

For communications professionals in southern Africa

SOUTHERN AFRICAN WIRELESS COMMUNICATIONS

SEPTEMBER/OCTOBER 2020

Volume 25 Number 2

- Critical communications: being prepared for the worst
- Looking at how developing nations should approach 5G
- Growing online: remote learning for tomorrow's farmers

An aerial night view of a city, likely Johannesburg, South Africa, featuring a complex highway interchange and a dense urban skyline. The sky is dark blue with a starry pattern, and a white airplane is visible in flight. A white network diagram with nodes and connecting lines is overlaid on the bottom right corner.

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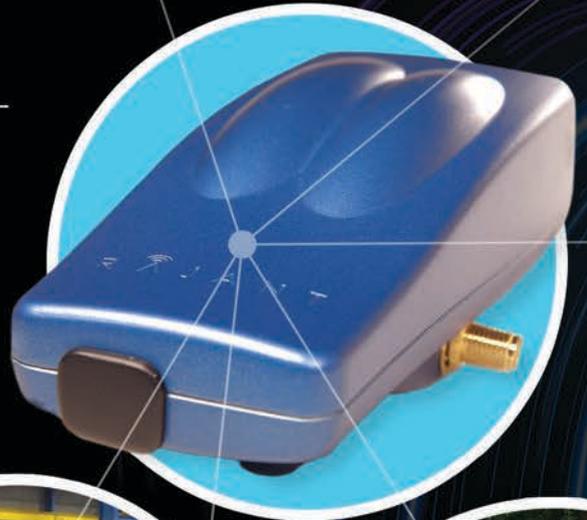
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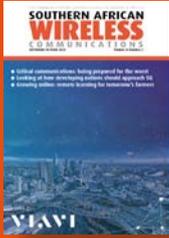


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Southern African Wireless Communications is a controlled circulation bi-monthly magazine. Register now for your free subscription at www.kadiumpublishing.com. Readers who do not qualify under the terms of control can purchase an annual subscription at the cost of £110. For more information and general enquiries please contact Suzanne Thomas at suzannet@kadiumpublishing.com or call +44 (0) 1932 886 537.

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Econet sees increased demand for virtual self-care solutions

Econet Wireless Zimbabwe (Econet) said demand for its virtual self-service platforms is surging as customers adapt, amid ongoing social distancing measures during the Covid-19 pandemic.

Zimbabwe, like most countries in the world, introduced a national lockdown in March to combat the spread of the deadly Coronavirus, which has affected millions of people globally. The country's authorities encouraged people to stay at home and utilise technology and digital platforms for their day to day requirements.

Econet – and its subsidiaries – embraced the digital thrust to accelerate the deployment of its virtual and digital platforms, which are fast becoming key in resolving customer issues, and has carried its customers along in the digital transformation journey.

To date, over one million customers have registered for the company's self-care platforms, which include the USSD *111# and web-based 'My Web Self-Care' platforms.

Customers with smartphones are able to access My Web Self-Care on <https://selfcare.econet.co.zw>. The web portal is zero-rated, meaning customers can login and resolve their queries free of charge, without incurring any data charges.

Non-smartphone users can also



Customers with smartphones are able to access My Web Self-Care. The web portal is zero-rated, meaning customers can login and resolve their queries free of charge, without incurring any data charges.

resolve their queries from wherever they are by simply dialling *111# and selecting option 1 to register and use the selfcare services.

A company spokesman said in the past six months, the integrated telecom and digital group's self-care portals have been busy with subscribers updating their details and checking their call and text message history, without visiting Econet shops.

"In addition to providing

customers with PUK numbers to unblock their SIM cards, subscribers can also recharge their mobile phones, buy data bundles, retrieve their over-scratched recharge card numbers and transfer airtime on the platform," said the spokesperson.

With more than 12 million interactions for the available use cases, customers have slowly warmed up to the idea of a virtually assisted customer service.

"We understand that the Self Care portal cannot be used to solve every issue of the subscriber," the company spokesperson added. "That's why we added the 'MY Queries' section, where our customers log a ticket on the specific challenges they are facing and are contacted by the Econet Team for resolution of the issue. The beauty about this product is that our clients are able to track progress on their queries in the comfort of their homes."

South Africa telecom regulator launches long-awaited tender for mobile broadband spectrum

South Africa's telecom regulator said it will invite mobile operators to apply to bid for spectrum for 4G and next generation 5G networks from October 2, with the country's first-ever auctions expected to take place by the end of March 2021.

Allocation of frequency bands for wireless communication is viewed as key to expanding broadband services, especially 5G, in Africa's most industrialised economy, where the high cost of telecommunications remains a barrier to doing business for many.

"The authority will make available 406 MHz of spectrum for the provision of mobile broadband services

in South Africa," Independent Communications Authority of South Africa (ICASA) chairperson Keabetswe Modimoeng told journalists.



Allocation of frequency bands for wireless communication is viewed as key to expanding broadband services, especially 5G

Data costs have come down after mobile operators were forced to cut prices, but they argue that prices cannot drop significantly until regulators

auction the much-needed spectrum.

There are five main mobile operators in South Africa - MTN, Vodacom, partially state-owned operator Telkom, as well as Cell C and Rain.

The operators will be able to bid for spectrum in the 700 MHz, 800 MHz, 2.6 GHz and 3.5 GHz bands. Reserve prices for lots in the 3.5 GHz band, key for 5G, range from 9.8 million rand (\$587,688.5) to 75.6 million rand, Modimoeng added.

The closing date for interested bidders to register is December 28, while the closing date for the government's wireless open access network (WOAN) invite is March 30, 2021.

TTCL connects Kondoa District

Tanzania Telecommunications (TTCL) has continued to expand its services to rural areas after launching a new telecom tower in Khondamauro Ward, Kondoa District, in Dodoma Region.

Speaking at the inauguration event, the district administrative secretary, Andrea Ng'hwani thanked TTCL for addressing the county's long-term challenge of

lack of services in the areas.

He said that the communication services will increase productivity in the ward and nearby areas including opening the doors to employment opportunities and boost income.

"Let us use the communication tower to promote employment in areas like Sim Card registration, agents to sell TTCL voucher and

T-Pesa agencies," Ng'hwani said.

The residents in the ward have been advised to take advantage of the telecommunication tower to create and explore new development opportunities, including finding markets for their produce.

Ngw'ani urged the residents in the ward to ensure that the telecom infrastructure and other TTCL

infrastructure are protected from any form of vandalism.

"When we destroy this infrastructure, it means that the ward will lack telecommunication, thus affecting social activities and development in our areas," he said.

He added that stern legal measures will be taken against those caught vandalising telecom infrastructure.

WIOCC raises US\$100m for Africa connectivity

West Indian Ocean Cable Company (WIOCC) has raised US\$100m to finance the development of its internet connectivity offering in Africa.

The wholesale telecom capacity provider received a loan of US\$40 million from the Emerging Africa Infrastructure Fund (EAIF) and \$60m from Proparco, a subsidiary of the French Development Agency (AFD).

WIOCC, which holds a stake in the EASSy submarine optical fibre cable, offers a fully integrated submarine and terrestrial optical fibre network around and within the African continent. Its network extends over 55,000km and interconnects 550 sites. The company provides end-to-end international connectivity in Africa.

With the new investment, WIOCC says it will increase its customer base, create a more competitive market, and help lower wholesale and retail prices on connectivity. It is also expected to support the creation of more than 200 direct jobs over the next 5 years. WIOCC also plans to develop professional computer training for women to further facilitate gender balance in its workforce.

Olivia Carballo, director of managers at Ninety-One, the entity that manages the EAIF, said "the announcement of EAIF's support for WIOCC marks the Fund's third investment in the African telecommunications industry this year. WIOCC's expansion will stimulate the enterprise and strengthen Africa's digital infrastructure".

Africell launch confirmed for 2021

Angola is moving further away from mobile duopoly status after the chairman of the Angolan Institute of Communications (INACOM), threw his weight behind Africell's aim of launching services in the second half of 2021.

Leonel Augusto confirmed that new mobile market entrant Africell is following the procedures required to exercise its right to operate. Most of these are now complete and INACOM is currently finalising details of the concession contract.

Angola's government issued a mobile licence to Africell Holdings in May and it was the only candidate for the licence as South Africa's MTN Group and fellow Angolan firm BAI Investments chose not to bid. Africell's licence will allow it not just to build out mobile infrastructure but to offer internet, fixed-line and pay-TV services.

Until now, the dominant players in the mobile space have been Movitel and Unitel, although the state-backed fixed provider Angola Telecom, which holds a Unified Global licence, has plans to enter the mobile space. However, an infrastructure sharing deal between Angola Telecom and Egypt-backed Angorascom has been



Angola's government issued a mobile licence to Africell Holdings in May

dropped. Angola Telecom now seems likely to share with Africell.

Originally headquartered in Lebanon, Africell now operates from the UK and provides mobile networks in several African markets, including the Democratic Republic of Congo, Gambia, Sierra Leone and Uganda.

In July, Angola Telecom chairman Adilson dos Santos confirmed that his company would share infrastructure with Africell and that the partnership would avoid the construction of any redundant duplicate tower and fibre assets.

"We are very committed to being

an infrastructure sharing company and if it depends on Angola Telecom, Africell will not take long to enter the market, because our infrastructure will be available from a commercial point of view", dos Santos said at the time.

Originally headquartered in Lebanon, Africell now operates from the UK and provides mobile networks in several African markets, including the Democratic Republic of Congo, Gambia, Sierra Leone and Uganda. It is one of the fastest-growing mobile operators in the continent, with more than 12 million active subscribers

Rural communities in Mozambique to have mobile connections for first time

Approximately 260,000 people from 30 rural communities in Mozambique are expected to benefit from the cellular network service for the first time, following a connection project launched by the government.

The project is funded by the government's Universal

Access Service Fund and will be implemented by one of the country's main telecom operators, Movitel.

In its fifth phase, the Cellphone Network Extension Project is evaluated at about US\$7m and will benefit communities covering almost every province in the country.

The project, which began in 2008, has already benefited around two million people and created 180 points of mobile network provision in its previous phases.

Currently only half of Mozambican population, about 15 million people, are users of cellular services.

Spacecom teams up with Ignite Power to launch e-health services

Spacecom, operator of the AMOS satellite fleet and Ignite Power, a pan-African developer of vital infrastructure projects, will collaborate to install e-Health connectivity solutions in remote clinics, which will provide local medical teams with immediate access to physicians around the world.

Using designed-for-solar medical devices and systems and satellite connectivity, all will be powered by “cost-effective” off-grid solar systems. Global medical experts will help doctors and paramedics in rural Africa to expand their reach and knowledge of new treatments and procedures.

The solution comprises of communication through Spacecom’s advanced AMOS-17, digital high throughput satellite and Ignite’s sustainable off-grid solar power solutions and diagnostic systems. The mutual solution enables an efficient infrastructure as the basis for digital communities and services to rural locations. It is set to create thousands of jobs while empowering an entire generation of students to new skills and remote learning capabilities, through e-Learning platforms.

AMOS-17 operates over sub-Saharan Africa, providing C-Band HTS, Ka-Band and Ku-Band coverage, and enables the combination of broad regional beams and high throughput



Using designed-for-solar medical devices and systems and satellite connectivity, all will be powered by “cost-effective” off-grid solar systems. Global medical experts will help doctors and paramedics in rural Africa to expand their reach and knowledge of new treatments and procedures

spot beams that maximize throughput and spectral efficiency. It is designed specifically to meet Africa’s fast-growing communication and digital transformation demands.

Ignite Power has solar power operations across Africa and has already connected 1.5 million people in off-grid areas and over

10,000 villages, to power through affordable solar-home systems.

All basic home system packages include USB chargers, long-lasting lithium battery, life-prolonging charger, rechargeable radio, and fixed lamps.

“Providing internet connectivity to rural areas in Africa is a major pillar in Spacecom strategy to close the digital gap,” said Dan Zajicek, SpaceCom’s

CEO. “Our partnership with Ignite Power is a huge step towards making an impact on a Pan-African scale. Together, no place is too remote for us to tackle. It is an honour to be able to make a difference in people’s lives and it is priceless to see the level of appreciation to something that seems trivial to most. This is only the beginning, we have many plans ahead.”

Vodacom South Africa begins DCSG trials with TIP

Vodacom South Africa has started the first commercial trials in the continent of the disaggregated cell site gateway (DCSG) solution that was developed with the Telecom Infra Project (TIP).

The operator is seeking to determine the DCSG’s performance in live 4G and 5G network environments, as well as its ability to interoperate with the firm’s current radio access network (RAN) providers.

“We are extremely excited about the potential of the DCSG solution,” said Beverly Ngwenya, CTO of Vodacom South Africa. “This promises to broaden our supplier market, expedite the development of new fea-

tures, reduce capital expenditure and improve operational efficiencies.”

DCSG was developed within TIP’s open optical and packet transport (OOPT) project group, by a sub-group led by Vodafone and Facebook.

The TIP DCSG uses open,

standard-based, disaggregated network technologies to target several opportunities in operators’ IP aggregation networks. This includes overall deployment cost reductions and the creation of a more diverse supply chain as well as

operational efficiencies from being able to use SDN technologies for network management automation.

Attilio Zani, executive director of TIP, added: “Vodacom is a pioneer in the adoption of TIP’s DCSG technology in Africa and we are very pleased that they are proceeding with commercial trials of the solution. We believe that the success of these trials will showcase the commercial viability of DCSG for large scale commercial deployments not only in South Africa but in other markets as well and demonstrate the case for how new solutions can significantly improve the quality of connectivity.”



DCSG was developed within TIP’s OOPT project group, by a sub-group led by Vodafone and Facebook

Vodacom Tanzania opens its M-Pesa API to developers

Vodacom Tanzania has opened its M-Pesa API in a move set to entice local and international developers into creating innovative new use cases for the leading mobile payments service.

The country's leading mobile financial system, Vodacom M-Pesa has undergone lots of transformation over the years including a historic migration and upgrade to a second generation platform which is robust, faster, more secure, futuristic and more impor-

tantly hosted locally in Tanzania for easier maintenance. The platform has since then diversified earning accolades and international recognition including a GSMA certification.

While addressing developers and fintech ecosystem stakeholders Hisham Hendi, Vodacom Tanzania CEO said the opening of the M-Pesa API is another step to fuel innovation in Tanzania around Fintech and digital business. "As a company with a vi-

sion to digitize Tanzania, we support the innovation ecosystems to come up with solutions that transform lives which is why we have now opened our API making it easier for businesses and developers to integrate with our M-Pesa system allowing them to test and enable a wide range of extra capabilities to the system that will bring real change," Hendi added.

The opening up of M-Pesa API complements other recent moves by

the company like Lipa kwa Simu an interoperable service, IMT and M-Pesa App all aimed at creating a cashless society and driving a digital economy. "The fully-fledged development infrastructure enables businesses to work independently with their developers and opens space for innovations in re-designing their payment interface independently, creating a customized payment system without directly engaging us," Hendi said.

Covid-19 pandemic forces firms to look at banking

Africa's mobile phone operators are ramping up plans to bring banking to millions of Africans, after the coronavirus crisis caused a surge in use of digital financial services.

Orange, MTN, Telkom and Vodacom are lowering fees, rolling out new lending services ahead of schedule, and expanding mobile payment networks with the aim of finally taking on cash, which has continued to dominate.

"It's one of those industries that we consider to be ripe for disruption," Sibusiso Ngwenya, financial services managing executive at South Africa's Telkom, told Reuters.

Revenue is under threat as governments cap data prices and customers abandon voice phone services for free messaging apps, so operators have sought to leverage their reach into remote villages and urban shanty towns in a pivot to banking. In many cases, people now have access to banking for the first time.

The global health crisis has been an unexpected catalyst, with some African governments releasing Covid-19 stimulus grants via mobile money platforms and central banks easing regulations, including limits on mobile transactions.

Orange and Google introduce Sanza Touch smartphone to Africa

Orange has launched its Sanza Touch smartphone in Africa, designed to improve mobile internet access and supported by Google.

Building upon efforts since the launch of Android Go edition in 2018, the new device will retail at around

US\$30, which is intended to make it the most accessible on the market.

The Sanza Touch is available with Payjoy instalment payments, depending on availability in different countries. The 4G phone has a 4-inch screen, 8GB memory and a

1750mAh battery offering over four hours' life when streaming videos.

Customers can use the Orange app collection (My Orange, Orange Money and Livescreen for news) and access popular apps including YouTube Go, Google Go, Facebook and WhatsApp.

Data, broadband demand driving investment in Zambia, says report

The Zambia Information and Communications Technology Authority (ZICTA) has reported an increase in the number of mobile data users and mobile phone subscriptions, which industry said is a result of increased levels of investment in the sector.

A 2020 mid-year market report released by the body showed the total number of active mobile internet users increased from 9.1 million recorded in the first half of 2019 to 9.5 million reported at the end of June 2020, reflecting a 3.6% increase.

The report also said the internet penetration rate increased from 52.6% to 52.9% between June 2019 and June 2020. Furthermore, Zambia also recorded significant growth in the number of mobile network subscriptions from 93.8% recorded at the end of June 2019 to 100.2% recorded at the end of June 2020.

A spokesman said the sector is expected to continue on its positive



A 2020 mid-year market report released by the body showed the total number of active mobile internet users increased by 3.6% in 2020

growth trajectory in the subsequent review periods. "Growth is expected to mainly be driven by increased demand for data services among consumers," he said. "The authority forecasts that the mobile subscriber base would close at over 18.2 million subscriptions by the end of 2020."

Zamtel's spokesman said the growing appetite for broadband services among corporate and

retail clients will continue to spur growth in data consumption in the short-to-medium term.

"What the report shows is that the positive trajectory is going to continue. We will continue to see increased investment across the sector which brings about a more stable network," he added. "For us at Zamtel, we have made significant strides in upgrading our network."

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Sub-Saharan Africa 5G connections to reach 18m

Mobile technologies and services are expected to significantly increase in sub-Saharan Africa, with over 137 million new mobile subscribers forecast to be added in the region by 2025, according to the latest "Mobile Economy sub-Saharan Africa 2020."

The research, released to coincide with the GSMA Thrive Africa virtual event, also found an estimated 27% (165 million) of total mobile connections will be made on 4G and 3% (18.4 million) on 5G, by this period.

It further found that mobile-enabled platforms and services will increasingly disrupt traditional value chains in sub-Saharan Africa, as it remains the fastest-growing mobile region globally, with 477 million mobile subscribers at the end of 2019.

The additional 137 million subscribers expected over the next five years will take the total mobile subscriber base to just over 614 million, representing around half the population in the region and a CAGR growth rate of 4.3%.

While spectrum availability will promote strong growth in 4G and 5G connectivity over the next few years, 3G mobile connections will continue to dominate the region, says the GSMA.

The report calculates the strong growth in mobile connectivity across sub-Saharan Africa will generate around \$184 billion in economic value contributed to the region's GDP by 2024.

"The findings from our Mobile Economy sub-Saharan Africa report clearly show the importance and value of digital connectivity," says Akinwale Goodluck, head of Africa, GSMA. "Realising the full potential of a progressive digital future requires an informed policy debate. Governments and policymakers should implement policies to enhance access to connectivity and drive investment in more resilient digital infrastructure for the future. This is crucial to reactivating the region's economy post-COVID-19 despite the sizable contribution mobile technologies and services generated in 2019, growing at 9% of regional GDP."

Orange makes data and roaming pledge

Orange has thrown its weight behind the Smart Africa Alliance's One Africa Network project pledging new investments in Africa, to upgrade quality of service and data security for customers in the continent.

The French operator said it aimed to localise voice and roaming data hosting and transport in Africa, by creating two new international voice points of presence (PoP) in Lagos, Nigeria, as well as host roaming data for customers in a new data clearing house.

"These PoP ensure a local connection to African and international content for its customers, as well as the exchange of roaming data," said Orange, and enable it to "host and route all voice traffic in Africa between connected operators".

"With the creation of new voice points of presence and a data clearing house for roaming traffic in Africa, Orange is emphasising its position as a leader in international interconnection in Africa, as well as its ability to provide a local solution to African operators for all voice, data and roaming services," said Jérôme



The creation of two new Voice Tier-1 PoPs enables a diverse range of services to all African mobile operators, allowing the routing of traffic across Africa, said Orange

Barré, Orange CEO of wholesale and international networks. "Orange's ambition is to keep all traffic and flows in Africa, in order to contribute to the development of the continent's digital economy."

The creation of two new Voice Tier-1 PoPs enables a diverse range of services to all African mobile operators, allowing the routing of traffic across Africa, said Orange.

Roaming traffic will be hosted by a data clearing house in a data centre

in Africa from January 1, 2021.

"We value Orange's commitment to strengthen Africa's capacity to manage and retain her own data," added Lacina Kone, Smart Africa director general and CEO. "This is important for ensuring universal access through cost savings and data sovereignty which is a hallmark of our data policy. Therefore, this partnership with Orange goes a long way in operationalising these principles and making the One Africa Network a reality."

'Namibia to assess long-term environmental impact of 5G' – report

The Namibian government is reportedly undertaking an assessment of the environmental

impact of 5G before introducing the technology to the market.

According to outlet The Namibian,

the country's Ministry of Environment, Forestry and Tourism was ordered to conduct the review just weeks after the Windhoek municipality revealed that it was upgrading the city's mobile network to prepare it for 5G.

It has also been reported that the city received Class Comprehensive Electronic Communication Network Services and Electronic Communications Services licences from regulator CRAN (Communications Regulatory Authority of Namibia) in March 2020.

The environmental assessment was likely announced as a follow-up to the government instructing CRAN to prepare a 5G strategy for Namibia. The country's information minister Peya Mushelenga has stated that environmental considerations should be accounted for before the introduction of 5G.



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Econet introduces pan-African Wi-Fi network marketplace

Econet, through its subsidiaries Liquid Telecom and Cassava Fintech International (CFI) has launched a network of #SasaiWiFiFinder hotspots in Rwanda, Zambia, Kenya and Uganda, to provide locals with affordable internet access.

A statement released by the telecom services provider said this partnership unlocks the 'African missing network' that will accelerate sustainable economic development through digital inclusion for all Africans.

The partnership creates a Wi-Fi marketplace that helps ISPs, franchisees and digital service providers unlock new revenue streams by creating job opportunities.

It follows the successful launch of #SasaiWiFiFinder hotspots in Zimbabwe and the service will soon be available in South Africa, South Sudan, DRC, Botswana, Burundi, Lesotho and Tanzania.

"We firmly believe that every African has the right to high-speed connectivity, and with #SasaiWiFiFinder hot spots, we are making this vision a reality," said Nic Rudnick, group chief executive officer (CEO) at Liquid Telecom.



The partnership creates a Wi-Fi marketplace that helps ISPs, franchisees and digital service providers unlock new revenue streams by creating job opportunities

"This initiative is in line with our parent company Econet's vision of an inclusive, connected future that leaves no African behind. The connectivity network that we have created with these hotspots will ensure ubiquitous access for businesses and consumers at extremely affordable rates. This is yet another milestone achieved in building Africa's digital future one individual and business at a time." Darlington Mandivenga, the

CEO of the CFI Group, added: "We consider #SasaiWiFiFinder to be a vital piece in the social and financial digital inclusion agenda that we are passionately driving across Africa. It is part of our broader strategy to provide solutions that address everyday problems for everyday people. In this case, we are offering more affordable internet access to African communities, including those previously excluded."

The companies explain that users will get access to free internet bundles when they connect to #SasaiWiFiFinder hotspots and download the Sasai Super app and purchase internet bundles. This app is a multi-service technology platform that allows access to social media services, on-demand services, digital interactive media services and digital marketplace, including payment methods in a single, easy-to-use mobile application.

Vodacom's base stations in Soweto targeted

Parts of Soweto have been experiencing slower connectivity as a result Vodacom base stations in the township being increasingly targeted for theft and vandalism.

The operator said its base stations in the area are being targeted by organised crime syndicates, with over one hundred cases of vandalism since the start of 2020. In most cases, the theft has resulted in significant site downtime, leaving entire communities in Soweto with no connectivity and has caused millions of rands worth of damage, the company said in a statement. Vodacom warned organised crime syndicates behind the spate of theft and destruction of base stations that their act is placing people's lives in danger and sooner or later, these criminals will cost someone's life. With damaged based stations, communities can-



Vodacom say its base stations are being targeted by organised crime syndicates, with over one hundred cases of vandalism since the start of 2020

not make emergency calls. "Incidents of base station vandalism and battery theft have significantly gotten worse since the beginning of the year," said Perumal Moodley, executive head for operations for Vodacom Gauteng region said. "On a daily basis, we experience multiple incidents of

break-ins in our base stations. "What we are finding through our investigations that this crime is being perpetuated by organised syndicates who are always finding new ways to commit this type of crime. We lose millions of rands worth of damage to our base stations annually as a result of theft and vandalism, which

ultimately impacts the cost of mobile services. But more importantly than the monetary impact, criminals are cutting off entire communities." Vodacom said each theft incident can result in the network in that area being down for days, and can severely impact businesses as well as anyone relying on the internet to study. It can also cause ecological damage with vandalism resulting in diesel spillage. Vodacom, however, is fighting back. Vodacom has ramped up the fight against this criminal activity and is working closely with law enforcement agencies and security companies to arrest thieves for prosecution. In July, a man who stole equipment from mobile phone base stations in the Western Cape was handed a 500-year prison sentence by a regional court in Cape Town.

MTN and Vodafone tops in SA

South Africa's MTN and Vodacom are Africa's most valuable and strongest business brands, respectively, according to Brand Finance's Africa 150 2020 report – an annual index which reveals the most powerful businesses on the continent.

The report said MTN is the most valuable brand, with a value US\$3.3bn (R55bn), while Vodacom is the strongest, with a Brand Strength Index (BSI) score of 89.5 out of 100.

“South Africa's telco giant MTN has been crowned as the continent's most valuable brand, despite recording a 1% brand value loss to \$3.3 billion,” said Brand Finance.

It also pointed out that over the last year, Africa's largest mobile operator has celebrated solid profit and impressive subscriber growth, which currently stands at over 250 million across 23 countries.

Brand Finance further noted that as with all big telcos globally, MTN is being squeezed from all sides, as over-the-top messaging apps like WhatsApp are impacting voice and SMS revenue, and challenger brands offer comparable data services at below-market rates, leading to fierce price competition and decreasing margins.

However, it added that Covid-19 may be an opportunity for telecoms brands to reverse their fortunes, as Brand Finance predicts a limited overall impact to the sector and even potential for growth as demand surges.

In addition to measuring overall brand value, Brand Finance evaluates the relative strength of brands, based on factors such as marketing investment, customer familiarity, staff satisfaction and corporate reputation.

According to these criteria, Vodacom (down 8% to US\$2.1bn) is the strongest brand in Africa, with a BSI score of 89.5 out of 100 and a corresponding AAA brand strength rating.

Brand Finance's global brand monitor study shows a clear improvement in Vodacom's brand investment metrics – place, price, products and promotion – all of which were considerably stronger than main rival MTN. However, the report said that due to the pandemic, Africa's top 150 brands could lose up to 12% of brand value cumulatively.



Talking satellite

Serving underserved communities

“The Digital Divide remains despite years of debate about solutions to bridge it.” This was the opening statement of the pre-event description for the latest in the GVF Webinar Series, organised in association with the Satellite Evolution Group (<https://www.satellite-evolution.com>), and held on the Zoom platform every two weeks. The ‘Serving Underserved Communities’ (<https://gvf.org/webinar/serving-underserved-communities>) webinar took place on 27 August and featured panellists representing Kacific Broadband Satellites, Gilat Satellite Networks, ViaSat, and SES. If you missed the discussion you can still access the recording by clicking on the above link.

This webinar addressed the fundamental question of ‘How exactly is satellite now fulfilling the urgent need to bridge the digital divide?’ Satellite solutions can be deployed anywhere. Satellite coverage is ubiquitous. Satellite's capacity continues to expand with more high throughput satellite systems being launched to geostationary orbit (HTS GEO), with deployment of enhanced additions to existing medium Earth orbit (MEO) infrastructure, and ongoing expansion of the new low Earth orbit (LEO) constellations. The webinar dialogue focused on such questions as:

- Is the biggest barrier to serving the underserved connectivity or affordability?
- Will there be a role for satellites in connecting underserved communities in five years? Ten years?
- Is community Wi-Fi the best way to bring the internet to remote communities in low-income countries?
- Are universal service funds a significant source of support to bring satellite delivered internet services?
- What advantages do GEO have over NGSO systems in bringing services to underserved communities? Conversely, what advantages do NGSO systems have over GEO systems?
- What is the role of satellite in emergency response and business continuity?

These questions from the webinar moderator were augmented with additional questions raised by the audience in real-time over the Zoom platform's Q&A function. Those

Martin Jarrold, chief of international programme development, GVF



audience questions which remained unanswered at the conclusion of the webinar are answered in writing and feature on the GVF's website webinar pages along with the webinar video recording. The geographic origin of the audience questions reflected the global appeal of the webinar, and of the series as a whole. Participants from some 69 countries featured during the discussion on the digital divide.

‘Serving Underserved Communities’ was the eighth webinar in the GVF Series. The video recordings of all seven previous webinar discussions are also available via the GVF website (<https://gvf.org/webinars/>), covering:

- The Satellite Industry's Response to the COVID-19 Pandemic
- WRC-23: Spectrum Dialogues in a Post-pandemic World
- Space Segment Disruptive Evolution: GEO, MEO & LEO – Does a Global Crisis Make a Difference?
- The Satellite Integral Factor II: Will Working from Home Render the Cloud a Different Animal?
- 5G & Satellite: Driving Forward the ‘Network of Networks’
- Ground Segment: Transformational Antennas/End of the Parabolic Paradigm?
- Ground Segment: Transformational Antennas II – Will terminals realise the promised LEO Connectivity Revolution?

The Webinar Series is the product of GVF's strategy of taking its digital presence into new areas, responding to the period of lockdown, social distancing and working from home brought about by the COVID-19 global pandemic. The Series is scheduled to continue for the remainder of 2020, with a schedule of

discussion themes which will include:

- GEO/MEO/LEO – Satellite in the Finance Markets
- Global Transitions: Digital Economy, Digital Infrastructure, Connected Communities, Digital Planet
- A Regional Perspective on C-Band – The Next Battleground?
- The Regional Satellite Operators' Voice
- Humanitarian Assistance & Disaster Response: The Evolving Role of Satellites in Disaster Response

In my previous column for this publication I focused on the subject of humanitarian assistance & disaster response, referencing that the global pandemic has, of course, led to a widespread cancellation of actual events and a general shift to digital/virtual events, including Pacific Endeavor 2020 and Satcom Endeavor 2020. Since this last column another actual event, a major one for the Middle East, northern Africa and south Asia regions, has also been affected by COVID-19. The CABSAT 2020 exhibition, already previously postponed from its usual March calendar slot to October, has now again been postponed. GVF continues to examine the practicalities for adapting the example of the virtualised Pacific Endeavor 2020/Satcom Endeavor 2020 model to CABSAT, thereby providing the GVF SATEXPO Summit @ CABSAT as an online event.

When confirmed, the further definition of the programme for the GVF SATEXPO Summit @ CABSAT will be announced through a GVF press release and will be posted at <https://gvf.org>



4G Advancement in Ethiopia

Abiye Yeshitila, account manager at Ericsson Ethiopia gives his take on a milestone in the country's telecom landscape

Ethiopia is on the verge of massive digital transformation, as one of the fastest growing economies in Africa, which is being led by consumers who, today, have access to more devices and are more connected than ever. The ICT market in Ethiopia is constantly evolving, and telecommunication providers have to offer products and services that meet their customers' demand for high speed data connectivity.

The first months of 2020 saw the spread of a novel coronavirus around the globe. Subsequent behavioral changes due to lockdown restrictions caused measurable changes in the usage of both fixed and mobile networks.

In Ethiopia, access to mobile communication has expanded rapidly. Proliferation of smartphones and tablets have increased data traffic exponentially, driven by the rise of video content. Explosion of mobile broadband is set to create new demand and an upsurge in household consumption of mobile internet is expected to provide continued impetus to the sector.

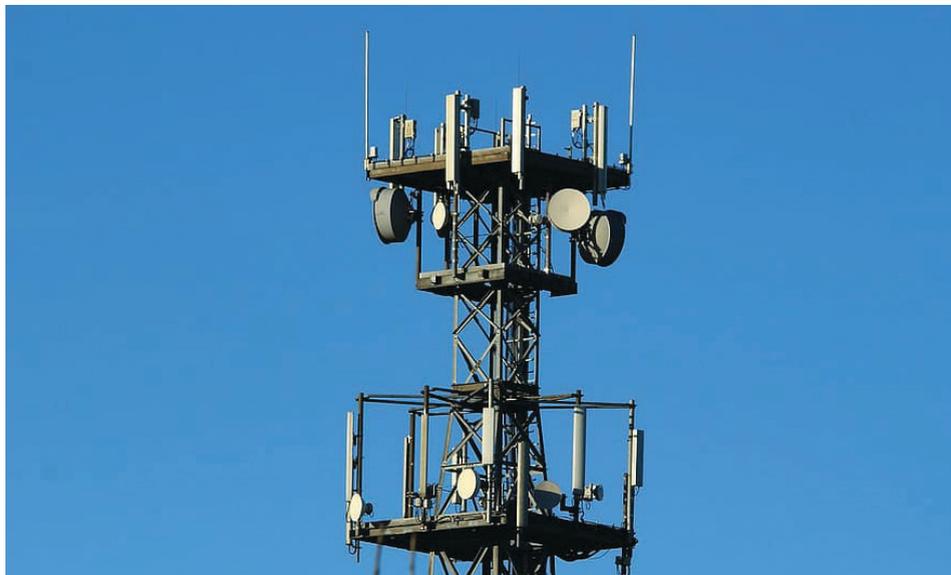
Enabling broadband connectivity for all is a basic human right and we know that for every 1000 new broadband connections, 80 new jobs are created (Ericsson and Arthur D. Little). A 10% increase in mobile broadband adoption secures 0.6-2.8% GDP growth (Ericsson and Imperial College) and a doubling of average achieved broadband speed generates an additional 0.3% GDP growth (Ericsson, Arthur D. Little, Chalmers University).

To keep up with increasing demand for data capacity, service providers need a fast solution. They are playing a key role in enhancing networks and paving the way for next generation of mobile connectivity.

Faced with limited spectrum assets and a need to provide the best user-quality network, many service providers have launched 4G LTE networks. LTE simplified the network and increased spectral efficiency significantly while driving down costs. It is the first mobile system that is designed for mobile broadband from the start. Some of the use cases it has enabled include:

- Enhanced local-area access through network densification
- Machine-type communications, providing efficient connections for non-human centric such as burglar alarms, power meters etc.
- Device-to-device communications, where direct communication between wireless devices is enabled in a peer-to-peer mode

Consumer devices dominate for 4G. Despite strong initial hope for laptops as a driving device, it was the app-enabled smart phone that became the killer device. Mobile phones have moved from a communication-centric device to a multi-purpose smart personal companion. Smartphones will



Enabling broadband connectivity for all is a basic human right and we know that for every 1000 new broadband connections, 80 new jobs are created

continue to see growth and more data-centric offerings are forecast to enter the market.

The latest mobility data shows that LTE accounted for around 11% of subscriptions in 2019 in Sub-Saharan Africa. Mobile broadband subscriptions are predicted to increase, reaching 72% of mobile subscriptions by 2025. LTE share will reach around 30% by the end of the forecast period, and LTE subscriptions are set to triple, increasing from 90 million in 2019 to 270 million in 2025.

Championing current demand, 4G brings major improvements in terms of coverage and capacity, offering download and upload speeds many times greater than those achievable with earlier technologies. In addition, support for Machine-Type Communications (MTC) and Internet of Things (IoT) in cellular networks is being drastically improved with the launch of 4G LTE.

Ericsson's services, software and infrastructure - especially in mobility, broadband and the cloud - are enabling the telecom industry and other sectors to do better business, increase efficiency, improve the user experience and capture new opportunities. We have done business in Ethiopia for a long time - since the sales of telephone receivers commenced in 1894.

Ericsson is devoted to support the development of Ethiopia's telecom industry, leveraging our global expertise and technology leadership. We are working together with service providers in Ethiopia to ensure rewarding new user experiences for Ethiopian consumers in the new connectivity era as part of our mission to empower Africa's technology-enabled economies and keep #AfricanMotion.

Consumers have gone through a massive digital evolution in a short span of time and people today

are staying online longer than ever before.

Our go-to technology devices have progressed from PCs to smartphones and communication has grown from voice to video and social networking services. Today, people are prone to behavior that involves reduced human interaction, with the advent of technological options such as e-shopping, e-selfcare and e-billing, to name a few.

The new consumer of today demands a seamless online experience across all the fronts whether it is a smartphone, a tablet, or other devices.

The 4G network in Ethiopia's capital offers mobile users with faster data speeds, high-quality video conferencing and faster response times when using mobile applications or accessing the internet. It also helped service providers meet demand for mobile data, which is rising every year as customers move to adopt data-hungry smartphones, mobile modems and tablets. Hence, there are plans to expand LTE across the country.

A steady upsurge in numbers for smartphone subscriptions and mobile traffic is the norm in the mobile sector. LTE for mobile and fiber optics for fixed connections are becoming widespread and this has led to the introduction of innovative connectivity bundles for voice and data. Demand and usage of digital services like OTT video, smart home, financial services, e-health, e-education is also on the rise.

It has been stated that the mobile industry in Ethiopia is a key contributor to the country's economy and enables new economic activity in other sectors. As wireless connectivity enables business to be done on the go, it allows information and services to be access anywhere, and will create new services and industries. ■

Cassava Smartech Zimbabwe claims regulatory controls constrain EcoCash

EcoCash parent company Cassava Smartech Zimbabwe (CSZL) said the performance of the mobile money platform has been negatively impacted by seven major regulatory directives in the past six months, causing its contribution to group revenue to decline, according to local media.

In the period ending August, the directives led EcoCash transaction volumes to drop to less than 800 million from over one billion for the same period in 2019. The mobile money platform's share on the National Payments System has slumped to 19% from 30%.

The group continues to comply with all the regulatory directives as they are issued, said CSZL. It continues reviewing tariffs, which are approved

by the regulator, maintaining a balance between inflation, business sustainability and affordability for customers. Such directives from the Reserve Bank of Zimbabwe have included cuts to daily, monthly and transaction limits, suspension of agents with transactions above Z\$100,000 and a requirement for their re-registration, suspension of agent-to-agent transactions and suspension of some EcoCash user categories and functions.

Revision of mobile money limits and the ban of use of multiple wallets announced in the past two months have also affected the performance of the mobile money platform. In the period, the group saw its revenues jump 443% to north of Z\$3.1bn compared to the same period in 2019.

Liquid Telecom South Africa appoints Geyser as new CEO

Liquid Telecom South Africa (L TSA) has made Deon Geyser its new CEO, effective from 1 January 2021.

He will be responsible for overseeing the strategic repositioning of the company as Liquid Intelligent Technologies "and the execution of the new strategic direction of providing an integrated technology capability that enables customers to transform their business through new intelligent technologies."

"We are delighted to welcome Deon to Liquid Telecom South Africa," said the group chief operating officer, Ahmad Mokhles. "He is a proven leader and his strong knowledge of both the local market and the continent, extensive management experience in both the public and private sector and the track records in digital transformation makes him ideally placed to continue Liquid's next chapter of growth and sustainability, as well as to achieve its successful repositioning."

Prior to joining L TSA and in his 18-year career, Geyser has held senior management positions at Siemens and Millicom International Cellular (Tigo).

His most recent position was head of southern Africa unit for Nokia since 2014.

"Liquid is a very strong company and I am truly honoured to be chosen to lead the business into the next stage of its strategic development," Geyser said. "Liquid has a ground-breaking view on transforming business through technology, supported by a strong and talented team, a solid customer base and an exciting cus-

tommer value proposition. I look forward to continue building out its growth and to unlock value for shareholders and broader stakeholders alike."

Geyser replaces Reshaad Sha who resigned in June.



Actis buys SA fibre business

Actis, an investor of private capital into global emerging markets, has entered into an agreement to acquire a controlling interest in Octotel, a fibre-to-the-home operator in South Africa for R2.3bn (US\$140m).

The former has also signed agreements to acquire a non-controlling interest in RSAWEB, an internet service provider (ISP) in South Africa. The transactions are subject to regulatory approval.

Octotel, a fibre network operator in the Western Cape region of South Africa and founded in 2016, has seen its open access fibre network has passed more than 175,000 premises. Through this network, Octotel provides line rental services to ISPs on a fully vendor neutral basis allowing high speed data connectivity in homes and businesses across the region.

The businesses, both founded by Rob Gilmour and Mark Slingsby who will remain as shareholders, will continue to be run by the existing management teams. "Octotel and RSAWEB are the latest Actis investments into the high growth digital infrastructure sector," said Actis partner, David Cooke. "We have a growing portfolio of data centre investments and are delighted to now be making our first investment in the fibre sector. Rob and Mark are industry pioneers in South Africa and together with their institutional backers have created highly successful businesses in Octotel and RSAWEB. The investment opportunity is driven by the demand for reliable, high quality, high speed digital access in the home. We see first-hand the impact that affordable connectivity has in communities in South Africa for work, entertainment and education."

Airtel and WorldRemit team up

Airtel Tanzania has teamed-up with World Remit to enable customers to send and receive money directly into their Airtel Money wallets from abroad.

They can receive funds from over 50 countries worldwide including the US, UK, Australia, Sweden, Canada, Germany, Norway, Netherlands, Denmark and Belgium. This will contribute to financial inclusion and boost the economic agenda.

The partnership with WorldRemit will widen access to money transfers for recipients in urban and rural areas of Tanzania as they can now receive international money transfers directly to their mobile wallets without the need for a bank account or internet connection. Earlier this year, WorldRemit also entered into a new partnership with Airtel Rwanda.

Mukuru and WorldRemit partner to expand money service

Money transfer services Mukuru and WorldRemit have deepened their partnership with the aim to expand cash remittances to Zambia, South Africa, Mozambique, Malawi and Botswana, after their tie-up in Zimbabwe.

As a result of the new deal, customers will benefit from guaranteed cash at all times and there will be no cash-out charges to recipients upon collections. Until now, recipients of payments into mobile wallets in countries like

Zambia would ordinarily be charged a cash-out fee when withdrawing from a mobile wallet.

However, under new terms and conditions, when a WorldRemit customer sends cash to a recipient in Zambia and that person collects their transfer at a Mukuru booth, there will be no fee charged at all. The cash pick-up service is operational six days a week and customers will benefit from not having to endure long queues. Instead, they can collect their cash quickly and safely.

'Malawi must reach rural areas with MoMo', says report

The lack of incentives and information is hampering the penetration and usage of mobile money services in Malawi's rural areas, according to new research.

A study titled Promoting Mobile Money use through Training and Text Messages in Malawi found that due to lack of information on digital payments, people receive money through mobile money services - but instead of paying for goods and services, they cash out and pay in hard currency. The study also said that available information on services should address this issue.

ECAMA secretary general Andrew Kambatira added that it was clear from the study that if people in rural areas are provided with correct information, more can start to use mobile mon-

ey platforms and enter the financial ecosystem.

"An increased usage of digital payment systems would generally improve transactional efficiency in the market and would allow people to have a wide range of payment options and enhance security," Kambatira said.

Consumer Association of Malawi director John Kapito said there are a number of issues that are hampering the penetration of mobile money services in Malawi.

"(These) include the high service fees and credibility challenges facing mobile money operators because of rising schemes that lead to theft by tricksters for which companies fail to provide remedies," he added.

Masiyiwa struggles to sell

The coronavirus pandemic is hampering efforts by Zimbabwean billionaire Strive Masiyiwa to sell a stake in Liquid Telecom.

Buyers are being sought for 20% to 34% of Liquid Telecommunications Holdings for as much as US\$600m, according to reports. He needs the money to repay a US\$375m loan that was backed by Public Investment Corp., the continent's largest money manager.

The PIC, which oversees the equivalent of US\$135bn mainly on behalf of South African government workers, is demanding the issue be resolved by the end of August after granting an extension on the payment earlier this year, the people said. The loan it backed was used to fund a pay-TV venture, which failed in 2019 because Zimbabwe's economic woes and currency shortages meant the company could not pay suppliers.

Masiyiwa had pledged shares in Liquid Telecom to the PIC as security for the loan, which had been taken out with Deutsche Bank AG. The tycoon was planning to repay the debt from the proceeds of an initial public offering in Liquid Telecom, which was scrapped because of volatile equity markets, according to reports.

The founder of Econet Global Ltd., which has interests in mobile-phone network operators and digital-banking operations across the continent, would rather sell part of his 66% stake in Liquid Telecom to avoid surrendering shares in the company at a discount to the PIC, according to sources.

Vodacom Congo FD walks free

Muhamad Oomar Chutoo, financial director of Vodacom Congo was released from prison four days after an unexplained detention.

The senior executive was taken into custody by the judicial police of the Kinshasa - Gombe prosecutor's office on Monday, September 14.

Chutoo, a Mauritanian national, surrendered to respond to police summons sent to him.

Vodacom had expressed its surprise around this arrest and the Congolese judicial authorities have never communicated the reasons for this arrest. According to reports, Chutoo was questioned at length about alleged tax evaders.

On the economic performance scale, Vodacom's international portfolio remains a standout performer and delivered double-digit growth for the group in the year ended 31 March 2020.

In July, Democratic Republic of Congo (DRC) Telecom Operators Country Intelligence Report noted that total telecom service revenue in the DRC reached US\$1.3bn last year and will continue to

increase at a CAGR of 15.8% over 2019-2024 to reach US\$2.8bn by 2024, supported by revenue growth in the mobile data, mobile voice and fixed broadband segments. Mobile data revenue is expected to be the fastest-growing segment with a CAGR of 25.1% in 2019-2024.

According to the report rising mobile Internet subscriptions and growing data consumption over the forecast period will drive mobile data revenues up. Fixed broadband revenue will grow from

US\$60.7m

in 2019 to

US\$97.4m

by 2024, driven by ongoing deployment of fixed broadband networks across the country.

Zimbabwe loses one million subscribers

The sector report for Q2 2020 published by the Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ) revealed that mobile network operators (MNOs) in the country incurred total losses of about 500% and lost up to a million subscribers.

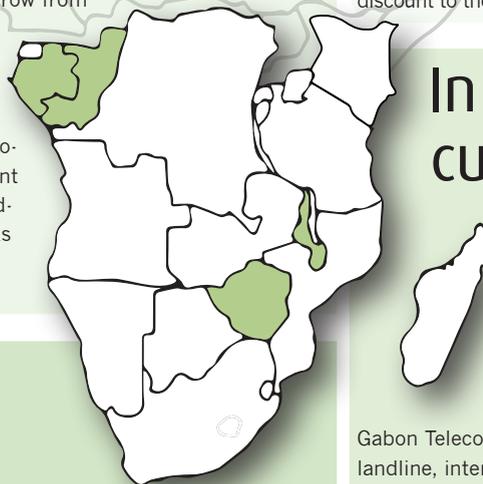
The loss of subscribers comes after protests by a consumer rights group in Zimbabwe against the hike in call and data tariffs by operators in the country.

POTRAZ reported that the collective revenue generated by telcos increased by 46% from Z\$2.1bn in Q1 2020 to Z\$3bn in Q2. However, the rise in revenue was entirely wiped out by

the Z\$11bn spike in total operating costs and resulted in losses of about 500%.

Furthermore, the report highlighted that the number of active mobile subscriptions in the country reduced by up to a million from 13.7 million subscribers in Q1 2020 to 12.7 million subscribers in Q2 2020.

In addition, the report showed that telecom operators in Zimbabwe are having to deal with challenges including the crippling shortage of foreign exchange currency, the high cost of international internet connectivity and a significant loss of subscribers.



In debt GT customers to have services suspended

Gabon Telecom has threatened to suspend landline, internet and mobile services for customers with unpaid bills.

The operator said in a statement, published September 22, the suspension of "the provision of its landline telephone, Internet and mobile services as of October 1, for accounts that will show unpaid bills in its books for invoices expired on September 19, 2020".

However, in order to avoid any inconvenience, Gabon Telecom has invited all customers with unpaid bills to bring their accounts up to date. Taking into account the health crisis linked to Covid-19, Gabon Telecom reminded its subscribers that these payments can be made by topping up their Mobicash account.



Keeping connected in the toughest environments

Africa has its challenges when it comes to disasters, be they natural or man-made. Robert Shepherd takes a look at the critical comms network in place ready to help out when things take a turn for the worse

Africa, like many other parts of the world, is susceptible to natural hazards. The diversity with regards to climate, terrain, demographics and wealth, epidemics, endemic diseases, drought, floods and earthquakes are just some of the disasters to hit different parts of the continent at any time.

According to new analysis by the charity Save the Children, 2019 alone will be remembered as the year the climate crisis devastated parts of east and southern Africa, with floods, landslides, drought and cyclones leaving at least 33 million people at emergency levels of food insecurity or worse.

Then, there are manmade hazards such as warzones and armed conflicts. Furthermore, this is compounded by the fact Africa doesn't have the wherewithal and infrastructure to bounce back as quickly as more advanced parts of the world.

It's clear then that this continent needs a solid critical comms back bone more than most others.

Given the region could be hit by something anywhere, at any time and likely with little or no warning, its paramount that the emergency services and local communities are able to maintain connectivity to save lives. So just how prepared is the critical communications set-up in relation to each country and indeed Africa as a whole?

Mladen Vratonjic, chair of TCCA, a membership organisation which represents all standard mobile critical communications technologies and complementary applications, says every business, organisation and government should have a business continuity plan to protect operations should they be affected by an unplanned event. The event could be a natural disaster such as an earthquake or flood, or unnatural such as a terrorist or cyberattack.

"It is often said that there are three 'Rs' of the greatest importance for any critical telecommunications network: resilience, reliability and recovery," he says. "These are achieved through some more 'Rs' - redundancy and robustness. There is no overall standard classification for a mission or business critical network – however mission critical networks are those essential for some mission accomplishment (mostly public safety), and business critical networks serve businesses that cannot operate without reliable communications. To meet those requirements, there are technology standards that have been designed specifically with resilience at their core – these include TETRA, P25, Tetrapol and DMR – all well-established narrowband systems leveraged for both mission and business critical networks around the world.

Sepura the UK-based business that supplies TETRA technology to emergency services around the world and a firm official explains the benefits of radio over other methods of communication during a critical situation. "Radio works on an independent infrastructure, so not susceptible to call overload, system failure, etc," says a company spokesman. "It is a robust system, designed to withstand extreme weather. It can also be supported by temporary network infrastructure to support if needed, particularly

in remote areas that are often the epicentre of a natural disaster. Critical comms radios are robust and will keep working in hot, wet or dirty environments, and can suffer rough treatment much more than other communication systems. They also use encrypted voice comms to ensure comms are kept confidential." He adds that data applications can be developed to work over the system to integrate with back office systems. TETRA radio systems also enable co-operation between agencies using that platform – "often police, fire, ambulance, rescue and other emergency response organisations".

Traditionally and unsurprisingly, the largest users have been public safety organisation – police, fire, ambulance, rescue organisations. After all, they need it more than any other group, business or sector.

The Sepura spokesman says the specific requirement for a critical communications platform are where there is a risk to critical national infrastructure, a risk to life, or a risk to business operations. "Where these conditions/risks exist, there is a need for a communications system with greater functionality that can be provided by standard cellular phones or low level radios," he adds.

As much of the developing world transitions from analogue to digital radios, it is important to understand that digital networks require more precise alignment than analogue networks to achieve optimum performance.

Motorola Solutions is another key player in this space, kitting out much of the continent. Patrick Fitting, the company's vice president for Middle East and Africa argues that land mobile (LMR) radio "has long been the ultimate communication method" in disaster-stricken or conflict zones.

"It enables instant, reliable communications with high capacity in areas where cell phone towers are down or none existent. And though this method of communication has been around for a while, it is still evolving, bringing more innovation to the front line in the form of software applications," he says.

Barry Hack, solutions engineer at Viavi Solutions, argues that poor alignment causes degraded digital modulation accuracy in the transmitter, which impacts the receiver's ability to recover the digital data, leading to poor coverage and range.

"For example, a 20% calibration error can affect range to the same extent as a 75% reduction in power," he says. "A quick back-to-back radio check will not show this problem. An understanding of digital radio operation and alignment, proper setting of filter parameters and an accurate FM deviation meter will significantly improve the performance of digital radios. This is important as most digital FSK based systems, such as DMR, P25 and NXDN, use CW and FM modulation for tuning of the radio transmitter."

Hack says FM deviation meters are peak reading. Any other signals or noise will add to the measurement. "AF and IF filters impact the measurements, too narrow they attenuate the wanted signal, too wide and they add noise to the measurement," he continues. "Using DMR as an example, a low tone (eg 100 Hz) is measured



Martin Jarrold,
chief of international
programme
development,
GVF

"Terrestrial communications can never be a total solution, illustrated, to use just a single example, by the critical role of satellite for backhaul ever since the earliest days of 2G mobile network deployment"

and the corresponding high tone (eg 3 kHz to 6 kHz) is set to exactly match the level of the low tone. FM deviation meters must have no change in accuracy from one frequency to the next. In other words, there should be no 'tilt'. This is a critical parameter, for example 0.05 dB flatness is specified by one major OEM."

Due to Asia's size, richness of different cultures, landscapes, climates and contrast of wealth, are some nations more advanced in this space compared to others?

Another company that has played and continues to play an integral part in the critical communications space is US industrial wireless mesh networks specialist, Rajant. According to Michael Van Rassen, its president, military & government markets says military, defence and other mission-critical agencies continually grapple with the complexities of establishing and maintaining internet connectivity in remote and often hostile environments. "In particular regions, such as those in Africa and south Asia, where pre-existing communication infrastructure may be lacking, the challenge is exacerbated," he says. "As this capability is extremely critical for situational awareness, tactical strategies, convoy communications, and more, these teams must be supported by a ruggedised networking solution that is tailored to their needs, seamless to set up, and proven to perform in challenging environments."

Nevertheless, the Sepura spokesman says there are landscapes/terrains/regions where critical comms are more difficult to deploy than others, regardless of economic circumstances. "Every system deployment is unique," he adds. "Systems have been installed across nations (and indeed allowing interoperability across national borders), on offshore oil rigs, in underground mines, on super-fast train systems, in ski resorts and in locations where buildings are designed to protect from natural disasters. Part of the process of designing a system is to understand where potential problem areas may exist and to mitigate any potential issues with them."

So, if the network is safe and it can be de-



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Infrastructure such as masts, towers, ducting/pipelines are all variously vulnerable when disaster takes the form of cyclone, earthquake, flood, military action, and typhoon, and networks' traffic capacity limits are compromised when the connectivity needs of displaced persons/refugees/victims of the effects of pandemic combine with those of 'first responders'

ployed in pretty much any situation, is there a question mark surrounding the technology itself? Do the handsets/radios need to be updated regularly and just how much of an investment is that? The Sepura spokesman says "it really depends" on how and where the radios are used. "On a less busy site the radios might rarely be upgraded, whereas police users might look to set up a radio much more frequently, based on operations taking place at that time," he says. New innovations are always being brought in to support users in these cases – for example over the air programming, enabling radios to be updated whilst connected to a secure, approved Wi-Fi network, reducing the time radios are out of use."

As far as Fitting is concerned, one of the biggest advantages of a modern LMR network is the ability to operate in the most difficult terrain. "That being said, it is extremely important to choose the right kind of technology and form of deployment to fit different kinds of geographies and use cases," he says. "For example, a dense urban area with large amount of users is quite different from remote rural areas. We like to see ourselves as technology partners, helping our customers find the best communication solution to fit their exact needs."

We've managed to get this far without mentioning 5G. Prior to the introduction of Covid-19 and possibly Brexit, you'd be hard-pressed to find a topic more often talked about than the next generation technology. Of course,

the UK has taken one step forward and two steps back with the way the government has handled the Huawei row. However, it's still slated to be with us in the not too distant future and once it is, Ken Gold, director of test, monitoring and analytics at Exfo, which develops test, monitoring and analytics solutions for operators says the new technology brings the promises of more resilience. "5G network slicing would be used to ensure the performance of mission critical services," he says. "Virtualised 5G core and edge networks will accelerate the implementation of required changes. Remote orchestration of new virtual resources as well as changes in traffic routing and moving critical services to the edge will improve service availability and reduce the need for truck rolls—keeping personnel out of the danger zone. Continuous monitoring and orchestration of the services and network will ensure critical services are maintained and the customer's essential communications needs are met."

The good news is we definitely have, or will have, technologies able to handle the very worst situations, but in the words of James Trevelyan, SVP global sales – enterprise at communications solutions provider Speedcast says disasters of any kind are impossible to predict, making short-term communications that connect emergency services throughout every stage of the response efforts critical. "High-speed, uninterrupted connectivity that enables voice, video, data

and IoT solutions can be the difference between the success or failure of a disaster situation," he says. "With rapid response times necessary, communication networks that are quick and easy-to-deploy are imperative."

For many critical communications, satellite remains the method of choice – particularly in areas where the internet access and cell towers have been knocked out as a result of a disaster. Trevelyan adds that as satellite communications become faster, more reliable, cheaper and are able to offer lower latency, disaster recovery operations and critical communications will become more streamlined and tactical than ever before. After all, teams that are better prepared, better equipped and that can work well together in challenging circumstances have a better chance of saving lives than those that are not.

"Low Earth Orbit (LEO) and High Throughput Satellite (HTS) offer first responders a way to establish short-term, easy-to-deploy communications anywhere at any time. "Due to the speed in which emergency services need to react and take control of the situation, solutions that can be brought online within five to 10 minutes and allow them to gain coverage immediately are vital," he continues. "When a disaster strikes, the first action of the emergency services is to create a local hub to re-establish critical communications and ensure they can stay connected through the entire recovery process. Once the disaster response team has established

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an on-site base, resilient trucks – similar to those used in broadcast – will be driven to the disaster area to create an emergency services network. A quick-deploy antenna mounted to the roof of the truck will be used to provide a satellite link to connect to the nearest cell tower to provide phone services and internet services so responders can better communicate at the scene.”

Let’s, for a moment, imagine the worst has happened. There’s a warzone or disaster-struck area: what are the best options?

For Martin Jarrold, VP international programme development at GVF, the global trade association for the satellite industry, says the developing world has long looked to a range of varied communications solutions to support their connectivity agendas for the facilitation of socio-economic growth, in attempting to meet the sustainable development goals of the global development agenda, to attract inward investment, to enable the creation of knowledge based economies, and other strategic objectives. “Such solutions are also mission-critical for governments, and their partnering organisations, working in humanitarian assistance and disaster response (HADR) environments,” adds Jarrold. “Just as governments and regulatory authorities search for ideal solutions to the challenge of connecting people in remote and under-served regions, NGOs and United Nations agencies need reliable communications to be available to support supply logistics and coordinate ‘first responder’ relief efforts anywhere and at any time.”

Gilat Telecom, is an Israel-based firm, which offers satellite and fibre-based connectivity solutions across Africa. Ami Schneider, the company’s VP defence & HLS, says it can ship everywhere phones that are ready to use to anywhere in the world. “So, for example, for teams who are leaving their base to go and help in a disaster, they can be sent phones to their homes, offices, somewhere en-route or their final destination,” she says. “Our phones seamlessly move between cellular, wifi and satellite networks and include: encrypted text messaging, group messaging, tracking, globalSOS with 24/7 monitoring, emergency alerts, maps, compass, as well as geocoded videos clips, audio notes and photos.”



“It is often said that there are three ‘Rs’ of the greatest importance for any critical telecommunications network: resilience, reliability and recovery”

“In particular regions, such as those in Africa and south Asia, where pre-existing communication infrastructure may be lacking, the challenge is exacerbated”

Jarrold is complementary about terrestrial communications networks – cellular/mobile networks, microwave networks, fibre – in that they play a very visible and vital role in both day-to-day connectivity and in circumstances of disaster response and humanitarian relief. However, he warns that infrastructure such as masts, towers, ducting/pipelines are all variously vulnerable when disaster takes the form of cyclone, earthquake, flood, military action, and typhoon, and networks’ traffic capacity limits are compromised when the connectivity needs of displaced persons/refugees/victims of the effects of pandemic combine with those of ‘first responders’.

“Terrestrial communications can never be a total solution, illustrated, to use just a single example, by the critical role of satellite for backhaul ever since the earliest days of 2G mobile network deployment,” he continues.

“The role of satellite communications in economy and society is broad, goes very deep, and is ever increasing. This role is not necessarily as obvious as it is for terrestrial, and yet satellite serves both every day needs and not-so-every day critical situations: from consumer to corporate/enterprise broadband data, from government closed user groups to multinational networks, from multicast VSAT services to distance learning, rural telecommunications, e-Health/telemedicine, and news distribution; and aeronautical, land mobile and, maritime services.”

Of course, a great deal of the necessary infrastructure behind these applications and services is in Earth orbit – hundreds of geostationary (GEO) satellites above the equator, thousands (soon to be tens of thousands, according to Jarrold) of medium-Earth (MEO) and low-Earth (LEO) orbiting satellites encircling the globe – and so, he says, this ‘space segment’ is not obvious to most. “A GEO can provide coverage over an entire continent. GEO high-throughput satellites (HTS) provide ever-increasing broadband capacity, with early HTS satellites having 45 gigabits per second (Gbps) of capacity, while more recently launched satellites offer roughly 130-145 Gbps and upcoming satellites around 1 terabit per second (Tbps),” Jarrold adds. “The ‘Ground Segment’ is a little more obviously visible – particularly the big satellite antennas at teleports/hubs – though even then the everyday very small aperture satellite terminal (VSAT) does not dominate the skyline like a cellular/mobile mast or microwave tower.”

While satellite may have had its detractors over the years, Kyle Whitehill, CEO of Avanti Communications provides examples of where his



company has and continues to make a difference.

“East African countries, such as Kenya, are prone to disasters, like droughts, floods or disease outbreaks,” he says. “The recurrent nature of these disasters inherently affects the capacity of communities to recover, which lowers economic output and holds back development year on year. Working with the National Disaster Operations Centre (NDOC) and Red Cross Society in Kenya, we along with our partners implemented a Disaster Risk Reduction (DRR) capacity development programme to improve Kenyan capacity to effectively plan for and respond to disasters using satellite technology. The SatDRR project was implemented to enhance at a regional and local level the coordination, command and control of disaster response of first responders and local agencies.”

Whitehill points to the fact Avanti’s steerable beams, available on HYLAS 2, HYLAS 3 and HYLAS 4, provide immediate ka- band capacity wherever it is needed, across Africa. “Our beams operate in civilian and government frequencies and can be moved with initial or full steering rights,” he continues. “This means that our satellite systems provide a secure, resilient, always-on infrastructure in disaster situations – providing critical tools for emergency communications and situation assessment. For example, we were able to move one of our beams over Mozambique to provide vital connectivity for rescuers when Cyclone Idai hit the country in March 2019.”

Currently, Avanti is involved in a number of on-going projects, with some rather august bodies and organisations. “We work directly with UNHCR, the UN Refugee Agency, to provide refugees and host communities in Uganda with solar powered satellite broadband connectivity which directly supports access to information, humanitarian and livelihood services within refugee settlements,” he continues. “The collaboration will see high-speed internet access introduced across some of the most remote areas of east Africa. Seven UNHCR sites in refugee settlements in northern Uganda, predominantly hosting displaced populations from conflicts in South Sudan and the Democratic Republic of Congo, will receive satellite broadband connectivity, laptops and maintenance of all equipment.”

As Fitting puts it, “a mission-critical network is purpose-built to withstand multiple failures” before communications are affected and is specially designed for multiple levels of active redundancy.

Although preparedness for any given situation is invaluable, one never knows how things will pan out in the worst possible situation. Luckily, the best people and their technology are ready to act. ■

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- **Unathi Mtya** – Chief Technology Officer, **Grinrod bank**
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One size does not fit all

Jiashun Tu, chief scientist of NFV and SDN at ZTE takes a look at how developing countries should approach 5G

There is a global race to implement 5G as quickly as possible and reap the benefits that it will bring to consumers and businesses alike. We hear a lot about progress being made in China and Europe, the latest partnerships, spectrum auctions and what successful trials have been completed. In all this noise, it can often feel like many areas of the world are left aside. In Africa and Asia there is also progress being made in 5G. However, their

socio-economic contexts and lack of mobile infrastructure means that there are other complex considerations that affect their 5G strategies.

Paths to 5G

Firstly, it is important to understand the approaches that can be taken to realising 5G. The first is Non-standalone 5G (NSA). NSA is all about providing higher data bandwidth and



Jiashun Tu,
chief scientist,
NFV/SDN,
ZTE

reliable connectivity. NSA networks use existing 4G infrastructure, allowing dual connectivity with 4G and 5G simultaneously. Traffic is carried over both spectrums and then aggregated at device level. This consumer-first approach allows service providers to use existing resources to establish 5G. Once the 5G coverage has been established, the operator can then implement standalone 5G.

The second – and less common – path is to jump straight to Standalone (SA) 5G. The rapid digitisation of industry has opened huge opportunities for a host of new 5G use cases and – by extension – revenue streams. 5G SA is needed to make the most of this transformative new technology, especially in industry where network slicing and virtualization will be a game-changer.

While these two approaches to 5G are not mutually exclusive, which one you prioritise is an important decision. Moving first to 5G NSA is the path of least resistance. However, it is not nearly so simple. Which of these two routes to take is a balanced and considered process, taking into account many different technical, regional and socio-economic issues. For developing countries especially, in areas such as Asia and Africa, these considerations are more complex than other countries.

Connectivity in developing countries

According to the GSMA's 2019 Mobile Internet Connectivity Index (MCI), mobile internet adoption in Sub-Saharan Africa stands at 24%, while the region also accounts for 40% of the global population not covered by a mobile broadband network. In south Asia, only 33% of the population are connected to mobile internet.

Despite these regions being two of the most left behind in terms of mobile connectivity, there has been some progress. In 2014 only 18% of the population of South Asia was connected to mobile internet. The dramatic rise of connectivity to its present figures has been driven by significant investment from operators to expand 4G coverage. Additionally, with some of the most affordable mobile broadband, the region has done well to make mobile internet accessible to large swathes of the population. The same is not true of sub-Saharan Africa. Here, the progress since 2014 is not so impressive – it has been driven mostly by upgrading 2G sites to 3G and 4G. However, mobile internet remains above the 2% of monthly income threshold for more than 75% of countries in the region.

While looking at the situation from a regional perspective, we can see that different trajectories of mobile internet penetration have implications for the state of national infrastructures as well as consumer readiness. These trends are important to acknowledge, as they illustrate why it can be more challenging for developing countries to decide on strategy. In order to look at this in more detail, we must examine specific examples of how individual countries are approaching 5G.

Whilst the regional outlook for Sub-Saharan Africa shows that it is one of the least con-



The dramatic rise of connectivity to its present figures has been driven by significant investment from operators to expand 4G coverage. Additionally, with some of the most affordable mobile broadband, the region has done well to make mobile internet accessible to large swathes of the population

nected regions in the world, there are dramatic differences between individual countries which effect their choice between NSA or SA 5G. South Africa has a well-established network infrastructure compared with many of its neighbours. It is in the top five highest performers for the region as a whole. In terms of network coverage, the proportion of the population covered by 4G scores 90 out of 100 on the MCI while 100% of the population have 3G coverage.

Compare this with Uganda, another country with 5G ambitions. Only 81% of people have access to 3G and it scores only 17 on the MCI when it comes to 4G. This lays bare the differences in the maturity of each country's network infrastructure and has significant implications on their approaches to 5G.

As we have already established, if the infrastructure exists to take an NSA approach, this seems like the most logical avenue. This is certainly the case in South Africa where MTN and ZTE have already jointly demonstrated multiple 5G use cases based on MTN's existing 4G network. The applications supported include gigabit mobile connection, virtual reality, ultra-HD broadcasting and more.

In Uganda there is the possibility of a different approach. The network infrastructure in Uganda is not quite as mature or extensive as that in South Africa, and the expense of building out the 4G network to then make the move to 5G, potentially makes less economic sense. Because of this, operators in Uganda could opt for SA 5G as an alternative approach to NSA. Although there is no correct path to take to achieve SA 5G, different contexts can sway decisions one way or the other."

The GSMA has held up Indonesia as a shining example of how a country can improve its mobile internet connectivity – being one of the top 10 most improved countries since 2014. This emerging digital giant has an estimated internet penetration rate of 69% by 2025, mostly due to infrastructure growth and affordability of data plans. Despite this improvement in infrastructure and mobile internet usage, many of the indications suggest Indonesia will jump straight to SA 5G. It is not just Indonesia in this region who are exploring the possibility of bypassing NSA 5G. Other countries like Singa-

pore and Thailand are doing the same.

To understand why this is the case we need to simply look at the broader socio-economic makeup of the countries. Indonesia, like many countries in the region has an established industrial makeup. Industry, including manufacturing, construction and mining account for 40% of the country's total GDP. It is widely known that in vertical industries such as these is where 5G has the highest capacity to transform the market, with use cases are abundant; smart factories, IoT, intelligent supply chain and more. The same is true of other countries in the region such as Thailand where industry accounts for 35% of GDP.

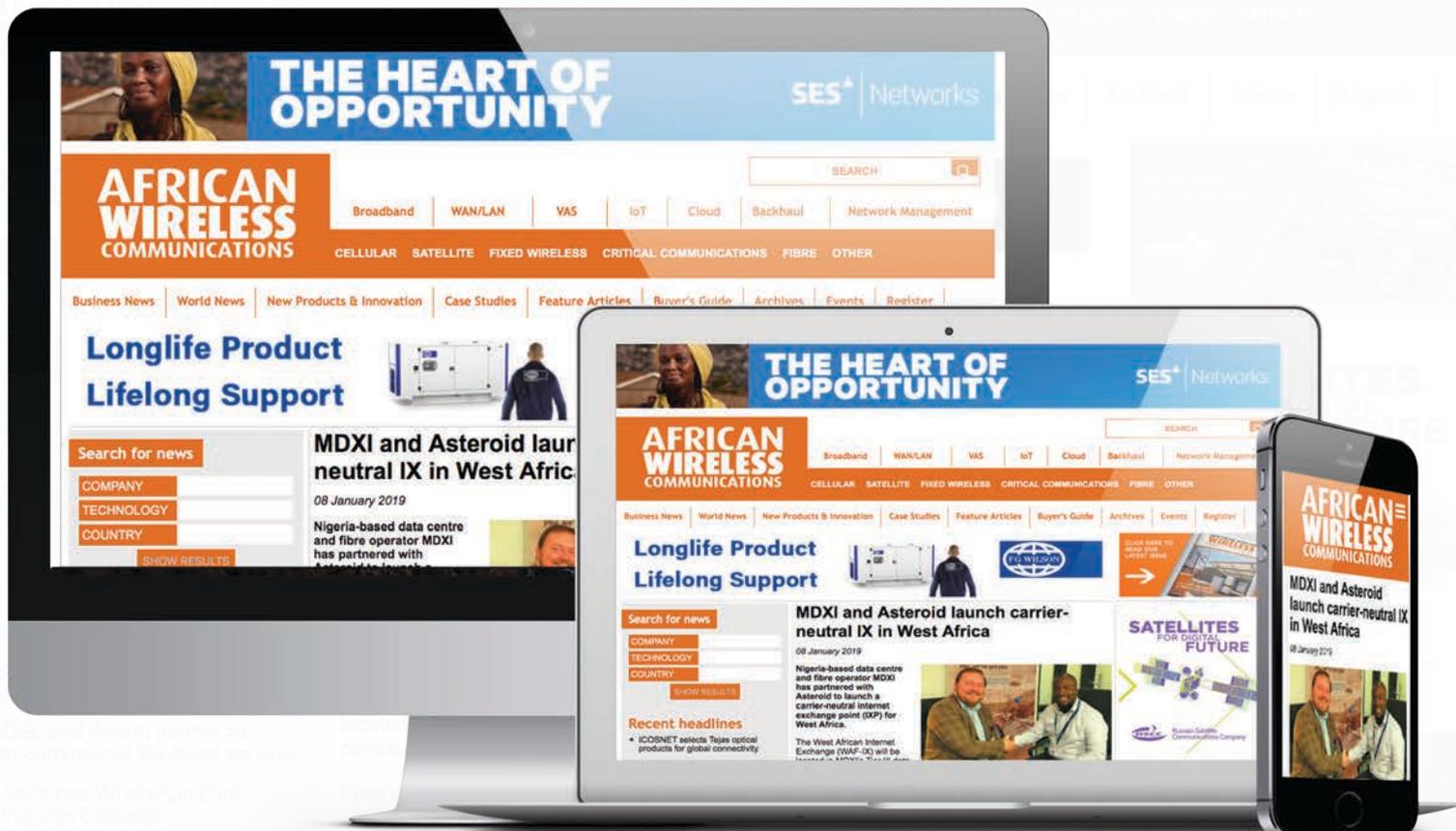
Additionally, the GSMA found that the greatest barriers to mobile internet penetration in South Asia are a lack of digital skills and a lack of relevance of mobile internet in people's everyday lives. This exposes a lack of consumer readiness not just for 5G but for mobile internet more broadly. It is predicted that in most parts of Asia, 4G will account for 70% of connections until 2025.

It is therefore not surprising that we are seeing an emphasis on the move straight to SA. This is by far the more industry-driven approach and it illustrates an acknowledgement that it is in the enterprise that 5G will make the greatest financial impact. In Thailand, operators are already moving to 2.6G and 2.5G spectrum in the belief that SA networks will be used widely in industrial scenarios and will generate new revenues.

Which path to choose

For every country, deciding which strategy to choose must take into account myriad factors. What is the current state of your network infrastructure? Where will 5G make the greatest impact on your economy and the everyday lives of your population? Is the cost of taking one approach prohibitive? There is no single answer to these questions, and countries in regions such as Africa and South Asia often have more to consider than others. However, if these questions are approached with the right degree of care an attention, there is no reason why developing countries cannot make 5G work for them and their people. ■

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C-Com's new Drive-Way antenna

The iNetVu Ka-75V Drive-Away Antenna is a 75 cm auto-acquire satellite antenna system, which can be mounted on the roof of a vehicle for broadband internet access over any configured satellite, according to C-Com Satellite Systems. It reckons the system works seamlessly with the iNetVu 7024C Controller, providing fast satellite acquisition within minutes, anytime anywhere. The company also says that "if you operate in Ka-band, the Ka-75V system is easily configured to provide instant access to satellite communications for any application that requires reliable and/or remote connectivity in a rugged environment". C-Com also says that this next generation mobile Ka terminal delivers affordable broadband internet services (high-speed access, video and voice over IP, file transfer, e-mail or

web browsing). It is suited for industries such as oil & gas exploration, Military Communications, Disaster Management, SNG, Emergency Communications backup, cellular backhaul and many others.



Peplink's Puma antennas

Peplink has garnered attention for its variety of antennas, certified for use with its LTE router series.

The new line, known as "Puma", is targeted at mobile users. First up is the Puma-401, an omnidirectional antenna, with four integrated cellular antennas that support all sub-6GHz 5G frequencies for 4X4 MIMO reception, along with GPS.

This particular model looks very similar to the older ANT-107 offering from Peplink, which has now been discontinued. However, there is a key technical difference - the latter did not have support for 600 MHz LTE Band 71. With four cellular channels in its arsenal, the Puma 401 is described as a "powerhouse, capable of providing high bandwidth and



solid reliability even under heavy usage". Equipped with high gain LNA, the GPS receiver, Peplink says, also has improved location tracking.

Next up is the Puma-221 5-in-1, with two cellular channels, two Wi-Fi channels and a high gain LNA GPS. It is described as a versatile all-in-one cellular antenna solution. There

is also 2x2 MIMO and dual-band Wi-Fi for high bandwidth and solid reliability, according to Peplink.

Last, but by no means least, the Puma-020. This model is a low-cost, dual-band Wi-Fi antenna built for mobile applications, coming with 2x2 MIMO that provides a high bandwidth for users.

Huawei's AirEngine 8760-X1-PRO 'redefining the Wi-Fi industry benchmark'

AirEngine 8760-X1-PRO — Huawei's flagship Wi-Fi 6 (802.11ax) indoor Access Point (AP) — comes with 16 Smart Antennas and is equipped to handle high-density and bandwidth-hungry scenarios, the company says.

Derived from innovations made in 5G technologies and apparently "unique to Huawei", the 16 built-in, dual-band smart antennas achieve a device rate of up to 10.75 Gbit/s, "delivering a fibre-like wireless experience". Smart anten-

nas also effectively improve signal gain, with signals following users to achieve complete coverage with zero blind spots.

Equipped with software-defined radios (SDRs) by default and with the ability to flexibly switch between three modes — dual-radio, triple-ra-

dio, and dual-radio + one scanning radio — AirEngine 8760-X1-PRO is designed for challenging high-density environments where interference is heavy. Such strengths make the AP a good fit for enterprise office, government and higher education use, plus primary and secondary education.



Intellian launches latest addition to GX antennas

Intellian says it is "proud to launch the latest addition to its next generation GX range of antennas". The firm claims the GX60NX is designed specifically and now type approved for

use with Inmarsat's Global Xpress Ka-band VSAT network. This 65cm terminal, the smallest in the range, completes Intellian's GX portfolio and brings the benefits of its market leading NX antennas to all vessels using Inmarsat's Fleet Xpress service for reliable, fast connectivity at sea.

It is also thanks to its compact size and light weight, the GX60NX is ideally suited to smaller commercial vessels, where space is at a premium "but the benefits offered by the latest technology are still required".

The new form factor supports customers across all markets, including leisure and fishing.

The Below Deck Terminal (BDT), single cable antenna connection and AptusNX control software are identical to those used for the larger GX100NX, which is already approved. This allows ship management companies and ship owners to benefit from the ability to work with a standard platform across diverse fleets.

"We are delighted that the GX60NX has been type approved and is ready for use for our channel partners with Fleet Xpress," says Ronald Spithout, president, Inmarsat Maritime. "This reinforces our close and innovative partnership with Intellian. We now have more than 9,000 vessels using the service and

we are seeing an increase in demand for digital and crew services, which is why we are launching a further seven satellites in the next three years."

Intellian's NX antennas come with pre-slung lifting straps in compact shipping crates, have no shipping brackets requiring removal and are terminated externally using a single coaxial cable to carry power, Tx and Rx signals, avoiding the need for the installer to remove the dome. Intellian reckons its AptusNX software "makes commissioning straightforward" via a built-in wizard and facilitates both remote and local diagnostics with health reports for the antenna systems and sensors.



Radwin delivers new MultiSector PtMP base station

Radwin brings to market its new MultiSector PtMP dual-carrier base station series. It delivers 1.5Gbps throughput and supports up to 4 sectors per base station with integrated or external antennas to achieve 360° coverage. It reckons the solution enables service providers and network operators to increase network capacity and coverage while reducing site complexity and TCO. What's more, Radwin's new series supposedly reduces the amount of glue components and cable wiring per site to a minimum. The self-contained base station incorporates dual radios, a built-in GPS antenna, and Layer-2 Switch. MultiSector also enables self-backhaul, eliminating the need for an additional PtP radio.

Radwin offers two base station solutions. The MultiSector Integrated is a base station that includes 180° (dual 90°) sector MIMO antennas and connectors to attach an additional 180° RADWIN antenna unit, or other third party antennas to cover a full 360°. Each of the radio carrier resources are split between two antennas in the time domain, avoiding signal power loss when using an RF splitter. This solution was designed for MicroPoP coverage supporting short-range connectivity of up to 2-3km including small or isolated rural villages, industrial parks on the outskirts of town, video surveillance, and remote automation for digital oil & gas fields.

The other solution

is the MultiSector Connectorized, a self-contained base station, connecting up to 4 external MIMO antennas to enable ultra-high flexibility in antenna selection per deployment scenario. Radwin reckons the base station is ideal for the deployment of multiple sites and sectors, each site addressing different coverage requirements (i.e. sector width and distance), such as long-range rural connectivity, video surveillance applications, and more. After being successfully deployed on a project only basis,

Radwin MultiSector Connectorized is now available for purchase through its global channel partners.



Viavi releases Auto-Test for XG radios

Viavi Solutions has released Auto-Test for L3Harris Technologies XG-25M, XG-25P and XG-15P two-way radios on the Viavi 3920B radio test platform

and 8800SX digital radio test set.

The vendor's radio test products support all L3Harris public safety radios, along with some of the industry's most comprehensive automated test solutions for the L3Harris XL-200P, XL-185P, TP9400, TP9300, TP9100, XG-75P, XG-75Pe, XG-25P, XG-15P, P7300, P5500, TM9400, TM9300, TM9100, XG-75M, XG-25M, M7300, and M5300 radio families.

"The Viavi and L3Harris relationship spans over a decade to provide the land mobile radio industry with high-quality, easy-to-use lab, bench and field test equipment for network infrastructure and subscriber radios," says Edward Latimer, director of product Management, radio test, Viavi. "This new capability further highlights the commitment by L3Harris and VIAVI to provide solutions for the public safety community."



ZTE's new 5G energy saving solution

ZTE Corporation introduces a 5G energy saving solution, PowerPilot, in a bid to "help operators realise higher energy efficiency, lower carbon footprint and achieve more sustainable growth".

Taking advantage of the energy efficiency differences of various types of services, ZTE reckons PowerPilot can deliver services to the most energy-efficient networks in real time, by intelligently evaluating service requirements.

What's more, PowerPilot can, apparently, save up to twice as

much energy as the existing energy saving solutions, thereby greatly reducing the opex for operators.

In addition to employing existing multi-layer energy saving technologies, which introduce AI

and big data to save network O&M labour, ZTE claims PowerPilot has coordinated multiple frequency bands and radio access technologies, to further reduce the energy consumption.



By virtue of more than 500 green patents, in-house chipsets, new-generation high-efficiency power amplifiers and cutting-edge product designs, ZTE says it can continuously facilitate the development of energy saving in 5G networks.

Look out for...

Finland get first standalone 5G connection, powered by Ericsson and Elisa

Ericsson and Elisa have established the first end-to-end 5G standalone connection in Finland, a milestone that will mean more advanced 5G use cases for both consumer and corporate customers worldwide.

Standalone 5G connections can allow the use of applications requiring ultra-low latency, including virtual and augmented reality, connected vehicles and smart factories.

Elisa CTO Kalle Lehtinen said the company began testing 5G technology years before it was launched in 2019 and is now taking steps to be ready for the future of 5G together with Ericsson. Even though this is a pilot, it represents a big step in the direction of a more reliable, faster and more efficient 5G network to benefit customers in the coming years, Lehtinen noted.

A standalone 5G device, using super-fast response time, is able to connect to a standalone 5G network up to six times faster as compared to a device operating in a non-standalone mode. Users can enjoy a far better experience and look to provide many new opportunities for innovations at an industry level.

Elisa's fully commercial 5G launch took place in Finland in June 2019. After the Finnish government decided to allocate frequency bands for 5G, Elisa is paving the way for 5G roll out and use in Europe, through the 5G portfolio of Ericsson.

Ericsson's head of northern and central Europe, Jenny Lindqvist, added that Ericsson and Elisa have been united in their dedication towards a sustainable and connected future. The companies have together provided superior connectivity to all 2.8 million of their customers and are now seeking innovations with leading 5G portfolio, she noted.

Lindqvist also said that 5G's low latency benefits would be multiplied with the use of 5G standalone connectivity and working with Elisa the company can unlock more solutions for transforming the industry as well as society.



Growing online: remote learning for tomorrow's farmers

Learning from the ground up: inspired to set up an agricultural college, two farmers are now training students in 14 countries online and at low cost

Two lifelong farmers in South Africa defied the odds to set up online training for agricultural students.

The idea began when Howard Blight and Wynand Espach, long-term colleagues in Limpopo province, attended a conference in Peru where Mr Espach spoke about his work in establishing avocado farms in Mozambique, lifting a whole village out of poverty.

It was during this trip, while chatting with other

farmers from across the globe that the pair were inspired to start their own agricultural college.

When they returned to South Africa, however, they soon realised that the venture would have to be very different to a traditional bricks-and-mortar college in the country.

Agricultural colleges in South Africa could not expand past a certain size, due to limits in availability of electricity, water supplies and the capital cost of investing in bricks and mortar.

Mr Espach said: "If we followed the same model as these colleges, we would come up against similar problems that agricultural colleges are facing across the world."

The challenge they faced was how to keep fees low for students from poorer backgrounds yet still have the money to maintain facilities and expand without hitting the limits imposed by a lack of infrastructure.

The answer was cloud-based online learning and led to the birth of AgriColleges International.

However, the two farmers had no experience with online learning platforms, so they began investigating technology providers.

Mr Espach said: "We were not happy with what we could do with the various platforms we had spoken to thus far. We felt we needed a platform that could facilitate the practical elements we envisioned (it being agri-based) and a company willing to work with us to develop those practical elements."

A friend introduced them to D2L, a Canadian company which had recently worked with Visions Consulting, based in Johannesburg, to extend its services in Africa.

With computer literacy low among the student base, ease of use was important; they felt that the other solutions they had enquired about were too complicated.

For the demographic they were targeting, only five per cent have access to a laptop or PC, while 70 per cent have access to a smartphone. The Brightspace platform from D2L features mobile functionality.

Mr Espach said AgriColleges would never have achieved its goals so early without D2L and Brightspace. AgriColleges now runs eight courses on the Brightspace platform, which are split into short courses and one-year certificates. The first one-year course was the National Certificate in General Agriculture, comprising six modules of either six or eight units.

In order to overcome the infrastructure and funding limitations that have dogged traditional agricultural colleges, key practical elements of the course are performed remotely.

Mr Espach said: "Students are given the theory and a task on the platform, like taking a soil sample. They then have to perform the task within the area around them. This can be in their own back garden. They do not need to go to a farm or a practical destination.

"They then record a video or take photos of the steps they took in performing the task which they upload to Brightspace. This is called a Remote Practical."

This remote practical is complemented by a two-week on-site practical, in which students travel to one of AgriColleges' practical destinations to learn skills such as servicing farming machinery, working with animals and visiting nurseries. They see everything they have learned in theory, translated into practice.

The short courses offered by AgriColleges are in three bands: introductory covering the basics of agribusiness, animal production, and crop production; fundamental, which are crop or product-specific, such as dairy production or avocado farming; and applications, where students attend a farm for a week-long practical course.

When AgriColleges rolled out its first short course it ran into issues common with engaging students through online learning. Mr Espach said: "To begin with there were challenges. At first, we did not really have anything to cover engagement metrics. We saw students log in and read materials, but very quickly disappear for a week or two. We realised that this had to change and we would have to engage them all the time."

Now, all students are linked to a course

consultant online who speaks with them daily. This has proved to be a lot of work for these consultants, and very recently D2L has helped AgriColleges deploy intelligent agents to automate many of the student engagement tasks.

These intelligent agents are automated emails that seemingly come from the course consultant, reminding students of deadlines. It saves course consultants a great deal of time and allows them to focus on helping students who are struggling.

AgriColleges also increased engagement by using Brightspace's discussion forums and rolling these into the course grading criteria.

Mr Espach said: "What we are achieving here is important because every year in Africa there are 50 million school leavers and only 5 million university or college places. That is 45 million people who cannot get tertiary education. As we expand, we are hoping to provide even more people with the skills needed to thrive in the farming industry."

AgriColleges is in the process of being officially accredited as a higher education institute so it can widen its offer to more students.

AgriColleges has widened its student base outside South Africa: students from 16 countries have completed its short courses. And the two men are looking outside the African continent, with India as one of the first targets.

Mr Espach said: "It is amazing how far we have come in just a few years. We were just farmers who knew nothing about educational technology, but now we are teaching farming, not only to students across South Africa, but across Africa. It has been a very exciting few years for us." ■

WiFi helps big schools group to save on textbooks

More than 62,000 pupils study at Curro's 175 schools. And it all started 21 years ago in a church vestry in Durbanville, a suburb of Cape Town.

Chris van der Merwe, now a non-executive director of Curro Holdings, and his wife Stephanie began the school with just 28 pupils.

All of the schools – apart from one each in Botswana and Namibia – are in South Africa and educate students to the age of 18. They were set up to provide low cost private schooling.

In a move to replace textbooks, Curro made the decision to go for e-learning.

In a continuing project, WiFi has now been installed in about 90 of Curro's sites, using a total of 4,000 access points. And there is expansion at existing sites as demand exceeds supply.

The equipment is from Xirrus, Acquired by Cambium Networks from Riverbed Technology in August last year.

The individual networks are designed and supplied by ISE (Information Systems Engineering) which has offices in Johannesburg and Cape Town, and installed by integrators.

Sean Vollmer is the managing director of ISE. He said that the high-density access points typically installed at Curro sites are the models XD4 and XD2, which have respectively four and two 802.11ac radios. And the com-

plete network is managed by the Xirrus Cloud and integrated EasyPass guest onboarding.

In another move, the schools group has launched Curro Online – said to offer flexible yet structured education -- with classes taught by current Curro teachers.

Curro's online business manager, Jay Paul, said: "We've been developing our digital education offering for some time now, which is evident with our recently launched DigiEd model.

"As part of the design process, we decided to rethink how home-schooling and distance learning is currently being offered. We set out to understand the frustrations of parents, and the learner, and how best to serve them and came up with a different proposition."

"One such concern is that most home-schooling solutions do not prepare the learners for the technology-heavy 21st Century and hence we focused our curriculum on maths, science, coding and robotics.

"As Covid-19 continues to impact our country, we also identified a need among parents who are struggling to juggle home-schooling with their own work, or are looking for an online programme that will still give their children access to class-time with qualified teachers."

He stressed that Curro Online is not a home-schooling model, where parents need to take on the responsibility of teaching and continuous supervision. It is a learn-from-home online model and



In a continuing project, WiFi has now been installed in about 90 of Curro's sites, using a total of 4,000 access points

the material is created and taught by Curro teachers.

Unlike other online schooling options that rely on a rotation schedule of tutors, Curro Online will be taught by a dedicated Curro teacher per subject per grade for the whole year. The learners will not study in isolation, but rather in small classes. They will also have group projects assigned to them, where projects will be done in small groups of four.

"We believe this model is ideal for families who wish to provide a high-quality independent school education for their child, and have the flexibility to return them to a physical school with little disruption to their academic career at any point in the future.

"Our model ensures that parents can continue to focus on their work commitments and all other responsibilities, and take off the pressure to teach their children." ■

Fleet One to enable sustainable fisheries

 Inmarsat and Cobham SATCOM have been awarded a new contract to connect 732 fishing vessels active in the Maldives Economic Exclusion Zone to the former's Fleet One maritime broadband services.

The green light follows trials of Fleet One services and SAILOR Fleet One terminals aboard 15 boats, confirming that performance exceeds specifications for a new vessel monitoring system (VMS) under the Maldives' Sustainable Fisheries Resources Development Project to improve Monitoring, Control and

Surveillance in fisheries sector. The VMS project, agreed between Maldives-based Ooredoo and the Ministry of Fisheries and Agriculture, is funded by the World Bank.

The five-year deal will see the supply and maintenance of the VMS, to include Fleet One satellite communications from Inmarsat, airtime and secure communications server via Integrated Monitoring (IM) and SAILOR antennas from Cobham SATCOM, installed by Ooredoo.

Fisheries is one of the main economic activities in the Maldives,

second only to tourism, providing jobs to over 30% of the population.

Fleet One will support electronic catch documentation and traceability (eCDT) to combat Illegal, Unregulated and Unreported (IUU) fishing. "The Fleet One Vessel Monitoring System ensures seamless monitoring of fishing vessels for owners and the regulator and enables new opportunities for the crew, while assuring their safety onboard," said Najib Khan, Ooredoo Maldives, managing director and chief executive officer.

Iliad set 'to become Europe's sixth largest'

 French firm Iliad has announced its intention to acquire Poland's Play, a move that it claims will make it the sixth largest mobile operator in Europe.

The former has brokered a €2.2bn deal to acquire all of Play's share capital; it will acquire 40.2% directly from Play's two major shareholders, Kenbourne Invest and Tollerton Investments (the pair hold an equal number of shares) and the remainder via a tender offer.

"This excellent alliance constitutes a new growth driver for the Iliad Group and gives it access to one of Europe's high-potential telecom markets," said Iliad CEO Thomas Reynaud. "The transaction will make Iliad the sixth-largest telecom operator in Europe." The group will have 41 million mobile customers across France, Italy and Poland, presuming the deal goes ahead, with Play contributing 15 million of the total.

Dutch Telecom KPN picks Ericsson

 KPN, the Dutch operator, has chosen Sweden's Ericsson to build core elements of its new 5G mobile network following a decision last year not to select China's Huawei.

The latter, the world's largest telecom equipment and smartphone vendor, is effectively banned in the US and Washington

had expressed fears that if KPN's 5G backbone contained Huawei equipment it would be vulnerable to spying by the Chinese state.

The Chinese firm has denied the US allegations that it is ultimately answerable to the Chinese government and is therefore a security risk.

KPN said in April 2019 that it

would select a Western supplier to build its core 5G mobile network, making it one of the first European operators to eliminate Huawei.

In a statement, KPN said it "will collaborate with Ericsson" for the implementation of its core 5G technology.

No financial details of the deal with Ericsson were disclosed.

NGMN Alliance announces board change

 The Next Generation Mobile Networks (NGMN) Alliance has announced its new board chairman and changes to the board members for the new term 2020-2022.

Emmanuel Lugagne Delpon, Group CTO of Orange and former Chairman of the NGMN Board, hands over the reins to the new Chairman Arash Ashouriha, SVP Group Technology Innovation, Deutsche Telekom.

Under Emmanuel Lugagne Delpon's direction, NGMN successfully initiated the enhancement of 5G within the ecosystem and, among others, initiated and published the 5G White Paper 2. Emmanuel Lugagne Delpon said: "It has been a pleasure heading the NGMN Alliance as many operators launched 5G. As we continue to deploy and further develop 5G to maximize the benefit of its potential, our goal is to remain at the forefront of next generation mobile networks. Therefore, I gladly

hand over the leadership to my highly respected colleague Arash Ashouriha, who will continue to strengthen and drive the NGMN Alliance forward."

Arash Ashouriha said: "I am honoured to be taking over as NGMN Board Chairman during these challenging but very exciting times for our industry. My goal is to continue enabling network operators to unleash the full 5G potential and to lead the Alliance into the future of next generation mobile networks."

Anita Döhler, CEO, NGMN Alliance said: "I would like to thank Emmanuel Lugagne Delpon for his great leadership and dedication over the past 2 years. We have a lot of work ahead of us and are confident that we will continue to follow the successful path with Arash Ashouriha's direction and Deutsche Telekom as a strong member partner."

The voting occurred unanimously during the board meeting.



Under Emmanuel Lugagne Delpon's direction, NGMN successfully initiated the enhancement of 5G within the ecosystem and, among others, initiated and published the 5G White Paper 2

Cape Verde turns off analogue telly and switches to 4G

 The Cape Verdean government gave the state-backed business company Cabo Verde Broadcast (CVB) the go-ahead to switch off all analogue terrestrial TV services from August, in a bid to kick-start 4G services.

This process is aimed at freeing

up frequencies that can be used for 4G as the country works on upgrading and expanding LTE network services. There will also be a continuing transition from analogue to digital terrestrial TV (DTT), something that has been underway for some years in Cape

Verde and other African nations.

In Cape Verde the analogue TV switch-off will free up a chunk of 800MHz 4G spectrum. However, Cape Verde's incumbent mobile operators, CV Movel and Unitel T+, have already launched commercial 4G 1800MHz services.

The Cabo Verde Multisectorial Regulatory Agency of the Economy (ARME) handed commercial 4G LTE mobile licences to the two operators in late last year. It followed about three months of network trials that began in June 2019 on the island of Sal, the fifth most populous of the 10 islands.

Ethiopia Telecom auction set for 2021

 Ethiopia has set a new deadline of February 2021 to complete the partial privatisation of its telecom industry.

The government is keen to auction two new mobile-network licenses and sell a minority stake in the state-owned monopoly Ethio Telecom. A plan was set for earlier this year but was delayed by the Covid-19 pandemic.

"We have a February, January timeline for both processes," said Eyob Tekalign, the state minister of finance. "The reform is fully on track."

Ethiopian prime minister Abiy Ahmed announced plans to liberalise the telecom industry back in 2018, in a bid to bring in much needed foreign exchange and boost the economy, while improving connectivity across the Horn of Africa nation.

Orange is understood to be a strong candidate to win one of the two new licences. South Africa's MTN and a consortium led by the UK's Vodafone are also said to be in the running. Both were on a list of companies that submitted expressions of interest released by the government in June this year.

"The Ethiopian authorities have said that 12 directives will be issued that will enable us to put together a business case and an investment case," a spokeswoman for MTN said in an emailed response to questions. "This is still work in progress and we have not yet made any decision on the opportunity."

Ghana readies towers overhaul

 Ghana has initiated its one-month public consultation for input on revised guidelines for the deployment of telecom towers, the country's National Communications Authority (NCA) has announced.

The body said the review will include emerging industry standards and procedures for the installation of communication towers, facilitate the development of infrastructure to enhance the delivery of quality service and address environmental issues.

Aspects of the former guidelines to be revised include changes to the specified radius for the construction of a new tower from 400m of the proposed site to 300m (if in a built-up area) and 200m if not, as well as the waiting time to secure a permit from all coordinating agencies adjusted to 90-days.

Furthermore, there is a new clause that forbids any sanction being applied to a sited tower that is compliant with the stipulated location requirements of the guidelines but compromised by electricity providers.

As part of requirements for co-location, operators will now consult with the NCA and the Environmental Protection Agency (EPA), as well as collaborate with them to negotiate co-location-related issues such as site access, security access, rates and compensation.

In addition, tower owners will also have to provide information about towers that are available for co-location to the NCA, EPA and Metropolitan, Municipal and District Assemblies on an annual basis so as to maintain a database.

The rationale behind infrastructure sharing is to



The body said the review will include emerging industry standards and procedures for the installation of communication towers, facilitate the development of infrastructure to enhance the delivery of quality service and address environmental issues

prevent network tower investment duplication in single locations but it has not been effective in Ghana as the NCA had expected, according to a study presented in a telecom conference paper by Alexander Osei-Owusu and Anders Henten in 2017.

At the time, the authors claimed approximately 40% of tower sites in cities like Accra and Kumasi had one co-locator, despite more co-location arrangements expected of them.

They added that because of the nature of tower agreements and sales, MNOs involved were compelled to serve in the role of 'anchor

tenants on commercial terms' which created 'market misconduct' and a situation in which tower companies were not independent.

The authors pinpointed MTN's working relationship with the American Tower Company (prior to the January 2020 agreement to acquire MTN's 49% stake in Ghana and Uganda operations valued at about US\$523-million) as giving the operator an advantage with regards to decisions affecting competitors, including pricing of infrastructure that favoured MTN and helped the company maintain its dominance.

Iran to send new Nahid 1 telecom satellite into orbit

 Iran will be sending its new Nahid 1 (Venus 1) telecom satellite into orbit, according to local reports.

Although no specific dates were mentioned, Jafar Salehi, the deputy head of Iran's Space Research Centre said the construction of Nahid 1 and Nahid 2 satellites has gone according to plan.

The former was completed three years ago and testing has been completed. It is now ready for launch. Nahid 2, more advanced than its stablemate, is also under construction, with the capacity to reach higher orbits. Salehi added that Iran will soon start designing a Nahid 3 satellite.

Morteza Barari, head of the Iranian

Space Agency (ISA), announced in April that the country plans to send its home-made telecom satellite Nahid 1 into orbit by the end of the current Iranian year (19 March 2021). Barari hopes to complete the flight model of three big space projects, including the orbital transfer system Pars 1 sensing satellite and Nahid 2 telecommunication satellite, this year.

Spain to tax Facebook, Google as telecom companies

 Spain has unveiled plans to tax all companies that operate telecommunications services, such as calls and instant messaging.

Under a new law being proposed by the government, "all operators who provide telecommunication services without having to provide phone numbers. This means the likes of WhatsApp and Telegram would have to register as telecommunications operators and would be taxed based on revenues, said telecommunications secretary Roberto Sanchez in a press conference in which he announced a new draft for the law.

Currently, only phone operators, who can provide phone numbers, need to sign up as telecommunications operators, he added.

Under the proposed rules, which would require parliamentary approval, companies such as Alphabet, Facebook, owner of the WhatsApp service and other internet service providers would have to disclose their sales from messaging services in the country.

Israeli players launch commercial 5G

 Three major Israeli operators have launched commercial 5G services after being awarded licences by the government.

Israel's Ministry of Communications (MoC) has awarded the concessions following last month's auction of 5G-capable spectrum frequencies, in which HOT Mobile and Partner Communications joined forces to acquire a licence, with Pelephone the third winner.

Bezeq, the parent firm of Pelephone, issued a statement confirming that it had been notified of the update to its general licence, with communications minister Yoaz Handel signing off on the operator's new spectrum allocation.

In governmental statement,

Handel noted that Israel had slowed in terms of infrastructure deployment and that 5G would help with "returning to leadership" in the telecoms sector by facilitating "the advancement of industry, high-tech, smart cities and IoT technology".

Pelephone has gone live with 5G mobile broadband in 150 locations including Dimona, Haifa, Kiryat Shmona, Ra'anana and Tel Aviv. Indeed, Pelephone claimed to have installed at least one 5G mast in every major town and city across Israel. Similarly, HOT and Partner reportedly have 250 5G-ready sites in the country, and plan to increase this number "on a regular basis".

Israel's other three operators – Cellcom, Golan Telecom and Mara-

thon Telecom – were unmentioned by the ministry's statement, despite their successful joint bid on 5G spectrum in August's auction.



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University builds the first UK-made end-to-end 5G system

 The University of Surrey in England has created an end-to-end 5G system with all components manufactured in the United Kingdom.

Together with AWGT, a UK-based digital and mobile engineering company, Surrey's 5G Innovation Centre (5GIC) has created a private 5G system that could help secure the country's communications network and thereby strengthen and safeguard the UK's digital economy.

Critical to the system is the use of a portable device - the size of a desktop printer - called the 5G CrowdCell, which is manufactured in the UK by Lime Microsystems. Once connected to a network, the 5G CrowdCell uses

software defined radio technology based on Lime's field programmable RF chipsets that allows coding to perform tasks that are usually reserved for sophisticated and expensive hardware. Coupled with open-source APIs (application programming interface), the 5G CrowdCell can be configured and updated – therefore future-proofing the system for technologies to come.

"This achievement is testimony to the UK's engineering capability and knowledge and emphasises that this nation can play a vital role in the developing global telecoms ecosystem," said Regius Professor Rahim Tafazolli, director of the University of Surrey's Institute for Communication Systems and 5GIC.

Abbey Alidoosti, chief executive of AWGT added: "We are excited to work alongside internationally leading organisations such as the University of Surrey's 5G Innovation Centre and Lime Microsystems to integrate a unique system that will benefit UK industry and showcase UK engineering capabilities."

Dr Ebrahim Bushehri, CEO and co-founder of Lime Microsystems, said: "There has been significant research and development in the UK covering the key aspects of 5G networks. The work of 5GIC and AWGT, coupled with Lime's radio technology, provides a leading-edge solution that capitalises on this visionary investment."

Meanwhile UK government departments are about to receive a proposal for £300 million worth of support for telecom suppliers in the country. The announcement comes as organisations close to the UK government are also looking at the country's capabilities in telecom systems. The government's concern follows the identification of Chinese companies Huawei and ZTE as "high-risk vendors", leaving Ericsson and Nokia to dominate the market. The UK decision followed a US ban on the Chinese vendors. According to some reports, one group of advisers – called the Catapult projects – is putting together a proposal for around £300 million to ensure the UK has "resilient communications".

Infinet Wireless opens new Cameroon HQ

 Fixed broadband specialist Infinet Wireless has opened a new regional office in Cameroon as the company expands its operations in one of the world's fastest growing economic regions.

This new presence will be initially managed by Ludovic Thierry Takam, a Yaounde native and Technical Engineer, who has been with Infinet Wireless since 2013.

He will oversee the establishment of a new platform to enable mutually beneficial exchanges of technology expertise between the Infinet Wireless management teams and their African counterparts. This will include setting up technological programs and qualifications in several universities as part of the Infinet Wireless Academy.

In addition, the presence will be used to deliver the firm's latest technological advances and support its customer base.

Specific focus will be given to verticals such as new infrastructures for service providers of all types, homeland security, mobile connectivity, energy and mining applications, as well as solutions for smart cities.

"Infinet Wireless' cost effective and market leading solutions can make a significant contribution to the economic development of the sub-Sahara region," said Kamal Mokrani, Infinet's global vice



Specific focus will be given to verticals such as new infrastructures for service providers of all types, homeland security, mobile connectivity, energy and mining applications, as well as solutions for smart cities

president. "Our presence much closer to the end users represents a win-win partnership for all stakeholders in the region, allowing us to react much quicker to market demands but also to make available our technological know-how and innovative solutions in the delivery of wireless infrastructures. Africa is a rapidly developing continent, both

economically and technologically, and we are committed and excited to be a part of a history in the making."

The new office launch comes just ahead of the Infinet Wireless Conference 2020, which will explore and showcase the latest and upcoming product innovations in the world of fixed broadband wireless connectivity.

Spark New Zealand launches 5G service in Auckland Viaduct area

 Spark New Zealand has launched 5G services in the Auckland Viaduct area of the country to offer high-speed mobile connectivity to a major international sailing event.

Finnish gear-maker Nokia said the 5G network will leverage its AirScale radio portfolio to deliver ultra-fast data speeds with low-latency. The upgraded mobile network allows Spark's customers to experience new interactive applications while making existing

ones more efficient, even under the significant traffic demands of a major sporting event.

"We help Spark create extraordinary experiences by bringing 5G to customers in Auckland," said Anna Wills, head of Oceania at Nokia. "5G delivers the speed and immediacy requirements of big events like sports tournaments, music concerts and cultural festivals."

Nokia has deployed NetAct across Spark's network. NetAct manages both radio and core networks, and

provides applications that oversee fault, configuration, performance and security management. Nokia is providing network planning and new product introduction support to optimize 5G performance.

Nokia is already supporting Spark's 5G networks across New Zealand. "By leveraging Nokia's technology, we will be able to increase capacity and coverage in the most demanding areas," added Raj Singh, general manager of value management at Spark New Zealand.

Ghana to build 2,000

 Ghana is accelerating the coverage of rural areas with telecom services, after its Ministry of Communications signed a partnership with Exim Bank of China for the construction of 2,000 telecom sites. The site entrusted to Huawei Technologies is to be delivered in September 2021. Although mobile communication in Ghana has experienced rapid development in recent years, the development of rural telecommunications is still relatively lagging behind.

Liberia launches

 TipMe, an electronic payment service provider, has been launched in Liberia to provide individuals and businesses access to useful and affordable financial products and services that meet their needs. Speaking at the launch, the CEO of TipMe Liberia Laureine Guilao, said: "Our app-based mobile money wallet allows customers to send money and receive money in the US and Liberian dollars." Customers can top up or withdrawal from their wallet by visiting the website with a visa or MasterCard.

Kenyan banks ink Huawei deal

 The Kenya Bankers Association (KBA) has penned an agreement with Huawei Kenya that seeks to deepen financial inclusion in the banking sector through further deployment of technology and building fintech capacity. KBA will work closely with Huawei Kenya to spearhead industrywide capacity-building initiatives aimed at promoting knowledge on financial technology innovation, digital transformation and other ICT-related programmes in the banking industry. Launched last year, the plan seeks to promote access to affordable financial services.

Q&A

Jon Lederman vice president of AI Rajant



What was your big career break?

I'm a very independent person and prefer charting my own path, so founding and launching two start-ups - SonicCloud and Spinor - was a break for me. The experience you gain starting a company is immeasurable, and it is impossible to achieve in a classroom or working at a large company. Being an entrepreneur pays back incalculable dividends in leadership, creativity, self-actualization, dealing with success and failure, ethics, and working with people.

Who did you most admire growing up?

Being a musician, I admired John Lennon for his brilliance as a songwriter, lyricist and artist as well as his sense of humour and wordplay - probably above all his honesty and acerbic wit. When I was a kid listening to his songs, I thought all the lyrics had special meaning. It was only later that I realized much of it was just wordplay. But, it's your personal interpretation that matters.

I also admired visionary entrepreneurs, such as Steve Jobs and technical gurus like Steve Wozniak. The computer industry has long since saturated, and there are few places where truly interesting things are happening. If you look hard, they exist.

Also, I admired world-class scientists, like Richard Feynman, for his brilliance as a physicist and person and zany sense of humor.

If you had to work in a different industry, which one would it be?

Most likely, I'd have been a physics professor. By nature, I love learning, and the physical world is endlessly fascinating. Much of life can be rather boring and mundane, but science is an endless source of intellectual gems. Physics is like storytelling. You start with a hypothesis or *ansatz* and then develop a story in the language of nature - mathematics - to flesh out the story. Then you test your story through experiment. If it coincides

with experiment, it's right. Otherwise, no matter how elegant, it is dead wrong and you have to abandon it.

What's the best piece of advice you've been given?

Feynman said, "Study hard what interests you the most in the most undisciplined, irreverent and original manner possible." I try to follow that advice, and I think to achieve progress, that is an absolute requirement. As far as we know, we have one life, and we have our duty to work hard to make it meaningful. Too many people I know chase money as an end in and of itself. If you're going to do something, it better be great or don't bother.

Also, when working on a project or company, surround yourself with A+ players. There is a massive gap between good and great. Working with the latter type will determine what you can achieve. It's not just a matter of raw talent. Equally important is drive and out of the box thinking. As an entrepreneur, you have to be in it for one reason - to build something great. If you're lucky, you have an opportunity to do something that can make some impact on the world to change things for the better. That's the best you can hope for.

Who do you most admire?

I admire qualities in people rather than people themselves. Generally, I admire people who are brilliant and creative and make some positive change in the world through those attributes. But, I think most importantly, I admire people with the courage and perseverance to achieve their goals in the face of adversity. It could be an entrepreneur, scientist, artist, or social engineer or anyone else really.

The environmental crisis facing this planet is, in my opinion, at the top of the list as it threatens not only the richness of the natural world that we often sadly take for granted but fundamentally human existence.

Elon Musk is a person who is an entrepreneur for the right reasons, and the beautiful technology his companies are building truly has a chance to enact social and environmental reform. I admire him primarily because he risked his entire fortune from PayPal on his vision. Who would do that? Almost nobody. He's driven by creating impact, not his bottom line.

What law would you most like to change?

There are many. The uneasy tension between the democratic ideal and our form of capitalism underlies much of the dystopian culture we live in. The extreme form of wealth disparity that has arisen in the last 30 years is highly problematic but, most importantly, deleterious to culture and our democratic idea. We have to ask ourselves what kind of world we want to live in. Small business is an integral part of the diversity in American culture,

Maybe New Zealand.

I still love Cambridge, Massachusetts, because it is one of the last bastions of bohemian intellectualism - and the best street music in the world. Any place with great book stores and great music. So, maybe in Cambridge.

What would you do with US \$1m/ £1m?

I'd invest it all in the startups I am working on. Other than that, the main things I spend money on are education, music, and books. Those things pay the best returns in life. Perhaps, I'd set aside some for a '63 ES 335. And, for sure, I'd donate a portion to help animals.

What's been the best technological innovation in your lifetime?

There are so many - and so many that have not lived up to their promise because they've been applied for nefarious purposes. I'd say GPS is one that doesn't get the recognition it deserves. To me, GPS is on par with the printing

"Being a musician, I admired John Lennon for his brilliance as a songwriter, lyricist and artist as well as his sense of humour and wordplay - probably above all his honesty and acerbic wit"

and right now, it is being ravaged. There is a need for legislation to protect our representative form of government from unraveling.

Laws protecting animals and the environment should be paramount.

Also, the tax system is completely broken. We need more laws guaranteeing the ability of anyone to achieve a higher education regardless of means. That's a win-win for individuals and society as a whole.

Finally, the patent system was broken by the America Invents Act eroding protections for small companies and individuals. That legislation should be overturned immediately.

If you could live anywhere in the world, where would it be?

I love swimming and being near the water, so anywhere close to the ocean that is simultaneously close to cultural meccas is ideal.

press for it offered humanity the ability to navigate anywhere on this planet for the first time. In that sense, it led humanity out of the darkness in the same way the printing press did. Plus, it's the only invention that I'm aware of that relies on both Einstein's theories of Special and General Relativity as an essential component of its operation.

What will you do when you retire?

Honestly, retirement seems boring to me, and I would never be interested in conventional notions of retirement. You are lucky if you love what you do. For me, that means working on interesting and hard problems in creative ways. I feel fortunate that I get to learn new things every day. I'll always be doing that, so retirement is not an option. Plus, golf just doesn't do it for me. ■

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