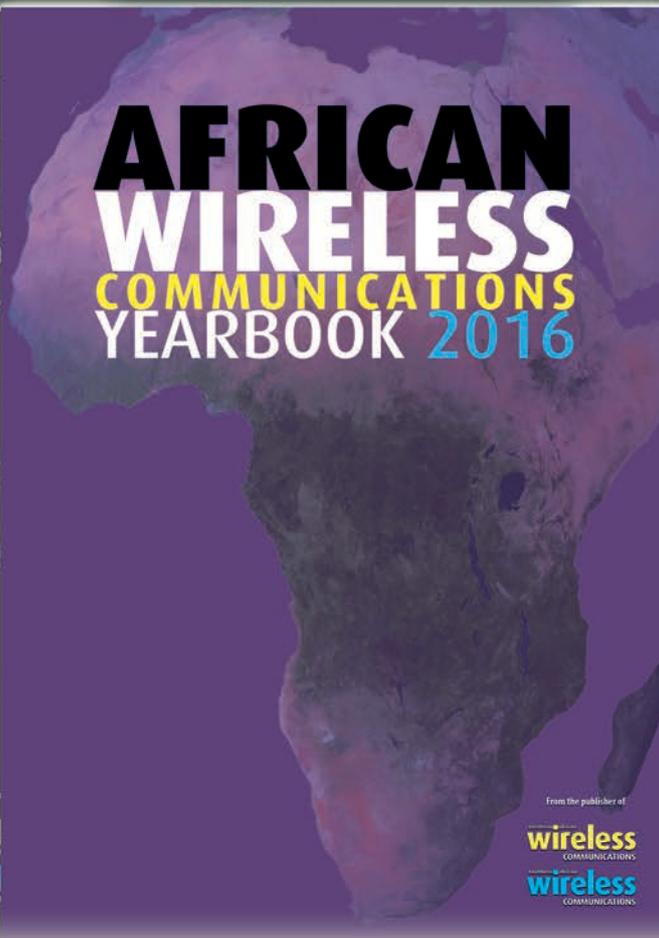
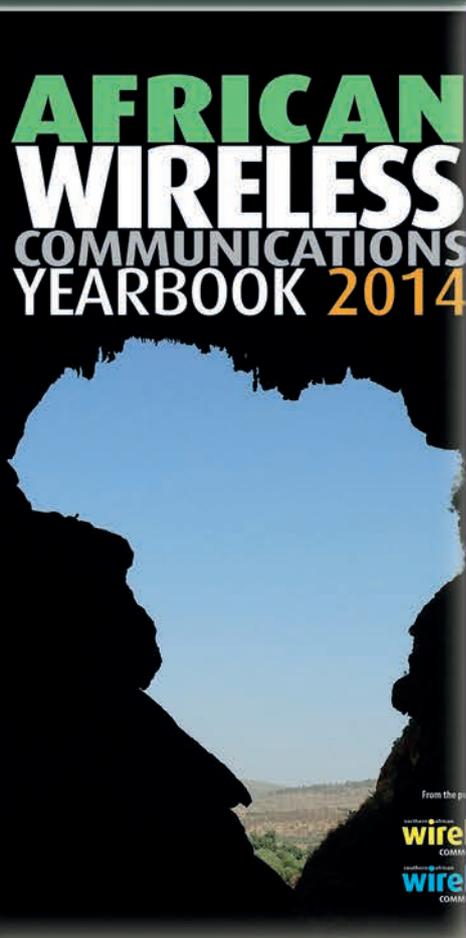


secure network and selecting the appropriate update campaign.

"Rather than worrying about maintaining all the different software and firmware versions, we created a centralised solution from car to cloud," said Mahbul Alam, CTO/CMO, Movimento. "You don't have to provision every ECU with a dedicated software agent, which reduces CPU and memory requirements, along with overall costs."

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