APRIL/MAY 2015
Volume 14
Number 2

northern african wireless COMMUNICATIONS

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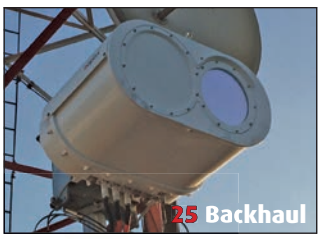

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Safaricom upgrades network as rivals prepare to launch LTE

Airtel has been given the go-ahead to launch its 4G network by the Communications Authority of Kenya (CAK). The cellco has already upgraded its 3G network in Nairobi, Mombasa and Kitali as part of a USD26m plan to prepare for LTE.

"The network upgrade in Nairobi has started in order to allow customers to continue accessing uninterrupted quality of service," says Airtel Kenya CEO Adil el Youssefi. "The network upgrade also makes Airtel Kenya's network 4G LTE ready."

The authority has also given permission to Orange Kenya to launch 4G trials on it networks, which almost certainly means it will be allowed to launch the technology on a commercial basis.

"So far, all the NFP Tier 1 licensees have been authorised to carry out tests on the spectrum they are already using," said CAK director-general Francis Wangusi.

Both operators are now hoping to catch up with Safaricom which claimed a first in sub-Saharan Africa when it launched LTE-A last December (*News, Dec 2014-Jan 2015*).

In separate news, Safaricom has signed a multi-year deal with Ericsson to upgrade its network to enable enhanced broadband services

The Swedish vendor will install Wi-Fi technology on the operator's network for the first time and upgrade its previously deployed *MINI-LINK* microwave transmission network. It will also implement its IP products to enable Safaricom to migrate to an all-IP transmission network.

The two firms say the measures are part of a five-year evolution strategy. The Wi-Fi solution will include Ericsson's access points and network management software. It will complement the data services provided by Safaricom's existing 3G network and aims to ease the load on the 3G resources through traffic offload to Wi-Fi in selected areas.

Ericsson adds that its *Broadband Network Gateway*, which is based on *SSR 8010*, will be deployed by the service provider as the first aggregation point in the Carrier Grade Wi-Fi network.

Robert Rudin, country manager, Ericsson Kenya, says: "Our leading mobile broadband, Wi-Fi and IP solutions will enable Safaricom to enhance their mobile broadband services cost-effectively and quickly."

Ericsson MD Robert Rudin says Safaricom's network will be upgraded to all-IP transmission.

In May, Safaricom launched *BigBox*, a DVB-2 set top box that will enable subscribers to leverage the operator's 3G and growing 4G data network to access content.

It will offer several TV channels in high-definition format, as well as allow users to watch content on demand via online video services such as *YouTube*. Safaricom says the device can also serve as a Wi-Fi hotspot for up to ten users.

Nigeria threatens prosecutions for mobile operators

Nigeria has become the latest country to threaten mobile operators with imprisonment if they fail to deliver quality services to customers.

Dupe Atoki, director general of Nigeria's Consumer Protection Council (CPC), says mobile users are having to deal with dropped calls, unsolicited texts and calls, and the disappearance of their credit. She says such poor quality of service has left the government with no choice but to impose harsh measures.

"In order to enforce consumer rights and ensure compliance with CPC's enabling law, CPC has adopted a strategy of criminal prosecution of recalcitrant businesses or litigations to achieve satisfactory redress," says Atoki.

Nigeria is the continent's largest market for mobile voice and data services, with some 142 million subscribers, and now joins other African nations in deciding to impose prison sentences in an effort to improve services and stop subscribers losing money, or at least not getting good value for money.

CPC director general Dupe Atoki says Nigeria has no choice but to prosecute failing mobile operators.

For instance in Zambia, Airtel, MTN and Zamtel have been taken to court by the authorities for failing to meet minimum standards. And in Tanzania, operators face fines of up to USD3,000 as well as prison sentences of a minimum of six months for poor quality of service without adequate explanation.

Third Global Xpress satellite arrives at launch site

Inmarsat's *I-5 F3* satellite has arrived at the Baikonur Cosmodrome in Kazakhstan, ready for launch later in May. This will be the third satellite from the company that will support its much anticipated *Global Xpress (GX)* service.

Inmarsat is investing USD1.6bn in the development and delivery of *GX*, which it describes as the world's first globally available mobile broadband service. It has been designed to deliver broadband speeds up to 100 times faster than the firm's *I-4* constellation.

Inmarsat's first *GX* satellite, *I-5 F1*, was launched in December 2013 and entered regional commercial service in July 2014, covering Africa, the Middle East, Asia and Europe. *I-5 F2* was launched at the start of February 2015 and will provide *GX* services over the Americas and the Atlantic Ocean. When combined with *I-5 F1* and *I-5 F2*, Inmarsat says *I-5 F3* will enable it to offer "seamless" global coverage. CTO Michele Franci says the project represents a major commitment for his firm: "Its successful completion and the start of global commercial services later this year will bring to life the prospect of the 'Internet of Everywhere'. For the first time, we will be able to deliver seamless, superfast broadband communications across the globe – on land, sea and in the air – from one single operator."

Inmarsat I-5 F3 is off-loaded from an *Antonov AN-124* heavy transporter plane at the Baikonur Cosmodrome, Kazakhstan.

Each satellite in the initial *GX* fleet has 89 beams and six steerable high-power spot beams for multi-regional coverage. Inmarsat adds that the new *GX* network will complement its existing fleet of L-band satellites.

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

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

Abu Dhabi-based Etisalat has extensive operations in African countries, including Tanzania (Zantel), Sudan (Canar), Egypt, Nigeria, amongst others. The operator plans to be the first in the region to roll out 5G in the coming years. In tests carried out in 2014, it claims it has already demonstrated

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

115Gbps data transmission capability as part of the development of fifth generation mobile technology.

It will also work with Ericsson to develop LTE's potential speed of 450Mbps. This can be achieved using License Assisted Access (LAA), an LTE-A feature that leverages the 5GHz unlicensed band in combination with licensed spectrum to deliver a performance boost for mobile users, especially indoors.

As well as enabling carrier aggregation of licensed and unlicensed bands, LAA optimises wireless network resources and improves app coverage for all users, regardless of whether their devices are using licensed cellular or Wi-Fi.

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

'Massive IP gravitational centre' created in the middle of the Mediterranean

TI Sparkle has teamed up with DE-CIX to establish an internet exchange (IX) as a key landing site for online traffic to and from Africa, the Middle East and the Mediterranean region.

TI Sparkle is Telecom Italia Group's international services division and runs the 'Sicily Hub', a next-generation data centre in Palermo.

The company says its facility is located closer to North Africa, the Mediterranean and the Middle East than any other European peering point. It is also connected to all cable landing stations in Sicily and served by *Seabone*, TI Sparkle's Tier 1 IP transit service.

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

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

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

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

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

Kenya agrees Microsoft tech support deal

Microsoft will offer support in providing a platform that will enable ICT skills training for 300,000 teachers in Kenya.

As part of an MoU signed with the country's ICT Authority, the areas of training could include proficiency in Microsoft Technologies, Microsoft Teach with Technology courseware, and accreditation as Microsoft Certified Educators.

Kenya's ICT minister Joseph Tiampati says the agreement with the software giant supports the country's ICT Masterplan, and fits in with the state's priorities to grow the local knowledge economy. "Building local ICT capacity forms an important part of our Kenya Vision 2030 and shift from a labour-based to a middle-income, knowledge economy. The ICT Masterplan also recognises that to be a leader in ICT we need to up the skills of our workforce.

Kenya's ICT minister Joseph Tiampati says the MoU with Microsoft fits in with the country's ICT Masterplan.

"By collaborating with partners such as Microsoft, we are intent to fast-track the development of local ICT skills, empowering working professionals, providing access to broadband and promoting small-to-medium enterprises in Kenya."

The main areas of collaboration outlined in the MoU include: integrating ICT in teaching and learning; developing world-class skills and placing working professionals in jobs; bringing SMEs online and encouraging innovation; providing reliable, accessible and affordable devices; and broadband.

Mobilink completes Single RAN project

Egyptian cellco Mobinil and Huawei have now successfully completed the implementation of a Single RAN project. Mobinil began implementing the system in 2011 in an effort to pave the way for better coverage and services, and facilitate 3G technologies which it first launched in 2008.

The operator says its move to Single RAN has resulted in a better customer experience mainly through improved voice quality and reductions in dropped and blocked call rates. In terms of the infra-structure upgrade, Mobinil says it has introduced "state-of-the-art" technology in its core switching to provide the best voice quality. It adds that the new technology is also more energy efficient.

"The comprehensive Single RAN is considered an advanced solution ahead of the industry and away from voice services and SMS and supply lines services," says Huawei account director for Egypt carrier network, Bob Zhao. "It also puts the industry into a new era of data diversity and vertical flow of market returns."

Mobinil is part of the Egyptian Company for Mobile Services which is majority-owned and fully consolidated by Orange.

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Liquid Telecom deploys VSATs for KCB branches in South Sudan

Liquid Telecom Kenya has expanded its partnership with KCB, the biggest banking network in East Africa, and has now connected all its 24 branches in South Sudan via VSAT. Staff at each branch can access the global internet using satellite communication, enabling faster and more efficient banking services.

Liquid has been providing connectivity services to KCB in Kenya for the last 10 years, but this extended partnership comes as part of the bank's investments that aim to bring services closer to all of its customers.

Liquid Telecom Kenya CEO Ben Roberts believes VSAT services are playing a key role in East Africa, with the provision of seamless connectivity within the banks. "Limited ICT infrastructure has hampered regional banking institutions and businesses, as many have had to spend extra to set up ATMs and internal connections. VSAT services are closing this gap by providing quality uninterrupted service," says Roberts.

After extensive pre-planning and coordination to ensure a smooth and swift roll out in South Sudan, Liquid started its project with KCB at the beginning of December 2014 and completed it by the end of January 2015. During the implementation, Liquid said it was making at least two bank installations per week.

According to EY Global's 2014 consumer banking survey, convenience and accessibility are key factors in retaining customers in the banking sector. It indicated that 28 per cent now choose their banks due to the availability of easy access to branches and banking facilities.

M-PESA users are switched to new Huawei platform

Safaricom is now using Huawei's *Mobile Money Platform*. In early May, the Kenyan operator announced that all 12.8 million active *M-PESA* subscribers had been migrated to the new system overnight.

Huawei says its platform will help Safaricom to rapidly enhance functionality for *M-PESA* users.

Among the benefits it offers are: improved availability for subscribers and agents to execute transactions; faster query resolution time through a Kenya-based support team; faster transaction processing for subscribers; and enhanced call centre integration, ensuring customer experience is of a consistently high quality.

The platform also features an open API for the integration of third-party applications and services, and real-time system monitoring. The vendor adds that its system's security measures "mirror the financial services industry best-practice standards".

Huawei says it built its *Mobile Money Platform* to deliver basic banking transactions in developing countries. It says the technology is not restricted to particular handset types, working on both smartphones and feature phones, and that this has been key to its success in developing markets.

M-PESA was created by Vodafone which owns 40 per cent of Safaricom. Huawei says that from a business investment and technical perspective, it has been closely engaged with Vodafone since 2012 to develop the mobile financial service.

Nexmo provides Mobilis with mobile ID services

Nexmo, which specialises in providing application program interfaces (APIs) for cloud communication, has signed a deal with Mobilis, Algeria's first independent mobile operator and a subsidiary of Algeria Telecom.

Sid Ahmed Zaidi of Mobilis says Nexmo will bring advanced communication tools to the telco's growing network.

The agreement will see Nexmo provide Mobilis with, among other things, online security solutions.

Sid Ahmed Zaidi, business development and international roaming deputy director for Mobilis, says Nexmo will bring "advanced" communication tools to a growing network of 15m subscribers.

"As application-to-person traffic continues to grow at substantial rates in Algeria, we knew we had to partner with Nexmo to provide the highest level of service our customers have come to expect."

David Vigar, Nexmo's director of carrier relations, says the deal with Mobilis marks an important milestone for Nexmo. "Through our partnership with Mobilis, we will continue to pioneer how people receive information on their mobile devices while empowering businesses to tap into one of the fastest growing mobile populations in Africa."

Satellite-based system aids navigation

Avanti Communications will support a satellite-based augmentation system (SBAS) as part of a crucial air navigation project in Africa.

SBAS-AFRICA will be used for GNSS (global navigation satellite system) operations serving significant parts of the continent. It is being developed in partnership with a number of local stakeholders such as the South African Air Traffic and Navigation Services Company, South African Space Agency, Ghana Council for Scientific and Industrial Research, the Agency for Aerial Navigation Safety in Africa and Madagascar, amongst others.

The project will use the L1 transponder on Avanti's *Artemis* satellite to provide a navigation data broadcast service. *Artemis* was previously owned by the European Space Agency before it was taken over by Avanti early last year. It orbits at 21.5°E covering Europe, Africa and the Middle East with a payload of Ka-, S- and L-band transponders.

According to the Flight Safety Foundation, although around 67 million people fly each year on 762,000 flights that connect to Africa's 371 commercial airports, the continent has just three per cent of global air traffic. However, air accidents in Africa account for roughly 20 per cent of the global total.

By demonstrating potential improvements in flight safety via SBAS technologies, the project is also expected provide socio-economic benefits

According to one EU-backed study, the potential economic benefit to African aviation from the deployment of SBAS services amounted to EUR1.7bn, achievable through the reduction of 'Controlled Flight into Terrain' occurrences, improvement of ADS-B (automatic dependent surveillance – broadcast) technology, and phasing out of traditional navigational aids.

Artemis orbits at 21.5°E and features Ka-, S- and L-band transponders.

As with the *iKnowledge* project in Tanzania *(see p5)*, Avanti was awarded the contract for SBAS-AFRICA by the UK Space Agency.

WIOCC connects Somalia to world of fast internet for the first time

WIOCC says it has "fundamentally changed" the international connectivity landscape in Somalia with the landing of a high capacity fibre cable system that provides a vital platform for sustainable economic growth.

Somalia had lacked direct fibre optic connectivity. The only way the country's 10 million inhabitants could access the internet was via "expensive, inflexible and capacity-restricted" satellite links, says WIOCC.

But in 2014, and working in partnership with local partner Dalkom Somalia, WIOCC landed the >10Tbps capacity EASsy (Eastern Africa Submarine cable system) cable in Somalia and linked it to a purpose-built landing station and data centre in Mogadishu. It took six years of work.

Latency reductions of up to 80 per cent at launch have had an impact on users. WIOCC says people have been flocking to hotels and internet cafés to experience a fast service for the first time. It adds that the improved availability, affordability and reliability of consumer mobile broadband have led to growth in mobile and social media network subscriptions. Other areas to benefit include education, where classrooms are being supplemented by online libraries and digital lessons, and improved public access to e-government services.

WIOCC uses more than 55,000km of terrestrial fibre and 40,000km of submarine cable to offer connectivity to more than 500 locations across 30 countries on the continent.

Rwanda to collect tax by mobile

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

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

Now, as a result of a deal between the RRA and MTN Rwanda, a new function has been added, "making tax payment easy", according to the RRA.

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

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

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AREWA24 launches Hausa services on Eutelsat 16A

AREWA24 will use satellite capacity from Eutelsat to broadcast what's claimed to be the first 24-hour free-to-air Hausa language entertainment and lifestyle channel.

Under a multi-year deal, the broadcaster will leverage Ku-band capacity on *EUTELSAT 16A* as it move towards a new, higher quality of service to enhance its position as northern Nigeria's premiere Hausa language channel. Eutelsat says its satellite's "powerful" footprint enables AREWA24 to extend its reach to Hausa-speaking communities throughout Nigeria and the region, including Niger, Chad, Burkina Faso, Ghana and Cameroon.

AREWA24 installers ready to point customer dishes to *EUTELSAT 16A*.

AREWA24 will upgrade performance on *EUTELSAT 16A* while continuing play-out and other channel services with its teleport partner, Amman-based Jordan Media City.

Launched in June 2014, AREWA24 is said to be the largest producer of original, high-quality television programming in Hausa, the most commonly spoken language in Nigeria and West Africa. The channel's line-up covers music, entertainment, lifestyle, business, employment, arts, sports, chat shows, children's programmes, 'Kannywood' films and original dramas.

Viewers will also be able to access a variety of popular free-to-air channels available from *EUTELSAT 16A*'s video neighbourhood.

iSAT books *AFRICASAT-1a*

UAE-based fixed-satellite and ICT solutions and services provider iSAT Africa has taken space on MEASAT's *AFRICASAT-1a* satellite. The company says it will use the capacity for the new managed services platform it launched in March. The platform utilises the latest DVB-S2x broadcasting standard. When combined with *AFRICASAT-1a*'s beams, iSAT says it delivers "a higher spectral efficiency". iSAT Africa MD Rakesh Kukreja adds that his company was attracted by *AFRICASAT-1a*'s "high bandwidth efficiency across the continent".

John Deere picks Q-KON

Integrated access services provider Q-KON has been selected by agricultural machinery manufacturer John Deere to provide VSAT connectivity in Ghana. Q-KON has agreed to provide its C-band Satellite Access service for voice, internet connectivity and VPN to the John Deere branch in Ghana. Q-KON claims it can provide its new client with the "perfect solution" between the high-capacity advantages of fibre access services and the "exceptional" reliability offered by satellite access services.

Express-AM6 now live

Russian Satellite Communications Company's *Express-AM6* is now ready for service. On 22 April, the company said it had commissioned its new heavy-class communications and broadcasting satellite to provide coverage over Russia, Europe, the Middle East, Africa, and Asia. It was launched to 53ºE last October, and has a payload of 72 transponders in C-, Ku-, Ka- and L-bands. RSCC now has 11 satellites in its fleet, and also plans to launch two more later this year.

BSO broadens global footprint into Africa

BSO Network Solutions, the global Ethernet network, cloud and hosting provider, is to further expand its worldwide network footprint after recently increasing its capacity to Africa, Russia, the Middle East and East Asia.

The firm will now be offering more high-speed access to new routes that will enable carriers and end-users to connect faster to the Asian, Indian and Middle Eastern regions, where it claims to be the leading connectivity company.

The BSO network now includes the following intra-region subsea cable connections: Unity; Pacific-Crossing 1; FLAG Europe-Asia (FEA); SEACOM/Tata TGN-EA; Europe India Gateway (EIG); TE North/TGN-Eurasia/SEACOM; FALCON; SEA-ME-WE 3; SEA-ME-WE-4; Europe-Russia-Asia (ERA) terrestrial and Hokkaido-Sakhalin Cable System (HSCS); Transit Europe-Asia (TEA) terrestrial and Russia-Japan Cable Network (RJCN); and Asia Europe Express (AEE) terrestrial.

In Europe, it uses the Hawk submarine cable, which has connections in France, Tunisia, Libya, Italy, Turkey, Cyprus, Syria and Egypt. For Asia, it has the following connections: APCN-2; EAC-C2C; South-East Asia Japan Cable (SJC); and Asia Submarine-cable Express (ASE).

BSO says that alongside the expansion of its routes, it has reached a total of 70 POPs on-net, worldwide.

Subsea cable to link Algeria with Spain

Infrastructure company Alcatel-Lucent has signed a deal with the Algerian Ministry of Post, Information Technology and Communications (MPITC) to build a 560km fibre optic undersea cable that will link Oran in Algeria to Valencia in Spain.

The cable system has been given the name 'Orval', and is expected to be completed in 2016. When fully operational, the system will deliver 100Gbps but has an ultimate design capacity of 20Tbps.

This projected speed and capacity will enable the delivery of broadband services to an estimated 42 million internet users in Algeria and Spain, says Alcatel-Lucent.

Philippe Dumont, president of Alcatel-Lucent submarine networks, says: "The Orval undersea cable system will help meet the broadband demand and strengthen overall connectivity in the Mediterranean.

Philippe Dumont of Alcatel-Lucent says the Orval submarine cable system will strengthen connectivity around the Mediterranean.

"As we enter in an upward cycle of submarine cables constructions, this new project highlights the continued need for higher capacity and connectivity that is critical for broadband expansion."

Alcatel-Lucent will be lead contractor in charge of designing and manufacturing the system in consortium with IT Marine, a software design and development company, which will be responsible for marine operations.

Abdelhak Benkrid, general secretary of the MPITC, says: "Broadband access is a fundamental contributor to both businesses and consumers.

"The Orval network represents a strategic technology investment that will strengthen access to high-quality network services. Based on Alcatel-Lucent's technology and expertise, Orval will give us an edge to continue developing our service offer to and to an increasing number of broadband users."

Orval also constitutes part of Organisation de la Réponse de SÉcurité Civile (Orsec) emergency plan in case of natural disasters, such as the earthquake in 2003. The country decided it needed to strengthen its international communications, which forms a key element of Orsec.

Peering 'fundamental' in closing the digital divide

Teraco CEO Lex van Wyk believes that keeping content local is essential to empowering African business.

NAPAfrica has warned that without innovative approaches to bridging the digital divide, Africa is unlikely to ever have full access to critical information. It says the continent has yet to fully realise the benefits of peering which is currently under-utilised.

NAPAfrica claims to be Africa's largest internet exchange point, and is based at Teraco's carrier- and vendor-neutral data centre facility in Johannesburg.

"There is significant proof that peering is not only fundamental, but also an essential part of any network landscape, particularly across borders," says Teraco CEO Lex van Wyk.

As an example, he cites Skyband in Malawi which was routing content via Europe and back again. The ISP was able to cut its relatively high IP transit costs through peering with NAPAfrica and having multiple diverse paths between Malawi and Johannesburg.

According to van Wyk, keeping content local is vital for the continent in terms of bridging the digital divide and empowering local businesses.

"If African countries started working together, we could grow the continent and provide better services and distribute content more economically. While it may not solve the issue, NAPAfrica believes a progressive internet environment and concepts such as peering could close the gap significantly."

SEACOM network is upgraded

SEACOM has completed an upgrade to its global IP and MPLS network. The firm claims it will offer "substantial advantages" to carriers and businesses looking to expand their communications infrastructure on carrier-class Ethernet, IP and MPLS platforms between Africa and the rest of the world.

According to SEACOM, the upgraded backbone gives service providers and operators access to gigabit ports offering up to 100GbE at "affordable" prices, as well as the ability to dynamically turn up bandwidth on demand. In addition, the new network will extend the availability of native IPv6 services to all users, and provide translated IPv6-to-IPv4 services.

"The deployment of our new service platform will enable SEACOM to provide a wider range of Ethernet-driven products and services," said Mark Tinka, head of engineering.

"It will also offer us improved levels of operational efficiency and scalability, ease of administration, and provide a growth path for the future. We will easily be able to scale our IP/MPLS network up to multiple terabits of capacity and more, giving us plenty of headroom for growth."

We empower our customers to realise the full potential of the Internet of Things (IoT)

Your wireless data solution is more than just data connectivity, we understand that, and with new emerging technologies, concerns about privacy, safety, security and demands for accountability are a very high priority.

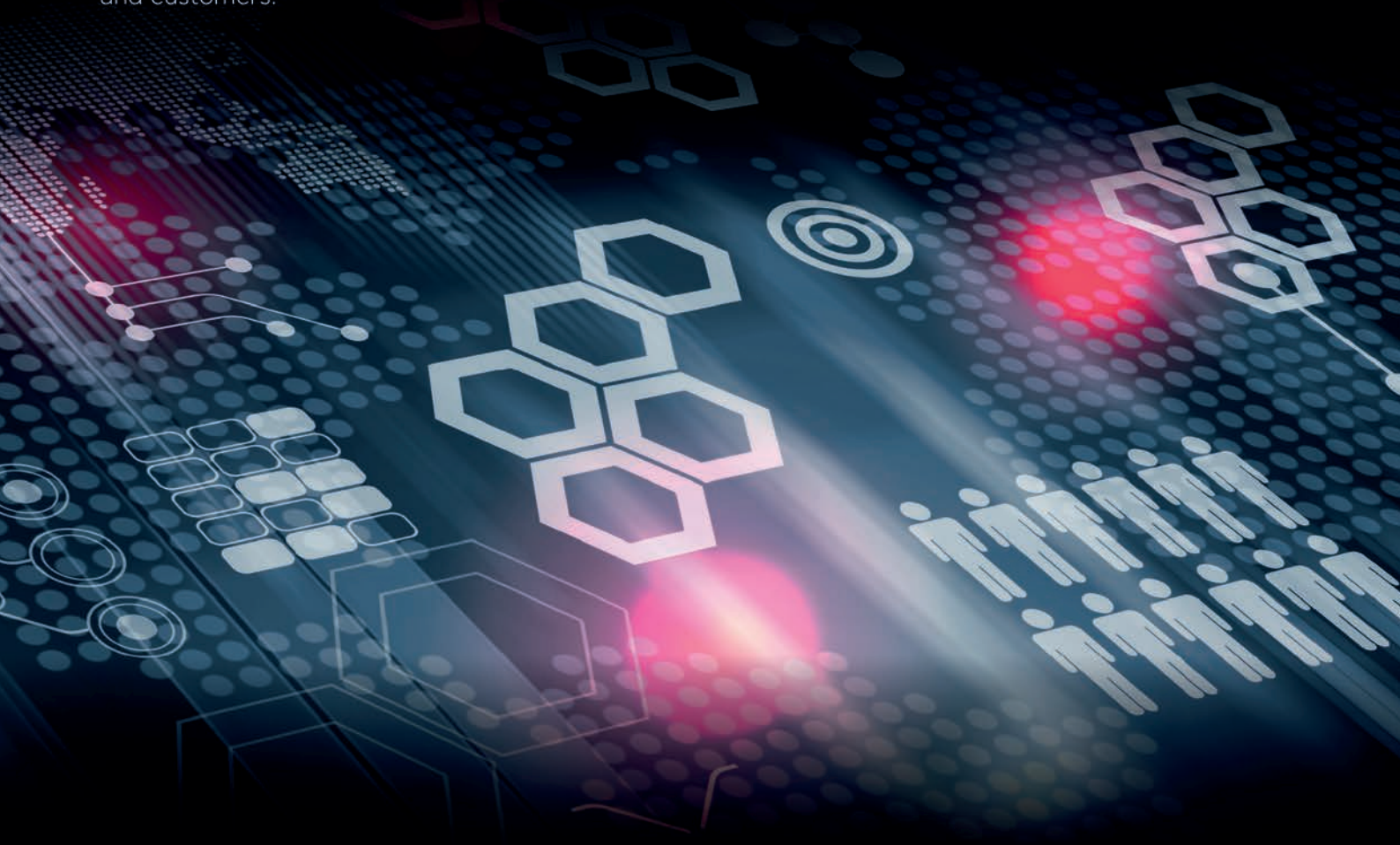
Wyless is working with both the public and the private sectors to define best practice and to commission technology that uses open standards, is interoperable, secure and scalable.

We've built Porthos™, the world's most advanced global wireless IoT platform and private secure managed network, we also built our business upon the most important connections of all – our relationships with our partners, carriers and customers.

That's why Wyless is the trusted provider to our partners and the trusted solution for Fortune 500 companies and startups alike. We're the easiest company to work with.

We listen to our customers and take pride in every connection.

So connect with the experts and together we'll take your applications to the next level. You have found your true IoT partner.



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Nokia and Alcatel-Lucent to merge

Nokia plans to take over Alcatel-Lucent in all-share transaction that values the French company at EUR15.6bn (around USD16.6bn).

In mid-April, the two firms announced an MoU under which Nokia will make an offer for all of the equity securities issued by Alcatel-Lucent. Directors from both companies have approved the terms of the proposed deal which is expected to close in the first half of 2016, subject to customary conditions.

The combined company will be called Nokia Corporation. It will include more than 40,000 R&D employees from Alcatel-Lucent's Bell Labs and Nokia's FutureWorks divisions. Their aim would be to accelerate development of future technologies including 5G, IP, SDN, cloud, the Internet of Things, analytics, sensors and imaging.

Nokia Technologies will remain a separate entity with a focus on licensing and the incubation of new technologies. But Nokia has begun a strategic review of its HERE business, which specialises in mapping and location technologies, and is considering its sell-off.

Nokia Corporation will be headquartered in Finland with Risto Siilasmaa as chairman and Rajeev Suri as CEO. Alcatel-Lucent shareholders will own 33.5 per cent of the fully diluted share capital of the combined company, and Nokia shareholders will own 66.5 per cent, assuming full acceptance of the public exchange offer.

On the basis of the transaction closing in 1H16, the corporation will target around EUR900m (USD986.7m) of "operating cost synergies" to be achieved on a full-year basis in 2019. These will include organisational streamlining, and the rationalisation of regional and sales organisations, overlapping products and services, central functions, etc.

Job losses have not as yet been announced. Nokia says it intends to maintain employment in France that is "consistent" with Alcatel-Lucent's 2015 Shift Plan commitments. In addition, the company expects to expand R&D employment with the addition of several hundred new positions targeting recent graduates with skills in future-oriented technologies, including 5G. To ensure ongoing support for customers, activities for care services and pre- and post-sales are expected to continue as well.

Nokia Corporation is expected to have a strong balance sheet, with combined net cash at 31 December 2014 of EUR7.4bn (USD8.1bn), assuming conversion of all Nokia and Alcatel-Lucent convertible bonds.

Surfline to improve connectivity in Ghana with USD15m backing

Vantage Capital, Africa's leading mezzanine debt provider, and Deutsche Investitions-und Entwicklungsgesellschaft (DEG), are investing USD15m in Ghana's Surfline Communications.

The funds will be used by the operator for the ongoing expansion of its LTE network, as well as to enhance its product distribution and marketing capabilities. Since launching its 4G network in Ghana last August, Surfline is said to be experiencing "tremendous growth" in its customer base.

Gunnar Stork, DEG's director of equity and mezzanine for Africa and Latin America, said: "We believe that the investment in Surfline will contribute to improve internet connectivity in Ghana and as such be an important factor to bridge the digital divide."

DEG, together with four other European investors, is contributing around USD60m to Vantage's recently launched third fund to facilitate growth in Africa. Vantage invested USD15m in Surfline from its second fund late last year.

Vantage Capital Group was established in 2001 and currently manages funds of more than USD400m.

It has made 12 investments from its second mezzanine fund, and says its third fund will focus on high growth markets such as Ghana, Nigeria, the East African Community members, and some of the Southern African Development Community countries.

Kenya's regulator and competition authority forge greater links

The Communications Authority of Kenya (CAK) is aiming to strengthen its regulatory capabilities, especially in promoting competition and efficient investment in the telecoms sector, with the signing of an MoU with the International Finance Corporation (IFC).

The two organisations plan to create a collaboration framework based on the concurrent jurisdiction over competition matters between the CAK and the Competition Authority of Kenya.

They will develop a pro-competition framework for spectrum management in Kenya to increase economic efficiency in spectrum usage, ensure a level playing field for investors, and facilitate the expansion of wireless communications. It's hoped all this will ultimately support capacity building on competition policy and regulation in the communications sector.

The agreement is part of the IFC's Kenya Regulatory Reform Programme that provides advisory services to help strengthen the development of the private sector in Kenya.

The corporation will provide technical support on strengthening collaboration between the two authorities to safeguard and encourage effective competition in the telecoms sector.

This includes the development of a cooperation agreement or MoU between the CAK and the Competition Authority, concurrency regulations, and a common action plan, based on international practices and the Kenya legal framework.

Director general Francis Wangusi said the IFC partnership is essential for supporting the regulator's work.

The Communications Authority's director general Francis Wangusi said the partnership is essential for enhancing the CAK's execution of its mandate.

New acquisitions boost bottom line for Maroc Telecom

Maroc Telecom has reported a 10.2 per cent increase in revenues for the quarter ending 31 March 2015.

Its earnings grew from MAD7.206bn (USD719.3m) to MAD7.942bn during the period. The increases were due to the consolidation of its recently acquired West African units in Benin, Central African Republic, Côte d'Ivoire, Gabon, Niger and Togo.

"This quarter was marked by finalising the acquisition of six new operators in Africa and the launch of many projects allowing us to quickly take over their operational control," said Maroc Telecom chairman Abdeslam Ahizoune. He added that the new subsidiaries will boost the group's presence in markets with significant growth potential, and that the company is also planning major investment after it is awarded a 4G license in Morocco.

However, when excluding the impact of the expansion, group revenues were down 0.7 per cent in the quarter, with a 5.9 per cent annual growth among the operator's international operations partly offsetting the 3.1 per cent decline in turnover in the group's home market.

Subscriber numbers rose 32 per cent to reach around 52m by the end of the quarter. Mobile subscribers in Morocco were down 0.9 per cent YoY, falling from 18.32m to 18.16m. But 3G customers grew by 88.9 per cent to 4.98m.

In the telco's other markets, mobile customers in Mauritania grew 8.3 per cent annually to 2.01m; in Burkina Faso, Onatel's customers increased by 22.7 per cent to 6.15m; while Gabon Telecom saw a 12.1 per cent increase to 1.164 million. Declines were reported in Niger, Côte d'Ivoire, Central African Republic and Moov Gabon.

ZTE partners with Mitsumi

ZTE has chosen Mitsumi Distribution as its distribution partner in Africa.

With a network of more than 3,000 resellers, Mitsumi claims to be the continent's largest distributor of telecommunications, IT and consumer electronics equipment.

ZTE says the partnership will enable better product availability in the region while strengthening its presence in Africa. The agreement with Mitsumi covers: Botswana,

Burundi, Cameroon, Côte d'Ivoire, DRC, Ethiopia, Ghana, Kenya, Madagascar, Mauritius, Namibia, Nigeria, Rwanda,Tanzania, Tunisia, Uganda, Zambia and Zimbabwe.

The companies have also agreed to co-invest in technical support staff, sales and market development activities to enable the adoption of the vendor's products.

ZTE says it will leverage Mitsumi's capabilities and "strong presence" in Africa to further strengthen its reach within the region. MEA marketing director Hong Chuangye adds: "Mitsumi's service centre, logistics credit facilities, and market knowhow give us the confidence to achieve our business objectives."

Gabon Telecom modernises wholesale billing with CSG

Gabon Telecom will use CSG's *Wholesale Business Management* platform to support both its wireless and fixed business. CSG says the implementation includes its *Interconnect* and *Intermediate* solutions, but was unable to reveal the value of the deal.

Bernard Mbangangoye, Gabon Telecom's international and inter-connection director, says revenue and net income growth are dependent upon the efficiency of operations.

"With the CSG solution we are able to control our wholesale process from end-to-end, correctly capturing data records, accurately invoicing our partners, and shortening the time to settlement. "

He adds that the new platform will enable his company to monitor operations via KPI dashboards that are updated daily, and proactively address any anomalies.

Gabon Telecom is owned by Maroc Telecom and operates as Libertis. Last year, it became the first telco in Central Africa to launch LTE, and made the strategic decision to not just modernise its network but also the systems responsible for monetising its network traffic.

Gabon Telecom is the tenth operating company in the Maroc Telecom Group to standardise on CSG solutions. The vendor adds this latest deployment means it now supports the operations of Gabon's top three telecom providers.

VimpelCom: subscribers slightly up; revenues slightly down

VimpelCom ended last year with 221.6m mobile customers across its international operations, a slight increase from 220m reported for 2013. According to its recently published annual report for 2014, it remains the seventh biggest operator globally in terms of subscribers.

The telco's interests in Africa include Djezzy in Algeria where it has 18.4m customers and Telecel in Zimbabwe which has 2.2m. Subscriber numbers for these operations in 2013 were reported as 17.5m and 2.5m respectively.

VimpelCom also had networks in Burundi and the Central African Republic. But in October 2014, the operator's 51.9 per cent owned subsidiary Global Telecom Holding sold its stakes in U-COM in Burundi and Telecel CAR to Econet Wireless Global for USD65m (*see Wireless Business, Oct-Nov 2014*).

Total revenues for VimpelCom were down four per cent YoY to reach USD19.6bn. The operator's Africa and Asia Business Unit realised a four per cent YoY organic decline in revenue to USD3.4bn, and EBITDA was down by 11 per cent YoY to USD1.5bn.

In Algeria, total revenue dropped five per cent YoY to DZD136bn. VimpelCom blamed this on the "forced" delay of Djezzy's commercial 3G service launch that were caused by regulatory issues.

Top African business schools collaborate on entrepreneurship

Six of Africa's top business schools from five countries have formed a new academic association to boost entrepreneurship and job creation.

The African Academic Association on Entrepreneurship (AAAE) will promote and develop academic cooperation through sharing resources, expertise and research. The American University in Cairo (AUC) in Egypt will serve as the coordinator of the collaboration until a structured steering committee has been appointed.

The five other organisations in the AAAE include: the University of Cape Town Graduate School of Business (UCT GSB) and the University of Stellenbosch Business School in South Africa; Esca Maroc Ecole De Management of Casablanca, Morocco; the Lagos Business School in Nigeria; and the Strathmore Business School of Nairobi in Kenya.

Sarah-Anne Arnold, manager of the MTN Solution Space at UCT GSB, said promoting the exchange of ideas, experiences and skills is core to building an entrepreneurship ecosystem in Africa.

"If we want to build our continent then we need to invest in building networks that are broader than any one single institution. The fuel to innovate is created when people with different experiences, realities, passions and ideas come together with the mandate and support structures to develop new possibilities."

The AAAE hopes to expand over the coming months to include more African business schools. It also aims to invite collaboration between global business schools and build bridges between academic and industry knowledge.

NEW APPOINTMENTS

Date	Name	New employer	New position	Previous employer	Previous position
1/4/15	Kurt Riegelman	Intelsat	SVP, sales & marketing	Intelsat	SVP, global sales
1/4/15	Michael J. DeMarco	Intelsat	SVP, operations	Intelsat	SVP, marketing & solutions development
6/4/15	Fernando Valdivielso	ECI Telecom	VP EMEA sales	SEACOM	COO
28/4/15	Ramy Hashem	Alcatel-Lucent	Country senior officer & MD for Ghana	Alcatel-Lucent	CTO, Middle East
4/5/15	Chuck Robbins	Cisco	CEO (as from July 2015)	Cisco	SVP, worldwide operations
5/5/15	John Chambers	Cisco	Executive chairman (as from July 2015)	Cisco	CEO
6/5/15	Willem Marais	Liquid Telecom Group	Group managing executive & CEO South Africa	Nokia Solutions & Networks	VP of global customer operations for Telefónica

INVESTMENTS, MERGERS & ACQUISITIONS

Date	Buyer	Seller	Item	Price	Notes
9/4/15	Infinera	Transmode	Transmode	USD350m	Infinera says acquisition will complement its "strength" in long-haul optical transport market & its "early lead" in metro cloud market.
28/4/15	NATCOM Consortium Development & Investment	Nigerian Telecoms (NITEL)	NITEL	USD252.25m	Local reports say more than $1bn is needed to revive NITEL & its mobile subsidiary MTEL.
29/4/15	Emerging Markets Communications	MTN Communications	MTN Communications	NA	MTN Communications uses a hybrid satellite-terrestrial broadband network to provide communications & content for remote locations around the world, especially for the maritime & energy sectors.
1/5/15	Sepura	Teltronic	Teltronic	EUR127.5m	Reports say Sepura will draw on its debt facility as well as the proceeds of a share issue to fund the purchase of the Spanish PMR specialist.
1/5/15	Shareholders	Eaton Towers	Equity	USD350m	Has now also signed first independent tower deal in Egypt, with the purchase, leaseback & management of more than 2,000 Mobinil towers.

IN BRIEF...

Grant Marais has left Intelsat as regional VP for Africa after nearly two-and-a-half years. At the time of writing, Intelsat had not made any official announcements about his departure or reasons for leaving. However, Marais' *LinkedIn* profile states he is now CEO of WirelessCo, the joint venture set up between Dimension Data and Multichoice last September. Headquartered in Johannesburg, WirelessCo will build and operate an open access carrier-grade Wi-Fi network. It combines the network assets of Dimension Data-owned Wi-Fi provider AlwaysOn, with the assets of MWEB WiFi.

The MTN Group added 4.1 million new subscribers during 1Q15. In its quarterly update for the period ending 31 March 2015, the operator said this represents a 1.8 per cent quarter-on-quarter increase and means that it now has a total of 227.5 million customers. But group president and CEO Sifiso Dabengwa said results for the quarter were impacted by a weaker macro-economic environment following the reduction in the price of oil in 2014 and continued price competition. "We continue to focus on our non-voice services which remain the key driver of the group's revenue growth."

Billionaire Mike Adenuga is reportedly preparing a takeover bid for Comium's operation in Côte d'Ivoire. Adenuga is chairman and CEO of multinational telco Globacom, and also runs Conoil, Nigeria's largest oil exploration company. He is said to have a net worth of around USD4.6bn. According to Geneva-based news agency Agence Ecofin, Adenuga has told Glo shareholders about a USD600m offer for Comium. Reports say Comium has been given until mid-May to pay off its USD24.8m debts or risk being auctioned off.

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

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

ISP Presta Bist will use O3b to provide backhaul from Chad to the internet. The company, which is also a pay TV operator, delivers consumer and business services across Chad via its national network of wireless broadband and VSATs. CEO Moussa Radjab said: "The broadband services we will now be able to offer are far superior to anything possible using current fibre connections or GEO satellites." O3b regards the Sahel region as a high priority. It says Burkina Faso, CAR, Chad, Mali and Niger are landlocked, and have erratic terrestrial fibre connections that are dependent on neighbouring countries.

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

LATEST COMPANY RESULTS

Date	Company	Country	Period	Currency	Sales (m)	EBITDA (m)	EPS (units)	Notes
4/2/15	Motorola Solutions	US	FY14	USD	5.9 (bn)		-2.84	Full-year sales declined 6%; expects a revenue decline of 2% to 4% for 1Q15 compared to 1Q14. This assumes a $40m unfavourable currency impact, which translates to revenue growth of -1% to 1% in constant currency.
22/4/15	Millicom	Luxembourg	1Q15	USD	1,709	565	0.26	Africa revenues up from 13% in previous quarter to 16%, with double digit organic revenue growth in all markets except Chad which saw a 17% decline in USD terms.
23/4/15	ZTE	China	1Q15	RMB	883	NA	NA	YoY revenue from carrier networks increased 8.9%, driven by sales growth in products such as wireless communication systems, wireline switch & access systems, routers & router switches.
23/4/15	Ericsson	Sweden	1Q15	SEK	53.5 (bn)	19.0 (bn)	0.40	Although sales in the quarter increased by 13% YoY, quarter-on-quarter sales in sub-Saharan Africa are down 17%.
28/4/15	Airtel Africa	India	FY14	INR	269,070	61,122	NA	YoY growth down 1%. Exchange rates continue to depreciate versus USD; revenue-weighted currency depreciation during 4Q14 was 8% compared to previous quarter.
30/4/15	SES	Luxembourg	1Q15	EUR	477.8	356.1	NA	YoY revenue is up 2.6%. Expects growth in group revenue & EBITDA of up to 1% (at constant forex) for the year ending 31 December 2015.
30/4/13	Intelsat	US	1Q15	USD	602.3	470.5	0.69	An aggregate decrease of $11.9m in transponder services is mainly due to a $10.4m decrease in revenue from network services customers. This is blamed on the competitive landscape, especially for services delivered in Africa, as well as reductions in point-to-point & consumer broadband services.
31/3/15	Mobinil	Egypt	1Q15	EGP	2.79 (bn)	639m	NA	Claims Etisalat Egypt has not paid interconnect charges of EGP29.8m as of January 2014, & has submitted arbitration notice to regulator.
19/4/15	Etisalat	UAE	1Q15	AED	12,906	NA	0.25	Acquired 53% stake in Maroc Telecom in May 2014; disposed of Atlantique Telecom operations in Jan 2015.
30/4/15	American Tower	US	1Q15	USD	1,079	724	0.45	International rental & management segment revenue increased 6.2% to $344m.
5/15	Safaricom	Kenya	FY14	KES	163.4 (bn)	71.2 (bn)	0.8	13% YoY revenue growth driven by data & M-PESA. Remains market leader with 67.4% subscriber share.
11/5/15	VimpelCom	Netherlands	FY14	USD	19.6 (bn)	8.0 (bn)	0.53	Africa & Asia performance impacted by weaker results in Algeria & Pakistan, offsetting strong performance in Bangladesh.

Hytera unveils platforms for PMR network users

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

MANUFACTURER: Hytera

PRODUCT: SmartOne & XPT

MORE INFORMATION:
www.hytera.com

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

It also includes voice detection technology that can automatically assign talking authority by detecting voice activity of radios, and gain control technology which adjusts voice levels from different communication systems to a uniform level without decreasing voice quality.

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

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

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

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

Weightless-N open standard goes live

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

MANUFACTURER:
Weightless SIG

PRODUCT: Weightless-N v1.0

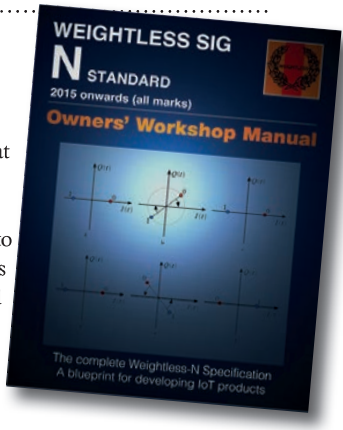
MORE INFORMATION:
www.weightless.org

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

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

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

Any company is able to develop both low-cost base stations and terminals using royalty-free Weightless technology. Networks can be owned and operated independently by any company or, typically, IoT terminal devices and applications can be produced for use cases that will rely on connection to networks operated by third parties.



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

Sat-Fi turns Wi-Fi devices into satellite phones

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

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

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

MANUFACTURER: Globalstar

PRODUCT: Sat-Fi

MORE INFORMATION:
eu.globalstar.com

Easy way to migrate from analogue to digital

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

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

With the capability to support individual, group and emergency calling, and featuring an emergency alarm and programmable side buttons, Simoco says the *LinX 200* can be deployed with little or no user training.

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

MANUFACTURER: Simoco

PRODUCT: LinX 200

MORE INFORMATION:
www.simocogroup.com

MIMOtech doubles backhaul throughput with Air Division Duplexing

MIMOtech describes *Janus AirDuplex* as a range of "ultra-high" capacity microwave backhaul radios that use a new patented technique called *Air Division Duplexing (ADD)*. This combines MIMO and full duplex transmission to achieve claimed data rates of up to 1Gbps in a single 28MHz channel, and 2Gbps in 56MHz bandwidth.

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

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

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

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

MANUFACTURER: MIMOtech

PRODUCT: Janus AirDuplex

MORE INFORMATION:
www.mimotechnology.com

Newtec gateway increases DTH availability

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

The gateway is compatible with the company's *Dialog* multiservice broadcast platform. It also features *multistream*, Newtec's efficiency-boosting clean channel technology, and *Equalink 3*, a new linear and non-linear pre-distortion technology designed to compensate for the effects of distortions caused by the satellite's filters and amplifiers. It's claimed the additional throughput this provides equates to up to 15 per cent more TV channels in a DTH carrier.

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

MANUFACTURER: Newtec

PRODUCT: MCX7000

MORE INFORMATION:
www.newtec.eu

Gilat claims small cell breakthrough

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

Developed using what the company claims is its "extensive expertise" in rural cellular backhaul, the integrated solution comprises a small cell that is optimised to provide the ability to deliver cost-effective 2G and 3G cellular services to unserved areas.

Gilat says *CellEdge* has an 80W total average power draw, including both the small cell and VSAT in a typical configuration, and therefore "significantly" lowers capex in the terminal and solar power generation. The firm adds its technology also minimises satellite space segment overhead by applying efficient voice and data compression combined with satellite bandwidth allocation on demand. Gilat claims this can reduce satellite opex by up to 80 per cent compared to traditional solutions.

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

MANUFACTURER:
Gilat Satellite Networks

PRODUCT: CellEdge

MORE INFORMATION:
www.gilat.com

ALSO LOOK OUT FOR

Raising the bar for satellite technology

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

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

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

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

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

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

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

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

26°E

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Sharing towers to maximise profits

Estimates vary as to how many towers there are in Africa, but there is no doubting the trend towards sharing. Some estimates suggest that as many as half of all towers will be shared by different mobile operators.

Under constant pressure to cut costs, mobile operators in Africa are selling-off their tower estates to financially stronger towercos, as ABDUL MONTAQIM discovers.

A definitive figure for the number of telecommunications towers in Africa is difficult to find. The two most authoritative sources differ from one another somewhat. TowerXchange, an industry forum, estimates that there are approximately 165,000 towers in the whole of Africa. Meanwhile, the GSM Association says there 240,000 towers in sub-Saharan Africa alone.

The GSMA does not provide figures for North Africa specifically, and instead combines the region with the Middle East and estimates there to be 70,000 towers in MENA. But if the association's figure for sub-Saharan Africa is correct, it clearly means TowerXchange's numbers for the whole of the continent represent a considerable under-estimate.

Although the GSMA has occasionally referenced data on towers as part of its programme activity, it does not conduct primary research in this area. A spokesperson for the association recommends using data from a specialist in this market, such as TowerXchange.

Whether we take the TowerXchange figures or the GSMA's, one statistical trend that is undeniable is that a large number of towers are currently being sold off. And that trend is likely to continue, if not accelerate.

According to TowerXchange, about 47,600 of 165,000 towers are owned or operated by independent tower companies, which makes up about 29 per cent. It says this figure will continue to go up this year, rising to almost 50 per cent by the end of 2015.

The change in ownership is largely due to mobile network operators – many of which built the tower infrastructure in the first place – deciding that they no long want to operate and maintain towers. These are an expensive distraction from their main business, which is to look after the communications needs of their subscribers.

Of course, MNOs still need the towers to carry the data and voice signals for their subscribers, but increasingly they are opting to sell their towers to specialist companies and lease them back on long-term deals. This frees the new owners of the towers to make similar deals with other MNOs, who end up sharing tower infrastructure with each other even as they compete for subscribers.

This move towards tower sharing is not only good for the operator's balance sheet, it is also believed to be better for the environment – although going green is probably less of a driver for the MNO because it often costs more money and eats into profits. But as is well known, power grids in Africa are not as extensive as MNOs would like, and establishing, for example, solar- or hybrid-powered tower installations is sometimes the only way to tap into many remote communities. While these may constitute small markets, they are still significant in an increasingly competitive business.

The GSMA estimates that Africa has some 145,000 off-grid sites, a figure it expects to increase to 189,000 by 2020. The number of what it calls "unreliable-grid" sites is expected to grow from 84,000 in 2014 to more than 100,000 by 2020.

Then there are the regulatory issues. Some countries are more highly regulated than others. For example, some states have established telecoms-

specific infrastructure regulations, such as the requirement to obtain and maintain a license. There may also be planning permissions to obtain, environmental permits required, and even civil aviation clearances needed. Foreign-ownership restrictions may also apply. Many countries already have these regulations in place, and the ones that do not are likely to do so in the future.

Increasing regulations, possibly leading to an increase in operating costs, will put further pressure on MNOs who are already facing declining average revenues per user (ARPU). Analysts at Ovum estimate that ARPU for operators is declining at a rate of 16 per cent globally, and Africa has been part of that downturn. ARPU was never all that high in Africa compared to other regions, so any downward movement has more effect here.

"In smaller markets, low ARPU is a game-changer," says Ovum analyst Emeka Obiodu. "Kenya is a prime example of the limits of fierce competition. When Airtel started a price war in 2010, it was clear that all market players would be affected." Obiodu adds that the "double hit" of low ARPU and small market size means that revenues are not big enough to fund investment.

A changing landscape

The activity taking place between tower companies and MNOs is changing the business landscape in Africa. Some of the towercos with a significant number of estates in Africa are American Tower Corporation (approximately 10,000), Eaton Towers (about 5,000), Helios Towers Africa (1,300), IHS Africa (more than 20,000), and SWAP Technologies (over 1,500). And perhaps the most noteworthy MNOs are Airtel, Econet Wireless, Etisalat, Millicom, MTN, Ooredoo, Orange, Smile, Tigo and Vodacom/Vodafone.

Of those operators, the company that has been the most active in the market is Airtel which is selling off its towers in Africa at an accelerated rate. By the end of 2014, the cellco had sold almost 12,000 of the 15,000 towers it owned across 17 countries in Africa. Three large deals accounted for the bulk of the sales: 3,100 went to Helios Towers; 3,500 to Eaton Towers; and 4,800 to American Tower Corporation. Airtel says it plans to sell its remaining 3,000 towers and leave the infrastructure business altogether.

The operator's sell-off may be typical of the general trend but the speed at which it has divested itself of its tower sites is connected to its immediate concern about its profitability. In April, 2015, its share price fell significantly on news that its estimates had not been met. Although Airtel mostly blames currency depreciations, the company apparently views the selling of its fixed infrastructure as one way to claw back its profits.

Nigeria is a crucial market for Airtel as it makes up 60 per cent of its total subscriber base of just over 50 million across Africa. Nigeria is the continent's most populous country with an estimated 185 million people. Around 30 million are Airtel subscribers, a similar number to that of Globacom. MTN, the market leader, has more than 60 million, while Etisalat is thought to have 22 million. According to the Nigerian Communications Commission, the total number of GSM subscribers in the country is 140 million.

At the end of 2014, American Tower Corporation (ATC) paid more than a billion dollars to Airtel for its towers in Nigeria, and will now lease them back to the operator for 10 years. Airtel said the agreement will allow it to focus on its core business and customers, enable de-leverage through debt reduction, and will significantly reduce its ongoing capital expenditures on passive infrastructure in the country. While Airtel strives to make big profits, ATC announced in April that its first-quarter earnings were ahead of expectations, and it forecast strong growth for the year ahead.

As well as the Airtel-ATC deal, Nigeria has also seen a number of other large tower transactions in the past 12 months. MTN entered into a joint ownership agreement with IHS Towers on 9,151 of its towers in the country. IHS paid around USD2 billion for the assets in what is believed to be the largest tower deal to date in Africa.

Etisalat was one of the first to sell its towers and has offloaded 2,136 of its towers in Nigeria to IHS. The MNO said the sale was part of its strategy to improve the quality of its network performance, as well as accelerate its rollout of 2G and 3G. Etisalat is now leasing back space on the towers from IHS.

Etisalat Nigeria CEO Matthew Willsher said: "Continued demand for mobile connectivity along with increased consumption of data requires reliable and effective networks that are also cost efficient for network operators. The decision to sell our passive infrastructure to an experienced commercial partner, such as IHS, is part of our strategy to increase network coverage and capacity which is already rated number one for quality of service by the Nigerian Communications Commission."

Issam Darwish, CEO of IHS, added that the partnership will provide significant long-term benefits to Etisalat Nigeria, allowing it to focus entirely on marketing new customer propositions to a wider market.

Etisalat believes the deal will help it to maintain reliable mobile services, lower overall costs, promote network sharing, and encourage the use of cleaner technologies through less reliance on diesel, which is often used to power cell sites.

MTN was also among the first to see the sense of separating the tower business from the business of providing services. In one of the earliest deals, the operator sold 1,876 towers in Ghana to ATC. The companies entered into a joint venture in Ghana, giving it the name TowerCo Ghana. It mirrored an earlier deal MTN and ATC completed in Uganda, with MTN selling about 1,000 of its tower sites to ATC. In both deals, ATC took 51 per cent of the new tower company's shareholding, with MTN retaining the remaining 49 per cent. It was agreed that ATC would manage the sites and infrastructure.

Broadening out from tower sharing

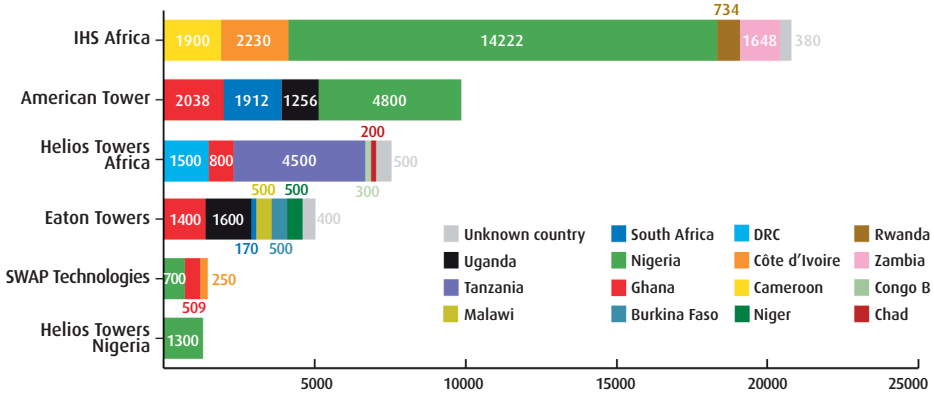
Along with tower sharing, the GSMA says infrastructure sharing as a whole is emerging as another trend. "Commercial considerations, rather than regulatory mandates, appear to be driving the increasing trend for MNOs to adopt a variety of infrastructure models," says the association in its *Mobile Infrastructure Sharing* report. "Examples of mobile network sharing can be found in both mature and developing markets, with 3G providing an added impetus to assess the commercial and regulatory viability of network sharing."

There are three main types of infrastructure sharing being observed in the industry:

1. Passive infrastructure sharing, or mast sharing. This is where operators can either agree to share a tower and its associated active equipment, or simply use an independent tower company which is more than likely being contracted by other telcos as well;

2. Radio access network sharing. This is based on, or includes, passive infrastructure sharing but extends to the sharing of active equipment. It could also include antenna and transmission equipment.

3. Core network sharing. This is said to be the most advanced form of network sharing, and entails sharing core network elements.



Between them, the 'Big Four' towercos own more than 42,500 towers in Africa, with the next two owning fewer than 3,000 between them. The country with the most number of towers on the continent is Nigeria, with around 22,000.

SOURCE: TOWERXCHANGE

Of the above, the most common is passive infrastructure sharing, or at its simplest, tower sharing. This is what the industry is seeing now as telecoms companies sell their infrastructure to tower companies, some of which have grown quickly in the last couple of years.

By way of acknowledging and perhaps monitoring this infrastructure sharing trend, the GSMA organised what it describes as "a high level meeting" at Mobile World Congress earlier this year. Eight telco groups, which between them cover 551 million mobile connections across Africa and the Middle East, took part and agreed to cooperate on network infrastructure sharing. They include: Airtel, Etisalat MTN, Ooredoo, Orange, STC, Vodafone and Zain. Collectively, they manage 79 mobile network operations across 47 countries in Africa and the Middle East.

Speaking at the time, the GSMA's outgoing director general Anne Bouverot, said: "We are greatly encouraged by the shared vision of mobile operators and the common urgency to find solutions that will drive down the cost of mobile and internet services and help connect the unconnected. Unique mobile subscriber penetration is only 40 per cent in Africa and the Middle East, lower than the global average of 47 per cent, so we need to work together to expand the reach of mobile."

The GSMA believes telecom regulatory frameworks should encourage flexible commercial sharing arrangements and facilitate access to government-owned assets at preferential rates. It says this will help speed up the rollouts of new networks and support the business case to extend mobile infrastructure into rural areas.

Deal or bigger deal

Meanwhile, the deal-making continues in earnest. Telecom Egypt, a fixed-line operator, has signed a USD2 billion contract with mobile operators Mobinil and Vodafone. Under the terms of the agreement the MNOs will utilise Telecom Egypt's infrastructure instead of constructing their own. Telecom Egypt will also permit Mobinil and Vodafone to use its global gateway services, which connects calls across the borders (*also see Wireless Business, Dec 2014-Jan 2015 issue*).

Egypt also saw its first independent tower deal earlier this year in May when Eaton Towers used some of the USD 350 million it raised in new finance for the purchase, leaseback and management of Mobinil's towers. Eaton says the agreement with the operator, which is part of the Orange Group, consists of the purchase of approximately 2,000 towers with a 15-year leaseback contract for the operation and maintenance, and additional build-out of new sites.

Terry Rhodes, CEO Eaton Towers, says this is the first purchase and leaseback tower deal in Egypt, which is said to be the second-largest mobile market in Africa. "We will invest over USD200 million to provide world-class shared infrastructure to help the Egyptian operators provide better coverage and data services to their customers. Once the Mobinil deal and the agreements with Bharti Airtel for six countries signed and announced last September are completed, Eaton Towers will be operational in eight countries, representing the most diversified portfolio of shared infrastructure on the African continent."

The quick pace and enormous size of the tower deals that are now taking place, as well as the general trend of MNOs selling off their infrastructure to specialist towercos, would seem to suggest that within a few years all towers in Africa will be owned by independents, leaving MNOs to concentrate on their customers. But this is not necessarily the view of everyone in the industry.

Vodacom operates in South Africa, Democratic Republic of Congo, Lesotho, Mozambique and Tanzania, but says its footprint in sub-Saharan Africa is strengthened by its subsidiary Vodacom Business. It has a presence in 14 countries, and claims to be the continent's largest provider of satellite and terrestrial network infrastructure and interconnection services for local and international telecoms companies.

"Tower sharing isn't a one-size-fits-all solution," says Vodacom spokesperson Richard Boorman. "In Vodacom's case we judge each situation on its own merits. If companies are to compete on quality of service, operational efficiency, and so on, then owning of infrastructure is a key consideration.

"Having said that, in other situations the need to rapidly roll out services can be a more pressing concern, in which case infrastructure sharing/leasing is a useful strategy. It's difficult to make a prediction on the eventual outcome, but in our view it's unlikely that all infrastructure would be outsourced."

Statistically speaking, it may be that a tiny number of towers remain in the ownership of MNOs. But at what point does it become statistically significant? If TowerXchange is predicting that 50 per cent of towers in Africa will be owned by independents by the end of 2015, which is a year-on-year increase of nearly 100 per cent, then it could be argued that within two years, the number of towers remaining in the hands of MNOs will be statistically insignificant.

A more conservative forecast comes from researchers at Statplan Energy. In its *Global Market for Telecoms Towers 2014-2020* report, the energy analyst predicts that in Africa 30 per cent of all telecoms towers could be independently operated by the end of the decade.

"Towers constitute almost 50 per cent of the total capital expenditure for an operator, so the cost of towers involves tying up large amounts of capital in costly infrastructure and is a significant drag on operating liquidity," states the report.

"As many MNOs face declining revenues, they have sought to free up the capital tied into infrastructure and the towerco was born. In turn, the concept of asset sharing has become another key trend in the industry."

Looking beyond Africa to the rest of the world, Statplan estimates that there are now four million telecom towers installed globally, and that figure will increase to five million by 2020. ■

ESTIMATED NUMBER OF TOWERS OWNED OR MANAGED BY INDEPENDENT TOWERCOS IN AFRICA

TowerXchange says the size of Africa's tower industry doubled in two quarters to the end of 2014, triggered by Airtel's sale of towers in 16 of its 17 African countries and the Mobinil deal.

"Upon completion of the Airtel and Mobinil tower sales, TowerXchange calculate that independent tower companies will own and share 30 per cent of Africa's towers, up from just 4.7 per cent five years ago," said Kieron Osmotherly, founder and CEO of TowerXchange. "While we forecast towerco penetration will rise above 45 per cent in 2015, tower companies will not want all the towers in Africa. Sites at overlapping locations or sites owned by less credit worthy tenants are unlikely to be acquired. It is also notable that in every African country where towercos are present, the majority of new towers are built by towercos, thus are shared on a non-discriminate basis from the outset."

The burgeoning tower industry is seeing new entrants to the market, says TowerXchange. It lists the new entrants as follows: Atlas Towers (South Africa); BCTEK (Nigeria); Communications Towers Nigeria; Frontier Tower Solutions (targeting Burundi); Hotspot Network Limited (Nigeria); Infratel (South Africa); Pro High Site Communication (South Africa); Shared Networks Tanzania (active infrastructure sharing); Square1 Infrastructure (Nigeria and South Africa); TASC (targeting MENA); TowerCo of Madagascar; and Tower Share (targeting MENA).

It is estimated that these smaller towercos owned or operated a total of around 2,000 at the end of 2014, with most of the money for their ventures provided by private equity investors.

The 'Big Four' towercos are IHS Africa, ATC, Helios Towers Africa and Eaton Towers (*see graph p21*). While these four concentrate on achieving economies of scale, colocation sales, greater efficiency and more profitability, the smaller, more nimble new entrants into the market can perhaps win in markets considered too small or too risky for the big players to be concerned with.

According to TowerXchange, another opportunity for newcomers is Africa's urgent need for a viable proposition to build single-tenant towers. It believes this is possible even in markets where the 'Big Four' are active. "Particularly in low ARPU, off-grid areas – a tough combination of economics which attracts a unique breed of telecoms entrepreneur," it says.

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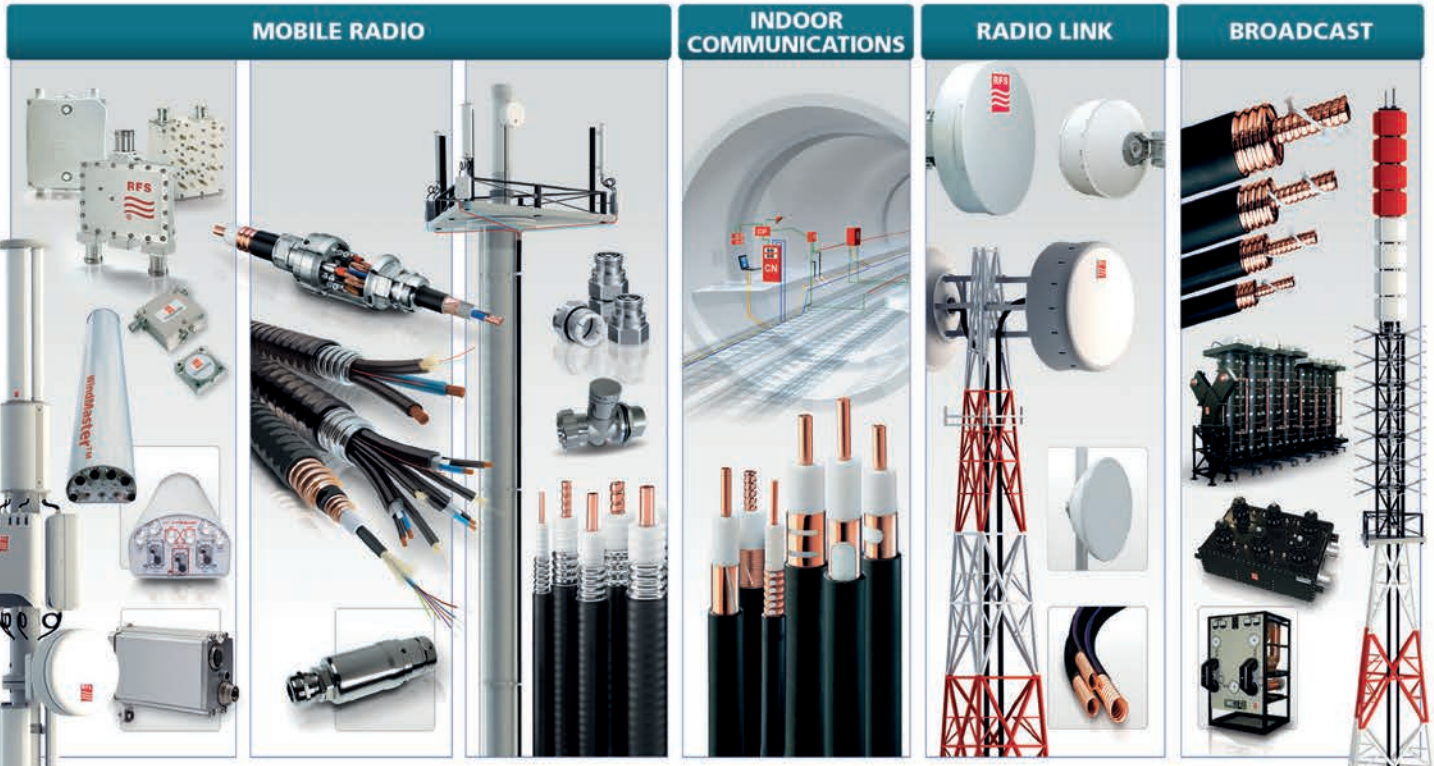

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GILAT SATCOM IS BLOOMING THE COMMUNICATION DESERT

61% of the people in Africa live in rural areas. Just 18% of the population – cities included – have some kind of internet access. Indeed, internet penetration in rural areas is below 10%. According to Mackenzie & Company: "If internet access achieves an impact on the same scale as mobile telephony has in Africa (~67%), it could account for as much as 10% of total GDP by 2025, up from only 1% today. This would be equivalent to over US$300 billion, due to the internet's transformational effects on sectors such as retail, agriculture, education and healthcare".

This fact only intensifies the lack of communication in the rural areas. I call it the "Communication Desert", a desert much bigger than the Sahara and that pervades all countries. The need for affordable rural communication is enormous: communication is a life source, the water of the economy. Just like during a drought, you can see how the shortage affects the lives of millions of people who are living in this Communication Desert, away from fresh connectivity of an internet oasis.

I invest my time and efforts on how to "bring water" to the people in the Communication Desert. So how can we connect the millions of people that are scattered around the vast continent of Africa to a fresh internet and telephony source? How can we enable a father from a remote village to call his daughter who lives in the city and ask her "How are you doing?"? Or enable a student studying in London to call his family in a rural village to tell his mom "I miss you" and share some pictures of the family dinner?

Our goal is to provide economical, self-sustained, easy to use and maintain, affordable turnkey solutions for rural community communication.

Sure, technology is a challenge, but the obstacle is business viability. Everybody knows that many rural areas cannot support telecommunications because of low ARPU potentials. On top of that, it is expensive to operate rural services and it is difficult to collect the revenue, so it is nearly impossible to build a self-sustainable business model. If, to continue the desert analogy I made earlier, then a reasonable ROI on a rural project is a Fata Morgana.

So, do we give up? Never!

The One Dollar Wall Must Fall

The One Dollar wall is the fact that the people in rural areas cannot pay more then $1-$3 per month for communication. This is a massive business barrier. It is the wall that prevents the internet from penetrating into rural communities and prevents economic growth all over Africa. You simply cannot put a $200,000 cellular tower in a remote community because you simply never see ROI. That is why what we are doing at Gilat Satcom is unique and revolutionary in the sense that we have targeted the rural community – people that can pay only as little as $1 a month for communication – and provide them with good communications, jobs and the internet.

The Village Island provides an excellent voice and video experience across a single satellite private network and all of the communication within the network is **FREE!** (Practically an unlimited number of villages, police, churches, healthcare, schools… you get the idea). Communication to users of VoIP like Skype, Viber and more, everywhere in the world is imbedded in the service and also provided **FREE!!** All internet browsing is also **FREE!!!** Calls to regular telephones and cellular users in the country and anywhere in the world can be made for an additional fee and with no need for equipment replacement or additional implementation in the remote location.

The Gilat Satcom Village Island is much more than just the technology and service management communication solution. We have put in a lot of effort to provide it with a full and detailed business plan from the village up. The Village Island is economically self-sustained and each village in the network is an independent business unit that shows a profit to its local owner and to its operator.

For us, making the communication desert bloom, is very exciting.

Eran Yoran,
Director,
Marketing and
Business Development,
Gilat Satcom.

info@gilat.net
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WaveTek has deployed AOptix's innovative Laser-Radio Technology in Lagos. It integrates free-space optics with millimetre wave RF technology to provide backhaul and connectivity for last-mile access.

Setting new sights on backhaul

As mobile networks continue to expand and carry ever greater levels of traffic, the need for effective backhaul has never been more critical. So with more fibre now available in Africa, is this the only solution operators need? RAHIEL NASIR finds out.

The number of submarine fibre optic cable systems that now surround Africa and have been landing on its coastlines over the last few years has certainly been a fillip to broadband connectivity in some parts of the continent. But as well as being used for broadband, what about fibre's promise of backhauling mobile networks? Here, it could be argued that submarine systems are not enough as operators need more terrestrial cable deployments that reach further inland. But all that now looks set to change.

In 2014, a new chapter began in the story of fibre in Africa as Liquid Telecom announced it had created the continent's first fully redundant regional fibre ring. Spanning more than 18,000km, the company's East Africa Fibre Ring runs from Kenya to Uganda, Rwanda, Tanzania and back into Kenya, connecting these countries to each other as well as to the rest of the world. Built at a cost of USD20m, it is said to be Africa's largest single fibre network and also connects to the region's five main subsea cable systems: WACS, EASsy, SEACOM, SAT3 and TEAMS.

Although Liquid uses wireless technologies and satellite to complement its network, it believes that only fibre will be able to provide the speeds and capacity needed by LTE base stations. Ben Roberts, CEO of the company's Kenya operations, says: "In Africa, most people access the internet over their mobiles, and so LTE networks are already commercially deployed with more being built. LTE base stations need mega amounts of bandwidth that can only be provided by fibre. We have already started laying fibre to LTE base station sites that have been built by a variety of operators and independent tower leasing companies. This fibre then interconnects with our pan-African fibre backbone."

Roberts admits that cell sites in remote areas are unlikely to be connected by fibre as it is just "too costly and time-consuming" to lay for smaller populations in such communities: "These BSTs will continue to be served by wireless and satellite but will not be able to provide LTE speeds and capacity."

However, he goes on to suggest that one option to reduce costs can be to run fibre on the electricity poles that supply mains power to the base stations. Liquid has already carried out large deployments of optical ground wire (OPGW) and all-dielectric self-supporting (ADDS) fibre in Zambia and Zimbabwe, and is considering the cost benefits for LTE base stations.

Wireless reaches where fibre cannot

What are often regarded as fibre's weaknesses is where wireless technologies such as satellite come into their own. Citing Ericsson's latest *Mobility Report*, Intelsat says the number of mobile subscriptions in sub-Saharan Africa will rise to 930 million by the end of 2019, up from 635 million at the end of 2014. It believes much of the demand for increased mobile connectivity will come from rural areas, where terrestrial infrastructure is either unable to meet demand or is simply non-existent.

According to EMEA VP Jean-Philippe Gillet, satellite is meeting the needs of MNOs in rural areas and Intelsat is providing 2G and 3G networks through the combination of its satellite fleet and *IntelsatOne* terrestrial network. "The introduction of high throughput satellite (HTS) will deliver the additional capacity that will enable the expansion of 4G networks as well. This will lead to

an increase in mobile network operators utilising satellite backhaul and satellite-based rural telephony extensions, as it allows them to cost-effectively increase their customer base in areas that were previously inaccessible.

Northern Sky Research (NSR) forecasts that high throughput satellites will propel the global market for satellite backhaul in the coming years. In its *Wireless Backhaul via Satellite* report published in April, the analyst predicts that current and next-generation solutions will generate revenue streams from USD1.7bn in 2014 to USD5.3bn by 2024.

According to the report, traditional FSS capacity in C- and Ku-bands has so far been the most prevalent solution used for backhaul and trunking in land areas, and has begun to address the need for 3G services.

But it adds that less expensive and higher throughput capacity is challenging the economics of traditional FSS where erosion of the revenue base is leading to an 'HTS play' by operators that own traditional FSS transponders. "GEO HTS capacity is making a big push on land, air and sea where a clear migration in the fixed land towers backhaul and trunking markets is under way," says NSR.

The satellite cost question

While non-geosynchronous HTS is still in its infancy, NSR says it promises better latency with the likes of O3b making inroads in backhaul, trunking and mobility platforms. It says that although few details on LEO (low Earth orbit) HTS programmes have been released, if one or two of these are launched, total capacity will increase manyfold leading to price pressure for all offerings.

"Non-GEO HTS equipment pricing, specifically antenna systems, will have to come down dramatically compared to current O3b pricing in order to address capex considerations," says report author Jose Del Rosario.

Dave Rehbehn, Hughes Network Systems' senior director of international marketing, agrees. As far as the prospect of LEO systems is concerned, he also says O3b's capex is driven by the cost of antennas, and because this is currently too high they are really only suitable for very high capacity sites. "But what most people seem to think is that there is going to be a new generation of antenna technology for the remote earth stations that are going to enable cost-effective LEO and MEO installations. And this will have huge impact, not just on cellular backhaul, but on regular VSATs."

Rehbehn goes on to say that backhaul is a very important application for Hughes for two key reasons: "Number one, it is a very high value service offering on the part of satellite service providers; and number two, it is an area where there is very good potential as we see more HTS systems deployed. We think we can change the equation of satellite backhaul for cellular systems with the new generation of high throughput satellites. What they will enable is a lower cost per bandwidth capacity, and that has always been one of the key issues with satellite backhaul for cellular systems."

Until then, he says satellite will continue to be viewed by MNOs as the backhaul solution to use when there is no other option available. "Talk to the cellular operators and they will tell you that if they can get fibre, that's going to be their number one choice. And if they can get microwave with a reasonable number of hops, that's going to be the next choice. The fact is satellite, historically, is the option when you don't have anything else."

Gilat Satcom, which provides both fibre and satellite capacity for cellular backhaul, supports this view. The company's marketing and business development director Eran Yoran says: "I can describe the needs of MNOs in a very precise way. Whenever there is a fibre option it will be the first choice as it is the most cost effective, and a great deal of demand can be met.

"In the absence of a fibre solution, satellite will be the number one choice for the very long distance backhaul as it is easy to deploy and maintain, and is extremely stable. The disadvantage is the latency and price. Prices are going down on the GEO satellite but the latency is fixed."

For short distance links, Yoran believes microwave will be the default option. But he adds that while it has low latency and is relatively affordable, the engineering side is complex, and adding more towers between two locations means the reliability of the link drops and the price rises.

Big opportunities with small cells

Microwave radio specialist Aviat Networks says although some countries such as South Africa have supported initiatives that have improved the national fibre backbone and metropolitan fibre penetration, the access (last mile) fibre penetration remains "appallingly" low with most areas having "zero" access to fibre.

But according to the company's technical marketing manager, Siphiwe Nelwamondo, there is a solution to connect back to the terrestrial metro fibre – a licensed wireless microwave radio system. "This will bridge the connectivity gap, keeping businesses connected and running effectively. This microwave radio last mile solution will cost effectively bring access to a community's doorstep.

"We are all aware of fibre's prowess and capabilities. However, little is understood about microwave radios systems and their capabilities, and hence they remain the underdogs."

Nelwamondo continues by saying managing backhaul traffic that is showing double digit annual growth and dealing with increasing numbers of cell sites are well-known challenges for most MNOs. Quoting Heavy Reading's *Ethernet Backhaul Market Tracker, April 2014*, he says the number of cell sites globally will rise from around four million to more than five million over the next three years.

"Coupled with this growth is the fact that newer public small cells are imminent in the near future. The reality quickly sets in as to how daunting a challenge this is for operators, leaving many to ask questions such as how do I deploy and provision all these sites quickly and within budget? And how do I continuously adjust my network to continuously deliver in an efficient way these new applications and services to my end-users?"

Canadian operator RuralCom is using Gilat Satellite Networks' *CellEdge* small cell system for its 3G network.

When it comes to using small cells for rural deployments, satellite also has a part to play. For example, Gilat Satellite Networks (GSN) has developed *CellEdge*, a small-cell-over-satellite solution to provide mobile operators with a 2G/3G cellular infrastructure solution to better serve remote regions *(see Wireless Solutions, p17)*.

GSN has teamed-up with Intelsat to deliver its solution. For example, earlier this year the two companies announced a deployment for Canada-based RuralCom's mobile network along the 1,000 mile-long Alaska Highway and British Columbia North Coast. Here, a *CellEdge 3G* network is leveraging Intelsat's global satellite fleet through its *Horizons 1* satellite and *IntelsatOne* terrestrial network. GSN says its small cell is optimising space segment usage via a hub located at an Intelsat teleport.

Rehbehn says he is seeing more infrastructure vendors developing small cells that can help save the costs of deploying high-cost and high powered macro sites.

"While these small cells don't perhaps have a huge amount of capacity, they are very cost-effective and can be solar powered. So from the infrastructure side we see small cells enabling more cost-effective rural deployments, and from the satellite side we see the HTS enabling a lower cost of bandwidth. Together, we think this really does create some significant opportunities for satellite backhaul and cellular traffic.

"Ericsson, Huawei, Nokia, Alcatel-Lucent – all of those guys have very good small cell products that are optimised and have an IP interface. Our view has been to integrate effectively with those products as opposed to trying to force fit our solution onto a operator. That's just our approach to the market."

Microwave – still Africa's hottest backhaul option?

Ceragon Networks remains sceptical about the use of both satellite and fibre for backhaul. The company has provided its microwave systems in many African countries such as DRC, Kenya, Nigeria, South Africa and Tanzania, and its mobile operator customers include Airtel, Globacom Nigeria, Vodacom, amongst others.

Amit Ancikovsky, the company's Africa and Latin America president, says: "Satellite is an option for wireless backhaul but falls short if you are trying to deliver bandwidth intensive multimedia services such as video or applications like *Facebook*, as less content gets to the user due to issues with uplinks. It is also cost-prohibitive and often used when in geographic areas where microwave or fibre can't reach.

"Microwave is a viable alternative to both satellite and fibre as it is able to be deployed rapidly and provides an opportunity to accommodate the needs for more capacity and features – from basic links to up to 4Gbps. Microwave can also work on a pure software mechanism where software upgrades can be done remotely through a network operation centre. Carriers are picking up on these advantages."

Microwave technology is certainly evolving beyond the 'QAM wars' that were grabbing the headlines just a few years as vendors launched radios with higher amplitude modulation rates. Now, there is a much greater focus on offering customers higher capacity.

That's certainly the thinking behind multipoint microwave backhaul specialist Cambridge Broadband Networks Limited (CBNL). With the GSMA forecasting 500 LTE networks to be in service by 2017, the vendor has enhanced its range of *VectaStar Gigabit* and *VectaStar Metro* wideband products, doubling platform capacity to 600Mbps. It said the extra performance will allow operators to meet the increased data demands of next-generation networks, providing customers with faster mobile speeds and serving the growing trend for multimedia services.

"LTE and 4G gives consumers and businesses vast economic opportunities and has the potential to be truly transformative," said CEO Lionel Chmilewsky. "However, there are many factors to consider when managing and constructing next generation networks, not least the technical and cost requirements applicable for mobile backhaul. The huge volumes of data which these networks are capable of generating continues to drive operators to deploy new and innovative backhaul solutions."

Chmilewsky claimed the latest *VectaStar* wideband products offer TCO savings of up to 50 per cent compared to alternative forms of backhaul. He added that by delivering up to 4.8Gbps per hub site, *VectaStar*'s "flexible" wideband platform saves valuable spectral resources and equipment through aggregating traffic from multiple cell sites. "This intelligently allocates backhaul, enterprise access or converged network capacity where it is needed most and provides a platform which is easily scalable as capacity demands grow."

Ceragon has come up with an alternative approach to scaling its microwave products. Earlier this year it launched *Advanced Frequency Reuse* for its *IP-20* microwave platform that is designed for heterogeneous network hauling. This enables the use of a single frequency channel where multiple channels are often needed to meet wireless backhaul demand. The vendor claimed the results include a saving of at least 50 per cent of the wireless spectrum required, and also allows for doubling the capacity of the wireless backhaul network.

Ceragon explained that *Advanced Frequency Reuse* works by requiring far smaller angular separation between wireless backhaul links that utilise the same frequency channel. Instead of employing a separation of at least 90° as required today, it reduces the needed separation to just 15°. The firm said this leads to flexibility in network deployment and a significant reduction in opex and capex.

"As capacity demands grow, microwave will provide a significant runway for growth," says Ancikovsky. "This is only the beginning, and LTE hasn't yet taken hold. Current customers are utilising approximately 100 megabits to 500 megabits. The capacity needed for LTE will increase to a range of between 500 megabits and one gigabit. By 2016/2017, we will see the need for one gigabit to the access sites."

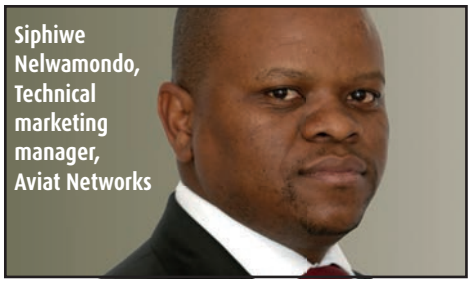
Forget all the traditional solutions

Free-space optics (FSO), a technology that uses light propagating in free space to wirelessly transmit data, has been around for quite some time now but its use in Africa is fairly rare. However in April, Nigerian ICT solutions provider WaveTek announced it had successfully deployed AOptix's Laser-Radio Technology (LRT) in Lagos. A seven kilometre link has connected capacity from submarine fibre cables to a distribution point in the city.

US-based AOptix describes itself as a "pioneer in ultra-high capacity wireless communications". Its *Intellimax* platform uses LRT that was originally developed for deep space imaging and later further developed for military applications. The company reckons LRT breaks new ground by integrating FSO with millimetre wave RF technology to provide reliable, ultra-high bandwidth capacity (2Gbps) with carrier-grade availability up to 10km.

According to AOptix, the deployment of *Intellimax* in Nigeria has proved the system's ability to provide high-bandwidth connectivity between the country's mobile carriers and the rest of the world.

Lagos, the largest city in Africa with a population of more than 20 million, is the landing point for four major submarine systems that connect Nigeria to Europe: SAT-3/WASC/SAFE; ACE; GLO-1; and Main One. With the undersea cables largely in place, AOptix says the challenge now is to pull that network capacity into the continent's population centres and bring connectivity to under-served markets. But it adds there is currently not enough infrastructure in the region to transport the optical bandwidth.



Siphiwe Nelwamondo, Technical marketing manager, Aviat Networks

"Little is understood about microwave radios systems and their capabilities, and hence they remain the underdogs."

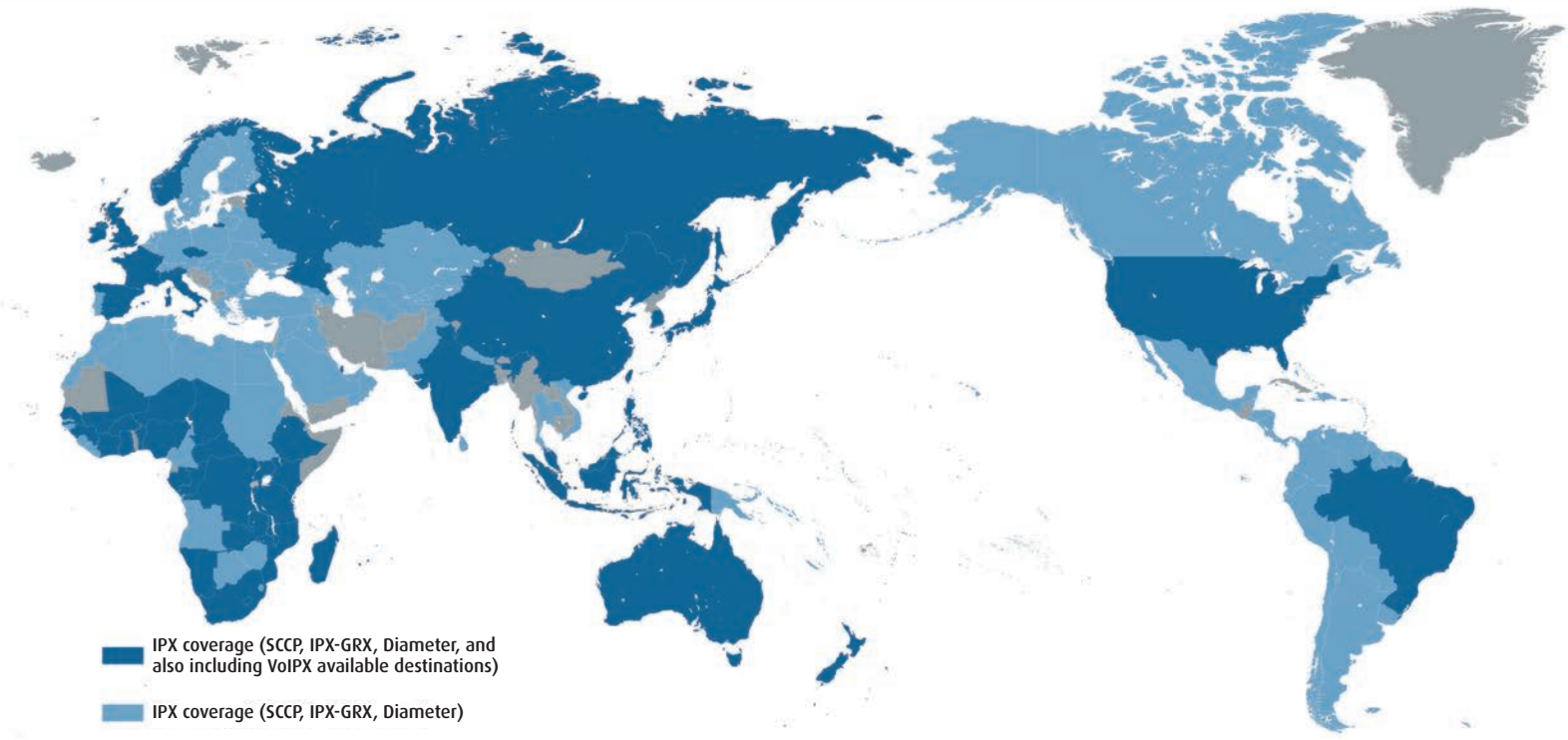
"In Nigeria, and across Africa, fibre is simply not viable in most situations – it is too costly to deploy given the challenges of the terrain," says WaveTek CEO Ken Spann. "On the other hand, microwave doesn't provide the bandwidth and range needed and can't stand up to our humidity and heavy rains. The *Intellimax* link has weathered our rainy season, delivering 100 per cent uptime."

AOptix and WaveTek conducted the Lagos validation using an E-band trial license granted by the Nigerian Communications Commission. They have also been working closely with the commission to open up E-band spectrum for full use in the country. AOptix hopes the release of the spectrum in the first half of 2015 will allow widespread deployment of its *Intellimax* system which uses E-band, or 70-80GHz frequencies, for the radio portion.

Spann believes E-band spectrum is a must for both backhauling as well as for microcell sites requiring multi-gigabit connections over short distances. "MNOs, tower companies and others will see the value of rapid deployment, significantly reduced cost compared to fibre, and begin to tap these technologies, first as a backup to fibre and ultimately as an alternative in areas where it is either economically or technologically not feasible to trench fibre. The ability to deploy a 2Gbps link 24-48 hours up to 6-8km means that backhaul as well as 4G/LTE will benefit."

What is clear in all this is that no single technology will provide mobile operators with a backhaul solution – fibre, satellite and microwave each have their own advantages and disadvantages.

Semir Hassanaly, market director of cellular backhaul and trunking at Newtec, says the choice between fibre, microwave or satellite is pragmatic and driven by three parameters: "Availability (fibre is most ideal in urban regions); economics (fibre is expensive which makes satellite or microwave – if line of sight allows a limited number of hops – the most cost-effective solutions); and marketing (satellite provides quick go-to-market). Capacity requirements can be very acute and in the end it is these three parameters which operators will consider when making the decision on which backhaul method to choose." ■



PCCW Global offers full IPX coverage for mobile data. It has created a fibre ring around Africa by connecting the undersea cables on the East and West coasts via Teraco's data centres in South Africa, thereby establishing an integrated VoIPX network.

Creating new ways of doing business

PCCW Global explains how it has become a major satellite, fibre, wireless and hybrid connectivity wholesale provider in Africa.

PCCW Global is the international operating division of HKT, Hong Kong's premier telecoms service provider. The company's initial operations on the continent were solely focused on the cable and satellite markets of West and Central Africa.

In 2012, it strengthened its African footprint by acquiring pan-African wholesale service provider, Gateway Communications. Gateway boasts a rich history of knowledge and expertise in the provision of IP, satellite and GSM backhaul services. PCCW Global has subsequently been able to ensure service providers and end-users obtain fully reliable, high-quality, entirely flexible and scalable internet capacity.

This has led Frost and Sullivan to recognise the company as a "customer value leader" and awarded it the *2015 Customer Value Leadership* award for sub-Saharan African connectivity solutions.

Growing the value chain

Nowadays, mobile data is of significant importance to many consumers and PCCW Global has made mobile a core sector. It is now building its own mobile ecosystem on top of the IPX fibre network.

Emmanuel Bain, PCCW Global's worldwide head of voice sales, has spent many years providing services to Africa's mobile operators. He explains that the company's goal is to become a key business partner for operators across the continent.

"The foundation is our network, our data centres, and our salesforce. There are multiple things that we can do. The basic one is that we build the MPLS and NNI between some of those operators in Africa and the PCCW Global network. That facilitates reciprocal business. We are in many respects a wholesale provider, but we want to be higher in the value chain and help MNOs develop new retail business and new consumer services.

"Africa is a complex market where you need to reach landlocked countries and link multiple submarine cables together. This is our challenge along with how we can bring quality of service, and adapt to the level of infrastructure, the level of the knowledge, and the different skills we may or may not find in different people. So really it is about one-to-one marketing and having one-to-one relationships with dedicated resources applied to each particular case.

"We really want to grow the value chain and be the business partners, not just as a wholesaler selling them traditional mobile data services,

signalling, GRX, IPX, etc. We want to partner with the operators to provide them with more value-added services such as fighting and detecting SIM box fraud in their country.

"We try to position ourselves as a retail business enabler. The idea is to come to market with a set of solutions that the mobile operator can sell to its own customer. What we clearly see is that a lot of mobile operators in the world, and especially in Africa, have limited engineering resources and limited capex. Most of their capex is used on the radio network, especially on 3G in some countries and even 4G in some others."

MNO challenges

Patrick George, PCCW Global's head of mobile ecosystem, works closely with Bain and describes the current situation that operators face.

"All operators on the planet face the same four issues: firstly, how they can grow ARPU (or maintain it if the market is growing or mature); secondly, how they can optimise their cost base; thirdly, how they can bring a better user experience to their subscribers (especially for the premium customer); and finally how they can fight churn in a pre-paid market or, in markets that are still growing, how can they attract and gain market share. Those are the four questions that keep C-level people awake during the night.

"We are trying to bring real answers to these questions. We seek out solutions that have been proven in other markets and then provide those to MNOs in Africa to sell to their retail customer base."

Bain reiterates that protecting against bypass fraud is one such solution that PCCW Global can offer. He says that while fraud affects MNOs all over the world, it is a particular problem in Africa where the mobile termination rates are high. To use his words, the fraudsters therefore find a "more juicy business in Africa" compared to markets where the termination rates are lower.

As well as fraud protection, Bain also points out that markets are increasingly becoming more segmented and operators therefore require dedicated solutions for niche parts of their customer base such as e-health, education, mobile device security, etc.

Reducing barriers to entry

So why should the continent's MNOs choose PCCW Global rather than, for instance, other larger MNOs or even satellite operators who offer managed services?

"If you take the satellite business it's just a means to bring connectivity," says Bain. "Connectivity is just one service to provide and is relatively easy to solve. But what we're doing is bringing value-added solutions that mobile operators can sell to their customers. Yes, larger


Emmanuel Bain, VP global sales, PCCW Global

MNOs can do that but they do it for their own affiliates. There are plenty of operators on this continent that are not part of a big group and this is our target market.

"If you are part of a big group, you can work on developing your own solutions. But if you are a smaller operator or part of a smaller group, you have limited resources. The problems mobile operators face in Africa is that their marketing and engineering teams are not huge, and the scope of a solution and its potential is quite large.

"So they cannot possibly study, say, 20 possible services in parallel. It becomes very difficult for them to identify new services because they have limited resources to work with. This is exactly where we come in; we can play that role of studying different use cases for them and can bring them solutions that have already been proven in other markets. We can reduce their barriers to entry." ■

Vodafone celebrates 30 years

The first call was made using Vodafone's *Transportable VT1* which weighed 5kg and had around 30 minutes of talk time.

This year marks the 30th anniversary of mobile telephony in the UK. The country's first mobile call was made on 1 January 1985 on the newly-launched Vodafone network. Michael Harrison, son of former Vodafone chairman Ernest Harrison, was the first to test the system. He called his father using a Vodafone *Transportable VT1* which weighed 5kg and had around 30 minutes of talk time.

The first generation of mobile phones became available for sale in the UK in 1984 even before a network was officially live. Vodafone says such was the demand for a fully portable, cellular phone that more than 2,000 orders had been taken by its sales team before Harrison made his historic call. By the end of 1985, over 12,000 devices, each costing around GBP2,000, had been sold.

In 1983, UK regulator Ofcom awarded two mobile licenses: one went to British Telecom which ran the Cellnet network (later to become O2 before being bought by Spanish telco Telefónica in 2005 for GBP18m); the other was won by Vodafone.

Vodafone was originally formed as a subsidiary of Racal Ltd, an electronics company established in the 1950s by Raymond Brown and George Calder Cunningham. At the time, it was 80 per cent owned by Racal, with Millicom owning 15 per cent, and the Hambros Technology Trust five per cent.

In 1991, Racal and Vodafone de-merged, and the Vodafone Group was publicly listed as an independent company on the London and New York stock exchanges.

Saudi Arabia's telecoms market is largest in MEA

Saudi Arabia remains the largest telecoms and enterprise IT market in the Middle East and Africa despite a drop in revenues, according to Pyramid Research.

In a report published in mid-April, Pyramid said total mobile and fixed services revenues in the country's consumer and enterprise segment declined by one per cent to USD16.2 billion in 2014. It added that this was Saudi Arabia's first decline in overall service revenue in the last decade.

Pyramid said the drop was the result of "aggressive" promotional activity and the re-statement of results from Mobily, the country's second largest MNO. It saw revenue fall by 20 per cent in 2014.

Despite the declines, the Saudi Arabian telecoms market remained the largest in terms of total service revenue in the MEA region in 2014. It was followed by South Africa with USD13.4 billion and Turkey with USD13.0 billion.

Annual growth in Saudi Arabia over the next five years is forecast to average three per cent per year, reaching USD18.7 billion by 2019.

Hussein Ahmed, analyst at Pyramid Research, said: "Operators have invested in upgrading network infrastructure and systems to handle growing data traffic volumes. The need in the short-term is for swift deployment of fibre connectivity in high demand areas such as Riyadh, Jeddah, Mecca, Medina and Al-Ahsa. This will improve the competitive services segment, where historically the incumbent operator STC has led."

New operators, which not only target Saudi Arabia but the wider region, are also expected to enter the market. Pyramid said a number of venture capital funds have already launched in the country, including Alkhabeer Capital, Mobily Ventures, STC Ventures and the government's own tech start-up fund.

It added that the entrance of Virgin Mobile and Lebara will add a "fresh impetus" to the mobile market with new promotions for data and voice services.

HKT converges networks simultaneously

Hong Kong Telecom (HKT) has converged its 4G mobile networks simultaneously using multi-operator core network (MOCN), carrier aggregation (CA) and VoLTE systems from ZTE.

After acquiring CSL in 2014, HKT operated two commercial networks in parallel. It therefore needed to integrate the two as quickly as possible to ensure high quality and seamless services for its subscribers.

As the supplier of one of its two mobile networks, ZTE optimised HKT's network performance through the use of large-capacity, high-performance hardware as well as the latest software.

In 2012, it provided CSL with a complete IMS-based VoLTE solution with voice call continuity support using eSRVCC (enhanced single radio voice call continuity) technology. The VoLTE network was launched for commercial use in 2014.

With the deployment of MOCN, CA and VoLTE technologies, ZTE says it has now further assisted HKT to bring its two networks together. It says the end-to-end network sharing solution has enabled HKT to achieve network interconnectivity, service convergence, and "set the standard" for global VoLTE interoperability.

"KPIs such as VoLTE connection time and voice quality will be near perfect, and users will be able to experience communication services of the same quality as before, and download files at a rate of up to 300 Mbps," claims the firm.

Eutelsat HTS supports in-flight Wi-Fi

Vueling says it has become the first low-cost airline in Europe to offer high-speed Wi-Fi to its passengers. Last year, the Spanish company began working with Telefónica to install Wi-Fi on its aircraft using connectivity via high throughput satellites (HTS).

In March 2015, the partners announced that the first Airbus A320 with the new integrated service is the EC-LZN. The plane can carry up to 180 passengers who will be able to use their mobile devices during medium haul flights and benefit from download speeds of up to 20Mbps.

Specialist engineers and technicians took several days to install all the Wi-Fi equipment needed for Vueling's A320. They deployed three access points that are sited behind the aircraft's ceiling panels, as well as a wireless Ethernet bridge, wireless data unit, and an antenna power supply unit.

The heart of the system is located in the avionics bay under the cockpit. Here, a satellite modem is used to send and receive the signal to and from the antenna, and it is also the interface with the baseband signal processing equipment.

Connectivity is provided via Eutelsat's *Air Access* platform and *KA-SAT* satellite. A Ka-band antenna, installed on top of the fuselage, can track the satellite while the aircraft is in flight. A protective dome is installed over this external antenna, which is in turn covered by a fairing in order to preserve the Airbus' aerodynamics.

Specialist technicians installed three APs behind the aircraft's ceiling panels.

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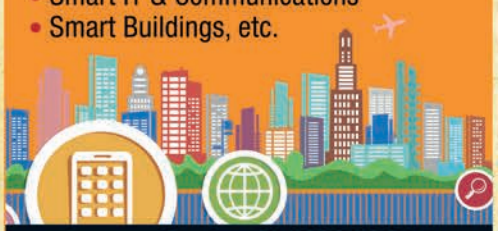

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Xtera demonstrates 'ultra-long' distant transmission

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

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

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

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

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

The demonstrations were conducted with large effective area ultra-low loss fibre from Corning and the support of State Grid Information and Telecommunication Company.

Corning provided its *Vascade EX2000* optical fibre, which has an average attenuation of 0.160 dB/km, and an average effective area of 112µm^2. Xtera says this enables higher optical launch powers for Raman pumping, ROPA, and data transmission.

Tait to deliver largest DMR Tier 3 system in US

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

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

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

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

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

Telstra makes SDN platform available worldwide

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

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

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

Darrin Webb, chief operating officer, global enterprise and services, says the new, global *PEN* platform helps to combine Telstra's and Pacnet's infrastructure to provide "enhanced connectivity and services" across Asia and the rest of the world.

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

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

"While software, servers and storage have all become virtualised over the past decade, networks have largely remained unchanged," he says. "The new *PEN* platform re-imagines the role of traditional telecommunications and enables organisations to complement traditional network approaches with SDN technology.

Facebook chooses Infinera for global optical network

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

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

The new route spans 3,998km and is deployed without any regeneration. Facebook's European terrestrial network stretches from its Lulea data centre in Sweden, across major hubs throughout Europe. Infinera will use its *DTN-X* platform to connect these hubs for Facebook, also using its *FlexCoherent* solution, which it says can deliver terabits of capacity on a single fibre across the continent.


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

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

Currently, Facebook delivers 100 gigabit per second coherent transmission to its European network via 500Gbps super-channels, featuring a forward-scale design to support 1.2Tbps super-channels in the future. The high capacity super-channels are enabled by 500Gbps photonic integrated circuits (PICs) developed and fabricated by Infinera – the only supplier providing 500Gbps of transmission capacity from a single line card.

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

Siemens will monitor Arabsat's fleet traffic

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

The CSM solution that SCC will provide is called *SIECAMS*. The company says it will enable Arabsat to enter "a new dimension" of satellite monitoring and interference detection and thus improve the quality of its satellite services. It's claimed *SIECAMS* has a flexible architecture that is designed to be ready for future requirements. SCC reckons it is one of the first satellite monitoring solutions available on the market to support Carrier ID detection, a new technology that enables the identification of the owner of a satellite signal.

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

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

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

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

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

Polish police deploy TETRA

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

Intelsat gets ETL upgrade

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

DAMM gains certification

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

Ooredoo in deal with Hong Kong telco

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

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

The agreement also enables PCCW Global and Ooredoo to collaborate in the provisioning of services to carrier and multinational customers requiring services such as VoIPX, GRX, Diameter, HD calling, HD video conferencing, Ethernet, cloud and SDN.

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

"Extensive coverage, coupled with the diversified design of PCCW Global's private MPLS/IP network, ensures direct connection to our IPX voice platform and the highest quality services."

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

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

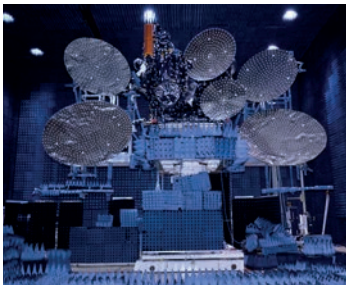
Tuvalu selects ABS for high-speed internet

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

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

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

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



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

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