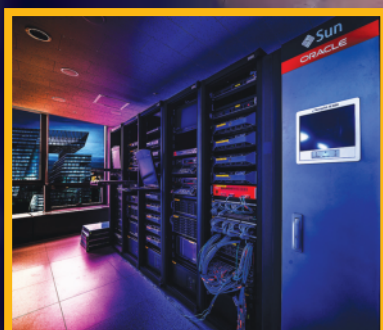


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Communications during a crisis



Broadcasting: The science
behind the subtitles

Spectrum

Cost versus need

4G for all?

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Cover story: 2020 in review
Cover photo: Adobe Stock

A note from the Editor

IN ISSUE ONE of Communications Africa last year we reported on many of the issues that Africa is addressing – or needs to address – in features that touched on satellite communications, OTT TV, fraud, remote connectivity, mobile commerce, 5G and power supply. Twelve months later, as our look back on 2020 makes clear, we are still looking at these topics – but through the prism of a world-changing pandemic.

But other concerns still matter. How should Africa manage spectrum auctions? Why do HetNets matter? What are the prospects for the sub-Saharan African tower industry? How has technology changed dubbing and subtitling? Will more mobile internet mean more malware? Is OTT broadcasting a threat to content providers? How can we increase 4G uptake in Africa? All these issues are addressed here, but so, inevitably, is the ongoing health crisis – and why connectivity has been crucial in helping us to deal with it.

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Telecom Egypt provides Google with a TransEgypt meshed solution

TELECOM EGYPT, EGYPT'S first integrated telecom operator, has signed an agreement with Google to provide the first-of-its-kind layer three meshed solution on Telecom Egypt's redundant and resilient Egypt crossing network infrastructure.

As part of the agreement, Google will also be provided capacity on Telecom Egypt's Mediterranean submarine cable, TE North. The project is expected to go live in the first half of 2021.

This mesh project connects several cable landing stations in the Red and Mediterranean Seas over diverse routes and will increase the reliability of Google's international transit traffic, providing an elevated level of robustness. Telecom Egypt's network can reroute traffic as needed in less than 50 milliseconds, and will also offer high-quality availability features with an SLA portal.

Adel Hamed, managing director and CEO of Telecom Egypt, commented, "It is our sincere pleasure to work with Google and support its mission to increase the reliability of its traffic regionally. This agreement comes in line with our strategy to solidify Egypt's position as an eminent digital hub that connects continents using Telecom Egypt's resilient, multi-routed, and low-latency mesh network that spans the Mediterranean Sea, crosses Egypt, and extends to Singapore."

Telecom Egypt offers the global telecom community access to abundant international capacities with the lowest latency and the shortest protected path from Africa and Asia to Europe, building on Egypt's distinctive geography. The company's advanced infrastructure and its capabilities has led it to become the partner-of-choice for many international telecom players over the years.

Hisham El Nazer, Google Egypt's country manager, said, "With internet penetration accelerating rapidly in Egypt, enhancing the capacity of transit traffic will unlock significant usage potential. We thrive to offer our users a better experience through improved connectivity in Egypt, and across the globe."

Telecom Egypt is working on multiple layers of its infrastructure diversity, such as establishing new subsea landing stations and crossing routes, as well as investing in new subsea systems and solutions that will cater for the wave of global demand for international capacities.



Photo: Adobe Stock

The mesh project is expected to go live in the first half of 2021.

NBS Bank announces e-commerce platform and online payment gateway

NBS BANK, A commercial bank in Malawi, has launched its e-commerce platform, powered by Network International.

The implementation of Network International's N-Genius Online payment gateway will enable NBS Bank to offer small and medium enterprises, large corporations, public institutions and individuals a fast and secure way to enter the growing e-commerce market in Malawi.

Kwanele Ngwenya, CEO of NBS Bank, Malawi, said, "We are providing a sophisticated yet low-cost solution, which will not only help grow but further engage our customer base and help drive online commerce across many segments of the population in Malawi."

Nokia and Airtel Kenya announce deal to lay 5G foundations in Nairobi

AFRICAN MOBILE OPERATOR Airtel Kenya has selected Nokia to partner it in a three-year deal to modernise Nairobi with high-speed 4G and 5G-ready hardware from its comprehensive AirScale portfolio.

Deployment will cover hundreds of sites and include upgrading existing 2G, 3G and 4G radio access network (RAN) coverage in urban and semi urban highways, tourist spots and central business districts in Kenya. Nokia's future-proofed network infrastructure has also been offered to Airtel Kenya to smoothly transition to 5G when necessary. The upgraded network will deliver enhanced connectivity to customers of Airtel Kenya and access to new, high-speed data services.

Nokia is supplying Airtel Kenya with its AirScale Single RAN (S-RAN) portfolio for both indoor and outdoor coverage, including base stations and radio access products. These solutions will enable Airtel Kenya to deliver improved connectivity and capacity benefits to its subscribers while reducing complexity and driving cost efficiencies. The improved

network will provide higher data speeds using additional 4G spectrum bands and provide access to secure, high-speed and reliable data services. As part of the deal, Nokia will also deploy its cloud-agnostic NetAct software solution to securely manage Airtel Kenya's networks.

Rajiv Aggarwal, head of CEWA Market Unit at Nokia, commented, "We are proud to supply Airtel Kenya with our comprehensive AirScale portfolio and support the operator with its efforts to deliver the best possible connectivity experiences to end users in Kenya. In a maturing market, we look forward to helping Airtel execute its strategy in the short term as well as set it on the path to 5G services."

Nokia will also provide digital deployment, network planning and technical support services, helping Airtel to launch its services faster to the market.

P. D. Sarma, CEO of Airtel Kenya, said, "We are excited to partner with Nokia on this project. Its technology portfolio improves our network quality considerably and also allows us to move to 5G services in the future."

Molotov opens seven new markets as part of international expansion

MOLOTOV OFFERS CONSUMERS an easy way to navigate through the content and services of publishers and channels on a single platform, accessible from all devices with a simple and intuitive interface, and a single subscription system.

With so many choices of niche or mainstream programs, live or on-demand content, Molotov addresses a clear need for simplification at a time of global shift into the OTT era.

The launch of Molotov outside the borders of France, by introducing regional versions in seven new markets, marks a milestone in the expansion of the platform.

The service in Côte d'Ivoire was launched in December 2020 and has already gained tens of thousands of paying subscribers. Senegal was to follow in January 2021, Cameroon in February, Burkina Faso in March, Tunisia in April, and Guinea and the Democratic Republic of Congo soon after, before a global rollout in the rest of French-speaking Africa countries.

For Africa, which is mainly equipped with smartphones and tablets, Molotov has optimised its applications to take into account regional specificities (low bandwidths, unstable connections, low-performance terminals). The monetisation of paid offers relies on payment solutions provided by Digital Virgo and in particular its no-credit-card-needed, per day payment system, provided directly by local mobile operators. Digital Virgo, a global provider of monetisation solutions operating in more than 40 countries with 120 telco partners, brings its expertise in African markets and local marketing to this partnership, thanks to its local branches and its 130 employees on the continent.

At launch in the new markets, the line-up consists of fifteen local linear channels, catch-up and on-demand content. Agreements with regional publishers have been reached in order to provide 30 channels by spring 2021.

Logicom reveals voicemail transcription software

LOGICOM, A PROVIDER of next-generation Software-as-a-Service (SaaS) solutions, has announced the availability of voicemail transcription software integration efforts with Mutare, a voice and text messaging solutions company.

Logicom and Mutare have built the software integration services to benefit their carrier customers. The two companies have jointly developed an API to electronically exchange information between their applications to facilitate information and transcription data exchange. The new services are available for deployment and customer use.

With the new Voicemail Transcription Integration Service, voicemails recorded on Logicom's portal can now also see accurate and written transcriptions utilising a simple workflow with Mutare's Voicemail Transcription Service, which utilises speech-to-text solutions to transcribe voicemails.

CCX Technologies to expand into sub-Saharan Africa with Safomar Aviation

CCX TECHNOLOGIES HAS signed an agreement with South Africa-based Safomar Aviation, agreeing to sell onboard cybersecurity solutions within the rapidly growing sub-Saharan Africa market.

A suite of CCX avionics hardware solutions, including the AP-150 Secure Avionics Wireless Gateway, AP-250 Inline Cyber Security Appliance, and other cybersecurity products, will be sold to a wide range of aircraft operators across sub-Saharan Africa as part of the agreement.

"Cybersecurity is an escalating concern among aircraft operators across the aviation market, from government to airlines to corporate," said Chris Bartlett, president of CCX Technologies, explaining: "Safomar and CCX Technologies both recognise the growing importance of cybersecurity and safety to the aviation industry, and we are extremely pleased to partner with this undeniably progressive dealer."

Installed directly onto aircraft, CCX Technologies' cybersecurity solutions help to defend and protect aircraft networks on board. Monitoring network traffic, solutions provide an in-depth view of the vulnerability and security of on-board networks and data buses, protecting aircraft from a number of privacy concerns, possible data breaches or malware and security attacks.

The technological solutions feature advanced intrusion detection and prevention systems, as well as log collection, monitoring and storage. The AP-250 provides aircraft operators with a simple interface to satcom terminals and routers, and can be installed with or without a satcom connection on the aircraft.

The systems also facilitate the mandatory fulfilment of the increasing number of guidelines on cyber security for aviation authorities, including RTCA DO-326/ED202 Airworthiness Security Process Specifications, as well as other mandatory guidelines involving cybersecurity that aviation authorities must conform to to ensure the safety of the aircraft, its passengers and its operators.

"Cybersecurity is new to most of us, but it is not an area we can neglect going forward," said Johan Wentzel, director of business development, Safomar Aviation. He added: "We've always worked to be at the forefront of aviation technology, and cybersecurity is no exception. We pride ourselves on delivering highly customized solutions to our military, police, commercial and corporate clients. This is why we are excited and honoured to partner with CCX Technologies to offer sub-Saharan Africa, the latest solutions to protect aircraft cockpits and cabins from cyber threats."

Ovamba, Singularity target financial inclusion

TRADETECH INNOVATOR OVAMBA Solutions and financial services provider Singularity Finance have partnered to deliver financial inclusion and growth capital to small and growing businesses in Egypt.

Singularity is the first to sign a reseller agreement with Ovamba in the region. This new partnership gives Singularity the right to sell Ovamba's digital solutions to banks, microfinance institutions and other alternative commercial finance providers to small and medium-sized enterprises in Egypt.

Pamoja exists for companies wishing to originate and invest independently in trade finance transactions. Pamoja displays the same capabilities found in BankPartner, streamlining workflows for investor and portfolio management, and financing transactions of any kind.

Mohamed Taysir, CEO and co-founder of Singularity, said, "With this partnership, we at Singularity have been able to expand our financial ecosystem offering by adding a set of bank-grade products that are tailored for our part of the world. Even more so we are empowered to start offering this tool to other banks and MFIs to start rolling out their platforms; this allows for a true disruption in how we as a country can reach financial inclusion."

Viola Llewellyn, co-founder and president of Ovamba, said, "We are really excited about this partnership. Ovamba has invested significantly in BankPartner, Pamoja and Jasmeera. Egypt is an important market, and Singularity is well positioned to pioneer in an era of business growth for small businesses and digital engagement for financial institutions."

Both Ovamba and Singularity, in responding to the near future outlook, said that they expect to be fully engaging banks and serving businesses in Q1 2021.



The deal is Ovamba's first seller agreement in the region.

Wingu.Africa begins construction on data centre

PAN-AFRICAN OPERATOR, WINGU.AFRICA, has broken ground on its hyperscale data centre, set to open in Addis Ababa, Ethiopia. The planned facility aims to establish Ethiopia's first-ever carrier-neutral hyperscale data centre park.

Details of the facility are scarce, but the centre will operate over 161,500 sq ft of land at Ethio ICT Park, Addis Ababa, which the company has vowed will allow it to provide flexible solutions for its customers, and offer secure and fortified server hosting for a number of companies including content delivery networks, cloud services and financial operations.

The construction represents Ethiopia's growing presence within the data centre market, a boost which has seen growth across the market and several constructions planned, with Wingu.Africa itself already planning to build a second facility in Adama City, 60 miles southeast of Addis Ababa where the new facility is beginning construction.

Wingu.Africa's co-founder and CEO, Anthony Vascarides, explained: "We are delighted to be part of Ethiopia's ICT development with our new hyperscale data centres. Ethiopia represents a natural extension of our group's other facilities, and we are delighted to be the first to break ground with a plan to launch commercial service later this year. Our commitment to Ethiopia is to provide a safe, secure, and stable platform for the many talented Ethiopians, including young entrepreneurs with vision and ambition. Wingu.Africa is also committed to developing the sector and contributing to the country with incentives and social programs."

The company currently operates facilities in Djibouti City, Djibouti, and Nairobi Kenya. As well as the planned Ethiopian constructions and expanding its Nairobi location, the company has also announced plans for additional centres in Zambia, Tanzania, Mozambique and Uganda.

“Reliable and fast connectivity is vital to growing a country's economy by opening doors to e-commerce and other global digital opportunities. Liquid Telecom is honoured to be part of this journey in Botswana.”



- Wellington Makamure
CEO
Liquid Telecom Southern Africa
(on a major new fibre implementation)

“We are proud to be the first country in West Africa to offer 5G's incredible connectivity, which is be a game-changer in supporting Togolese citizens with a range of new services and opportunities.”

- Paulin Alazard
CEO
Togoco

“With [new pan-African high-speed fibre network] Djoliba, local populations will be able to access healthcare or

educational services more easily, as well as the applications offered by cloud computing.”



- Alioune Ndiaye
CEO
Orange Middle East and Africa

“The Electricity Consumption Prediction service is a transformative and vital tool that will help direct investments to solve this profound challenge.”



- Joseph Nganga
Rockefeller Foundation
(on satellite-supported electricity consumption forecasting in Africa)

“The objectives of the telecommunications sector reform are to expand reliable and accessible communications for all Ethiopians in order to enhance the economic and social development of the country and promote rapid economic transformation and growth.”

- The Ethiopian Communications Authority

“We are in the midst of rolling out our network to enhance coverage along with modernization of our data network that will help us to deliver improved, high-speed data services to our customers. We are excited to partner with Nokia on this project.”



- PD Sarma
CEO
Airtel Kenya
(on a planned network upgrade)

“Project Taara is now working with Econet and its subsidiaries, Liquid Telecom and Econet Group, to expand and enhance affordable, high-speed internet to communities across their networks in sub-Saharan Africa.”

- Mahesh Krishnaswamy

*General manager
X's Project Taara*

“From 2021 we will celebrate MWC Africa, joining our world-leading platform for thought leadership and technology, recognising the important role Africa will play in our connected future.”



- Mats Granryd

*Director-general
GSMA*

“E-commerce is the fastest-growing form of commerce in the

world. Understanding its role as a key driver of growth for our business, we have launched a world class e-commerce platform with leading payments solutions provider, Network International.”



- Kwanele Ngwenya

*Chief Executive Officer
NBS Bank, Malawi*

“NCC is assuring Nigerians of more improved broadband penetration in the coming years, and 90 per cent of the Nigerian population is expected to enjoy ubiquitous broadband access by 2025.”

- Dr Ikechukwu Adinde

*Director, public affairs
Nigerian Communications Commission*

“We are aware that licensees generated and reported revenue growth during this period. We have therefore resolved that, in addition to

fulfilment of the obligations imposed with the release of temporary spectrum, the extended use of spectrum must be at a fee as provided for in the amended regulations.”



- Dr Keabetswe Modimoeng

*Chairperson
Independent Communications
Authority of South Africa*

(on newly introduced charges for temporary spectrum)

“We are constantly seeking to bring down our debt, and we prefer to bring it down even faster with the tower deals.”



- Raghunath Mandava

*CEO
Airtel Africa*

(on Airtel's plans to shed 4,500 towers across five countries)

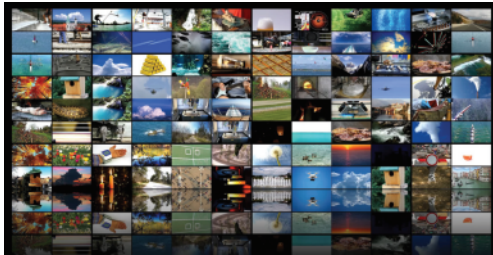
Intigral expands Jawwy TV app and OTT entertainment service into Egypt

INTIGRAL, THE LEADING over the top (OTT) content provider in the MENA region, has announced the expansion of its flagship Jawwy TV app and OTT entertainment service into Egypt through a strategic collaboration with Telecom Egypt "WE" and TPAY Mobile.

The Jawwy TV app encompasses both linear TV and subscription video on demand (SVOD) offerings, presenting viewers with content titles across multiple genres including Western, Arabic, and Khaleeji series in the form of movies, documentaries, lifestyle shows, and children's content. It also includes over 50 free-to-air and encrypted channels, such as Rotana, MBC, National Geographic and FOX HD.

Jawwy TV's extensive video on demand (VOD) library comprises Jawwy TV Exclusive W1 movies, including the latest Egyptian movies as well as Jawwy TV's exclusive original productions. Additionally, the app offers aggregated content from leading global content providers such as Fox+, StarzPlay, Cartoon Network, Wide Khaliji, and many more.

The app is also packed with features, such as subtitles and audio options in both Arabic and English, parental control tools, rewind features for linear TV content, live TV start over options, a recommendation engine, and the ability to use the app and even play the same content on multiple



The Jawwy TV app offers a new digital entertainment platform for viewers.

devices at the same time.

Markus Golder, CEO of Intigral, commented, "We are excited to be entering the Egyptian market, where we will present local audiences with a unique and high-quality OTT viewing experience that will enrich their digital entertainment experiences."

Sahar Salama, founder and CEO of TPAY MOBILE, said, "TPAY Mobile's platform provides one simple integration giving digital entertainment players all-inclusive capabilities for bundling, billing, and multi-channel acquisition access to new markets and audiences covering up to 80% of the Middle East and Africa population. What we bring to the table is an easy and convenient fintech solution built for mobile operators to connect even more users with premium digital services like Jawwy TV."

Liquid Telecom accelerates connectivity in Botswana

LIQUID TELECOM, A leading pan-African telecommunications group, is activating 82 km of fibre in a cross-border network which will give more people in Botswana access to more than 73,000 km of pan-African fibre footprint of Liquid Telecom - and increased access to the global digital economy.

Prior to this fibre implementation, Liquid Telecom Botswana did not have a cross-border connectivity network.

This expansion will connect Lobatse Border to Gaborone with the aim of creating efficient mobility and connectivity in Botswana, giving millions of citizens and thousands of businesses access to Liquid Telecom's One Africa broadband network.

Photo: Adobe Stock

Gilat Telecom enhances SD-WAN system to unlock bandwidth capacity across Africa

GILAT TELECOM HAS announced significant new improvements to its Software-Defined Wide Area Network (SD-WAN MAX), which will help African operators with fibre and satellite networks to increase network availability and bandwidth.

The new SD-WAN enhancements centre around the integration of technology from F5, a leader in application security and delivery, that enables complex traffic management decisions based on the client, server, or application status. Gilat Telecom is also leveraging F5's event-driven scripting language, which is vital to addressing application delivery challenges across any environment.

The integration of F5 makes it even easier for Gilat Telecom to intelligently manage network traffic, including building smart monitors that sample various network components. Depending on the samples, it is possible to change the traffic path, save bandwidth, improve performance, and perform bandwidth control. AI and machine-learning algorithms drive additional traffic management and bandwidth optimisations.

"Our SD-WAN MAX solution enables MNOs, ISPs, and enterprises across Africa to achieve more capacity from less hardware and software. The integration of F5's software is one of a number of improvements we have made in response to suggestions from our customers and partners. We are confident that our SD-WAN MAX is the best available on the market," said Amir Cohen, chief technology officer of Gilat Telecom.

Most MNOs and ISPs in Africa use both satellite and fibre networks to maximise coverage, creating asymmetric traffic routes with end-customers receiving traffic over satellite and sending over fibre.

Gilat Telecom's SD-WAN lets service providers and MNOs centrally control the route that both satellite and fibre traffic takes to and from the customer.

It ensures different applications, such as voice, streaming, caching (Facebook, Netflix, Microsoft cloud services, etc), can be identified with automatic prioritisation, and according to customer requirements. This enables the enterprise to save bandwidth and money.

PostBank and UnionPay International unveil new payment card for Uganda

POSTBANK UGANDA, A financial institution that is committed to empowering people to transform their lives, and UnionPay International, a leading card payment company, have unveiled UnionPay PostCard, a new debit card to enable bank customers to conduct fast and safe cashless transactions across the world.

With the card, PostBank customers can now transact at over 3,000 merchant points in Uganda. Julius Kakeeto, the managing director of PostBank said, "Today, we unveil a significant and highly prized asset because of its importance to our customers who have continued to be loyal to us, despite the current global and local challenges we are facing together. The asset we are unveiling today is the UnionPay PostCard, which is set to bring numerous benefits and convenience to many of our customers across the globe."

The launch of the UnionPay PostCard follows the start of a successful partnership between PostBank and UnionPay International in an effort to take the bank's services beyond Uganda's borders and respond to customer needs.

"To make access seamless and fast, we have rolled out instant issuance of the UnionPay PostCards to our customers in a number of our branches and intend to have this capability across our branch network by the end of this year. I urge our customers to sign up for this card so that they can take advantage of its numerous benefits and experience a new efficient and effective way of payments." Kakeeto concluded.

Deputy governor of the Bank of Uganda, Michael Atingi-Ego, commended PostBank for partnering with UnionPay International to introduce a new and affordable payment card for the market, in addition to launching Digital Banking, Beyi Powa. "I encourage the bank to continuously innovate digital banking solutions that ease the lives and livelihoods of customers, especially in unprecedented times like Covid-19 and beyond," Atingi-Ego commented.

Telco Systems to boost Dimension Data's network capacity in Kenya

TELCO SYSTEMS, A provider of innovative SDN/NFV, CE 2.0, MPLS and IP solutions, and Dimension Data, a leading technology services provider, have announced that they are in the process of upgrading Dimension Data's carrier ethernet network in Kenya.

Dimension Data provides advanced cloud communication, connectivity and carrier services to public and private sector organisations in Kenya and other countries in the region.

The network upgrade will see Telco Systems double the capacity of Dimension Data's carrier Ethernet network in Kenya. This network upgrade will boost the bandwidth and internet service speeds for local businesses and home users twofold at a time when the demand for connectivity in Kenya has risen by 5.1% between April and June.

Tizeti begins roll out of high-speed 4G LTE in Edo

AS PART OF its commitment to ensuring access to affordable broadband connectivity in Africa's underserved populations, Tizeti, a solar-based internet service provider in West Africa, has started rolling out its 4G LTE network in Edo State, with monthly fixed broadband costs pegged at US\$8.

Announcing the rollout of this new low-cost unlimited 4G service in Edo, the chief executive officer of Tizeti, Kendall Ananyi, said that this 4G broadband internet will empower more Nigerians in Edo State, stimulate economic activities and provide unlimited access to affordable and reliable broadband services. It will also complement the Edo State Government efforts in driving investment promotion and building a robust technology ecosystem in the state.

Ananyi commented, "Rolling out 4G LTE broadband internet in Edo at the cheapest fixed broadband prices in Nigeria, and possibly Africa, is a strategic decision for us. We have been building brand-new, solar-powered, 4G-capable towers in Edo, starting with Benin City, which leverages Edo State's expansive fibre network built by some of our partners, MainOne and Facebook."

"Edo State has a large population of vibrant, young people and a high number of higher institutions, which provides a foundation for a robust and thriving ecosystem to enable digital leadership. And the Edo State Governor, Godwin Obaseki, is implementing reforms in investment promotion and determination to build a robust technology ecosystem in the state, with an agenda that prioritises

information communication technology (ICT)-compliant pedagogy in primary schools, improves digital skills for students and graduates and revamps technical education to increase productivity. This has created a perfect environment for us to roll out our low-cost broadband service, starting in Edo State, but with plans to expand across the country over the next few months," Ananyi added.

Ifeanyi Okonkwo, chief operating officer of Tizeti, stated, "The launch in Edo State is personal to us as founders of Tizeti because we are alumni of the University of Benin. We believe the plan is affordable, especially to undergraduate students. This provides a huge opportunity for people in Edo to benefit from unlimited broadband internet for use in online learning, eCommerce and entertainment, especially interactive games, video consumption, and music."

For many countries in Africa, there is still a huge digital divide. This boundary between connected and unconnected translates into clear consequences for employment, education, family and social life, and access to information. According to the World Wide Web Foundation, ensuring fast internet in Africa will enable billions more to come online, and to take advantage of the life-changing socio-economic opportunities that access to the internet provides. With the new service from Tizeti, millions of people in Edo State previously outside the broadband envelope can now take advantage of high-speed broadband internet.

Mastercard expands commercial payment solutions across Africa

FINANCIAL SERVICES COMPANY Mastercard and its strategic partner Network International, have collaborated to drive the adoption of commercial payments and solutions across Africa.

Together, the companies offer business and corporate cards, travel cards, fleet cards and procurement cards, among other corporate payment solutions, to help businesses of all sizes across a wide range of sectors move to cashless and paperless payments.

The suite of payment solutions will allow businesses to save time, reduce costs and simplify the way they manage their business costs. Corporate clients will also be able to benefit from Mastercard's In Control for Commercial Payments, an innovative platform that helps improve user experience by creating an end-to-end virtual payment ecosystem.

Annual commercial spending in the Middle East and Africa is more than US\$4 trillion, but currently, only 1% is spent on payment cards. As commercial cards become more popular in the region, corporate clients recognise the benefits of card products that offer business benefits such as enhanced cash flow, increased visibility, spending control, reduced reconciliation efforts, and a free credit period.

"Our partnership with Mastercard enables us to create a consolidated framework to address some of the challenges and unlock opportunities for issuers, banks and fintechs in the region. We have been accelerating and enhancing our services and innovative solutions to help large and small business, government and merchants to improve their financial well-being," said Simon Haslam, group CEO of Network International.



Covid-19 has led to an increased focus on contactless transactions.

Photo: Adobe Stock

Eutelsat provides connectivity services to the post office network in Côte d'Ivoire

EUTELSAT HAS SIGNED a framework agreement with its distribution partner InterSat to provide connectivity services to the post office throughout Côte d'Ivoire.

The multi-year agreement will enable the connection of about 170 post offices throughout the country. Furthermore, all 170 post offices will be equipped with konnect Wi-Fi hotspots in white zones, enabling the Post Office to offer broadband solutions to its local customers. In the future, its scope could be expanded to 3,000 parcel-points throughout the country.

Leveraging the recently operational high-throughput satellite Eutelsat Konnect, the roll-out of the service will start in January 2021 over a six-month period.

Commenting on the agreement, Philippe Baudrier, chief executive officer of Konnect Africa, said, "We are privileged to support an institution such as 'La Poste' in expanding the scope of its universal service mission. This agreement is the perfect example of how konnect can help both public and private entities in Africa to bridge the digital divide in rural areas. Already providing connectivity to schools, clinics and health centers in several countries, konnect is re-defining connectivity expectations for people who live and work beyond reach of terrestrial networks."

Jeffrey Woods, chief executive officer of InterSat, added, "We are very proud to work together with the Post Office of Côte d'Ivoire. This framework project comes in response to the desire of the Ivorian government, particularly with the support of the post office of Côte d'Ivoire, to deliver high-quality digital services throughout the country to meet the operational needs of its 170 postal offices, but also to ensure the continued roll-out of ubiquitous services to populations living in white areas. Reliable and affordable broadband access has now become a reality."

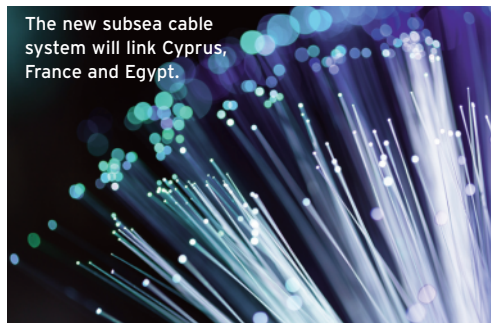
Cyta begins construction on ARSINOE subsea cable system

CYPRUS-BASED TELECOMMUNICATIONS PROVIDER Cyta is proceeding swiftly with the construction of the ARSINOE subsea cable system.

The system, connecting Cyprus to France and Egypt, uses fibre optic technology to provide fast telecommunications services. Its operation will make a significant contribution to Cyprus's growing need for international connectivity, particularly for internet and cloud services. It also expects to serve the international and regional needs of neighbouring countries, thereby strengthening them further.

The minister of transport, communications and works, Yiannis Karousos, said, "It is our long-held policy to strongly support and encourage the creation of infrastructures that strengthen the telecommunications sector and consequently the related economic activity in Cyprus. Especially when such infrastructures are expected to be used for the benefit of neighbouring countries, thus increasing the export of services and the strategic importance of Cyprus, with the corresponding political and economic benefits for the country."

Cyta CEO Andreas Neocleous pointed out that investment in international infrastructure, together with the local development of fibre optic access (Cyta Fibre) and the 5G network, is essential if Cyprus is to become an integral part of the global digital ecosystem that ensures the country's sustainable growth.



The new subsea cable system will link Cyprus, France and Egypt.

Photo: Adobe Stock

The ARSINOE subsea cable system uses the latest technology to achieve high availability and durability of transmission. The system will land at Yeroskipou and is expected to enter into commercial operation in the first quarter of 2022.

Through Cyta's extensive international telecommunications infrastructure, which includes numerous subsea cable systems and teleports linking Cyprus to neighbouring countries and other global destinations, the island has established itself as an important telecommunications hub in the Eastern Mediterranean.

The subsea cable system enhances both Cyprus and Cyta's role as a communication bridge between East and West, increasing business opportunities and providing access to new markets in the telecommunications corridor linking Asia, East Africa and Europe.

Nigeria SIM replacement policy

THE FEDERAL GOVERNMENT of Nigeria has approved a replacement policy for subscribers whose subscribers identification module (SIM) has been lost, stolen, or damaged.

Dr. Ikechukwu Adinde, director of public affairs for the Nigerian Communications Commission, issued a statement on the government's efforts to remove the burden on subscribers, and simplify the SIM replacement process.

The government approved certain conditions to the process, based on the recommendations of the Technical Committee. These conditions mean the subscriber must present a National Identification Number verified by the National Identity Management Commission, and adhere to the relevant guidelines regarding SIM replacement.

Ericsson completes acquisition of Cradlepoint

TELECOM COMPANY ERICSSON has completed its acquisition of Cradlepoint, the US-based market leader in WAN Edge 4G and 5G wireless solutions for the enterprise market. The deal is worth an enterprise value of US\$1.1bn.

Investment is vital to Ericsson's ongoing strategy to capture market share in the rapidly expanding 5G enterprise space, notably across Africa.

Closing of the acquisition follows several months of negotiation following the announcement on 18 September 2020 of Ericsson's intention to acquire Cradlepoint, with the transaction finally completed in Q4 2020.

Using Cradlepoint solutions, companies can connect sites, vehicles, mobile workers and IoT devices in a simple and secure manner using cellular technology. By leveraging the combined offering, Ericsson will be able to generate valuable new revenue streams for its customers by supporting 5G-enabled enterprise services and boosting the return on investment in the network.

Ericsson's global presence and

long-standing relationships with the leading service providers will also help accelerate Cradlepoint's international expansion.

Cradlepoint will operate as a stand-alone subsidiary within Ericsson and continue to build on the current market momentum as 5G is speeding up digital transformation and increasing the need for advanced connectivity services for enterprises. Cradlepoint will be part of Ericsson's Business Area Technologies & New Businesses.

Asa Tamsons, senior vice-president and head of Business Area Technologies & New Businesses, said, "With Cradlepoint's market-leading solutions, we are strengthening our enterprise offering and taking an important step to lead the next wave of enterprise network transformation. Together, we will power solutions to the customer edge that help improve productivity and deliver real-time services, enabling us to drive faster adoption of 5G in enterprise segments. This is good news for our customers as it helps them to accelerate their returns on 5G investments."

GOODsoil VC drives inclusion with Zeepay injection

GOODSOIL VC, AN Africa-centric early-stage venture capital firm headed by a diverse team of entrepreneurial investors, has continued its mission to drive financial inclusion across the continent by injecting US\$940,000 seed capital into Ghana's fintech company Zeepay.

Founded in 2017 by Charmaine Hayden, Orla Enright, Ashley Thompson-MacCarthy and Richard Mensah, GOODsoil comprises 50% female and 75% black partners, all young serial entrepreneurs eager to become economic growth catalysts for minority founders across Africa. The company has pledged to boost financial inclusion across the continent, injecting capital into a number of businesses and initiatives to fuel financial growth throughout Africa.

"There are clear barriers to entry for tech startups to scale, and our vision is to level the playing field. We go by the dictum that talent is evenly distributed; opportunities are not," explained Charmaine Hayden. The company is the perfect fit for entrepreneurs, markets and industries that may typically be overlooked by other VC firms, added Orla Enright.

Zeepay focuses on digital rails to connect digital assets. The company has a footprint in more than 20 African markets. In April 2020, the company became the first indigenous company to be granted an Electronic Money Issuer (EMI) license to operate as a mobile financial services company under the banking and financial services regulator of the Bank of Ghana.

GOODsoil's investment will enable Zeepay to continue to expand and roll out its services across the continent and expand its global reach by launching in the UK in 2021.

"We are delighted to have GOODsoil on board," said Zeepay co-founder and managing director Andrew Takyi-Appiah. "We believe with their strong brokerage background, with leading Ghanaian brokerage firm Obsidian Achenar in their portfolio, we will be able to attract good pricing on foreign exchange for our wholesale clients."

Uganda begins production on solar smartphones

SIMI MOBILE, THE company assembling laptops, smart and feature phones in Namanve Industrial Park, Uganda, has begun manufacturing solar-charged smartphones, targeting clients outside of the electricity grid.

The executive director of Simi mobile, David Beecham Okware, explained, "60 per cent of Uganda does not have power and this phone is coming to answer that question. The phone costs Shs35,000 and we are asking government to make it cheaper so that it can be used for disseminating government information," he said.

The minister for finance for investment, Ms Evelyn Anite, met with the investors who operate the factory, who pitched them their idea in 2019. "This is the company which has taken the name of Uganda to the world of IT manufacturing. We are very proud that you are selling to Morocco and Hungary and created over 400 jobs," she said.

Telecom Egypt to build Egypt's largest international data centre

TELECOM EGYPT, EGYPT'S first integrated telecom operator, has announced the construction of Egypt's largest international data centre facility.

To be commissioned in Q1 2021, and accessing all the global submarine cable systems landing in Egypt, the data centre will be Uptime Institute-certified in design, construction and operational sustainability categories.

Despite the Covid-19 pandemic and its impact on the economy, the construction of the new facility has not been affected and is proceeding according to plan. The facility also received a Tier III design certification from the Uptime Institute a few months ago, following a rigorous assessment of all aspects of the data centre and its operations.

Telecom Egypt's new data centre is very well connected to all 10 Mediterranean and Red Sea subsea landing stations, providing access to more than 60 countries around the globe. Acquiring Tier III Design Certification guarantees that customers of Telecom Egypt will receive the highest level of availability and technical resilience.

In addition, Telecom Egypt's new data centre is characterised by an enhanced placement service and a higher level of redundancy with the ability to expand to meet growing placement needs. This will further contribute to the development of sustainability features that reduce rising energy costs and are closely aligned with international standards.

The facility targets organisations that value premium



Photo: Adobe Stock

The new facility can house up to 2,000 racks over 4 Colo Modular Facilities Campus.

data centre services and consider risk management and lower latency as benchmarks when it comes to selecting data centres. This facility can house up to 2,000 racks over a four Colo Modular Facilities Campus.

This certification demonstrates the clear focus and commitment of Telecom Egypt to transform Egypt into a global digital hub. The new data centre is located in a smart village in western Cairo where many multinational and local companies, government agencies, financial institutions, educational institutions and research and development centres are located.

This project coincides with the country's efforts to accelerate the development of Egypt's ICT infrastructure and digital services and to contribute to regional digital transformation.

Safaricom begin post-Covid recovery

SAFARICOM CEO PETER Ndegwa recently made the announcement of the telecoms company's financial results for the half-year ended 30 September 2020, which saw net profit decrease by 6.0% to US\$300mn with service revenue hitting US\$1.09bn.

"Our business has proved to be resilient despite tough operating conditions. There is no doubt that Covid-19 has dealt a huge blow to many people, not just in Kenya, but across the globe. This has been a tough period for businesses, small and large alike, and our customers," noted Mr Ndegwa.

Despite a 4.8% drop in service revenue, Safaricom increased capital expenditure by 25.5% to US\$210mn, signalling investment commitment to building a network infrastructure that supports the country's economic development. Voice service revenue dropped by 6.5% to US\$370mn, while M-PESA revenue dropped by 14.5% to US\$330mn. Continued customer focus has led to a 10.2% increase in active subscribers over the period of one month, with customers growing across all revenue streams.

"As we go into our third decade as an organisation, we aim to create a technology business by developing new digital ecosystems in health, agriculture and education sectors as we aim to provide digital solutions for our customers," added Ndegwa.

With the new strategy and renewed focus on the customer, Safaricom expects to build on the momentum gained during the second quarter of the period under review, with future plans in place to extend its 4G coverage across the entire country.



Photo: Adobe Stock

Safaricom is targeting 100% 4G coverage across Kenya.

MainOne launches Microsoft Azure Peering Service

MAINONE, A COMMUNICATIONS services company used for business in West Africa, has announced that it has become the first Microsoft Azure peering services partner in West Africa, enabling the company to utilise Microsoft services.

The new Microsoft Azure Peering Service will ensure that enterprises that rely on Microsoft Cloud services, accessed over the public internet, enjoy consistent performance via secured routes. The service will also ensure that customer data is delivered over a dedicated internet connection, rather than public internet on MainOne and Microsoft networks.

MainOne now offers enterprises that can access Cloud applications, such as Microsoft 365, Dynamics 365, Teams, and other SaaS products.

Anil Verma, chief technology officer of MainOne, conveyed that the growing migration of its customers to cloud services influenced the company's decision to collaborate with Microsoft, and to deploy a predictable and reliable connection with Microsoft Cloud services.

He said, "We have noted that an increasing number of Nigerian enterprises make use of SaaS applications due to the agility and ease of onboarding that it offers. With the impact of the global health pandemic, usage of such applications has further skyrocketed. Microsoft Azure Peering Services directly address the connectivity challenges of accessing Microsoft Cloud applications by providing enterprises with the benefits of MainOne's dedicated connection with Microsoft."

Jeffrey Cohen, partner programme manager, Azure Networking at Microsoft Corp., said, "We are pleased to extend Microsoft Azure Peering Service with MainOne. The service improves overall connectivity to Microsoft 365 and ensures each customer's traffic takes the shortest path via MainOne into the nearest edge Point of Presence (PoP) on the Microsoft network."

Can tower supply in Africa keep up with demand?

TowerXchange Meetup MENA is going to be a virtual event like last year's telecom infrastructure-focused event TowerXchange Meetup Africa Borderless 2020. Matthew Edwards of TowerXchange tells Vaughan O'Grady how last year's show went and discusses a recently published analysis of the sub-Saharan African tower industry.



Photo: Adobe Stock

“Major African towercos were able to keep sites fuelled and maintained through the initial lockdowns and curfews.”

THE TOWERXCHANGE MEETUP MENA is described as the only event for the regional telecom infrastructure industry. The third edition of the event will take place in a virtual format from 30-31 March.

Key decision-makers and leaders from the MENA telecom infrastructure industry will come together digitally for two days of networking and knowledge exchange: towercos, MNOs, investors and solution providers. But how does a virtual telecom infrastructure event work? Luckily there is a precedent.

Key decision-makers and leaders from the African telecommunications infrastructure industry met at TowerXchange Meetup Africa in October 2020 – as they had for the seven previous years. This time, of

course, there was a difference: Africa's passive telecom infrastructure leaders met virtually.

As Matthew Edwards, head of research, EMEA, TowerXchange, an open community for thought leaders in the global tower industry, explains, not only did the format of this meeting place change thanks to Covid-19 but the industry as a whole has had to face new challenges due to the pandemic.

As he says, “This was our first African virtual event, but our eighth digital show in 2020. The coronavirus crisis has forced all of us to find new ways of doing things. Our role as a community host and industry reference is more important than ever now that international travel is so difficult – so we had to react quickly.”

A large number of visitors and

speakers from Africa attended, which must have been gratifying – and even had a few benefits. When it's not virtual, the show takes place in Johannesburg and often only senior management can attend. “But because our show was free and virtual we attracted attendees from all across Africa: Cote d'Ivoire, Ethiopia, Cameroon, Senegal, you name it!,” says Edwards, adding, “To be able to bring new insights and connect people in a new way in such a difficult year was my highlight.”

There were many interesting panels and keynotes at the show, but participants come to these events to network and this remains key. Edwards explains, “Telecom infrastructure is a capital-intensive business, but business in Africa requires personal relationships and

Events/Événements 2021

FEBRUARY/FÉVRIER

3-4	Future Datacentres and Cloud Infrastructure Summit	Dubai, UAE	www.expotradeglobal.com/events/futuredatacentre
17-18	Smart Data Summit	Dubai, UAE	www.expotradeglobal.com/events/smartdatasummit
23-25	SAFEX	Algiers, Algeria	www.securanorthafrica.com/en/

MARCH/MARS

8-12	INTERNET WORLD EXPO	Munich, Germany	www.internetworld-expo.de
17-18	Cyber Security & Cloud Expo Global 2021	Virtual	www.cybersecuritycloudexpo.com/global
18-19	Blockchain Africa Conference	Virtual	www.blockchainafrica.co
22-24	5G MENA	Virtual	https://tmt.knect365.com/5g-mena/

APRIL/AVRIL

5-7	COMEX	Muscat, Oman	www.comex.om/2020/
12-16	HANNOVER MESSE	Virtual	www.hannovermesse.de/en

MAY/MAI

24-26	CABSAT	Dubai, UAE	https://www.cabsat.com/
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JUNE/JUIN

29-30	SECUREX West Africa	Lagos, Nigeria	www.securexwestafrica.com
28 June- 1 July	MWC Barcelona	Barcelona, Spain	https://www.mwcbarcelona.com/

meetings to build up trust, so we worked hard to make sure the networking worked.”

Among the approaches used were a platform with text messaging, video calls, interactive roundtables and giving sponsors personalised booths to welcome people online. Not only were there no complaints, but, he says, “some people even preferred it because it was so efficient”.

Among the conference tracks one would expect at such an event was, inevitably, one that analysed the effect of Covid-19 on the industry. As Edwards explains, telecoms has been a vital sector for everyone over the past year, so it was important towercos kept sites active. “Thanks to contingency plans at all the major African towercos, and because their crews were designated essential service workers in most territories, they were able to keep sites fuelled and maintained through the initial lockdowns and curfews.”

The downside, not too surprisingly, was supply chain disruption and postponed planned builds. As Edwards says,

“Changes in patterns of work affected towercos, as planned new sites in commercial areas were not needed, and new capacity was needed in residential areas, but,” he points out, “towercos were able to add leases in residential areas, so that capacity was expanded where people actually were.”

A completely different consideration, and one that might have been even more central without the pandemic, is OpenRAN, which was a discussion point at Meetup Africa. According to Edwards OpenRAN is already having an impact in Africa, “and I expect its influence to grow”.

Africa Mobile Networks, for example, is a rural specialist with a proposition built on OpenRAN principles. It targets rural areas, builds telecom sites, and manages both passive and active parts of the network for MNOs. “This model wouldn’t be

possible,” says Edwards, “without OpenRAN reducing headline capex and power opex so much. I expect to see many others copying this model over the next years.”

However, he suggests, transmission is a significant barrier to further investment in 4G and densification in Africa. “Wireless connectivity has enabled Africa to leapfrog fixed line infrastructure, but you cannot build proper 4G networks without fibre backhaul, so you should expect to see the growth of fibre networks go hand in hand with densification of networks.”

TowerXchange recently published a new analysis of the sub-Saharan African tower industry. How optimistic is its outlook for market growth, market opportunities and ease of doing business?

Edwards starts by reminding us of the strong macro fundamentals that drive investment in Africa. As

he says, “In Finland 270 people are serviced by each base station; in Nigeria the number is closer to 4,500 people per base station. On current trends, the population of Africa will double by 2050.” That growth rate means that Africa needs another 9,000 towers just to stay still. “Tower demand in Africa is chasing a moving target,” says Edwards.

As we know, there are three major towercos investing in Africa now and increasing numbers of tower entrepreneurs raising capital to join them. But doing business in Africa is still difficult. “For example,” says Edwards, “Ethiopia is a potentially major new market – but it will be hard to do business there.” However, he adds, “The market opportunities are there for those willing to grab them.” ©

To find out more about TowerXchange, and to read its analysis of the sub-Saharan African tower industry, go to www.towerxchange.com/africa / For more on the MENA event, go to www.towerxchange.com/meetup/meetup-mena/

“Transmission is a significant barrier to further investment in 4G and densification in Africa.”

The small cell shared infrastructure solution

Denser networks are needed for 4G and 5G rollout - but such an approach isn't going to be cheap. Richard Kennedy, COO, Small Cell Forum, explains why diversity enabled by shared infrastructure is not only a useful model for HetNets but a potential way forward for economic rollout of networks in emerging markets.

THE ECONOMICS OF deploying cellular networks at scale are increasingly challenging, as demands for higher data rates and better coverage go up, but user willingness to pay higher fees does not.

So how can outdoor networks deliver both the performance users require, and the profits operators need – especially in rural or suburban regions of emerging economies? The new approach will rely far more heavily than previous cellular networks on asset sharing, as well as automation – but it will also support a wide diversity of equipment and services.

Small Cell Forum* believes it is crucial to define and promote these new approaches, to lower barriers to deployment of HetNets that can bring much-needed connectivity to millions of citizens and businesses.

HetNets – heterogeneous networks – use multiple types of access nodes in a wireless network, including both macrocells and small cells. Small cells are low-powered radio access nodes or base stations operating in licensed or unlicensed spectrum that have a coverage range from a few metres up to a few hundred metres. Such networks are likely to be denser than ever before.

There are two secrets to success for this new approach to cellular build-out. One is diversity – a network that can be constructed from many different types of equipment, spectrum and sites, in order to support the widest range of applications and revenue streams at the most efficient cost.

Gone are the days when the only way to reach an underserved community was to invest in a macrocell in sufficiently low-

Can HetNets keep rural populations connected as 4G and 5G roll out?



frequency spectrum that it could cover many kilometres, and so reach enough people to turn a profit. A far better balance between performance and cost can be struck with a cluster of small cells, deployed so that capacity is targeted where communities are based, rather than wasted on a huge area where many places are uninhabited.

These clusters can provide services to a village, a farm or a

remote industrial site, and can deliver full broadband speeds and bandwidth, and can often be mounted on all kinds of street furniture, low-level buildings or even underground.

Creating that cluster then enables operators to layer a diversity of revenue-generating services on top of the network, rather than being constrained, by a sub-GHz macrocell, to basic voice and data offerings.

Where there is wireline broadband access available, the services can include fixed wireless access and TV, making 4G (or future 5G) the only telecoms and media platform. That allows the operator to tap into users' entire spend on these areas, rather than just mobile, which is important in low ARPU areas.

And if the network can reach business and industrial locations, as well as transport routes, the targeted cells will have sufficient capacity and quality of service to support business services – and their higher ARPUs – too.

Small cells can go a long way to make the case for deploying mobile broadband in dense urban environments or rural communities.

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How to reduce energy consumption

What sort of power demands should we expect from intelligent buildings - now and in the future? It's a question that will matter more and more as smarter systems become the norm. Dinesh OP, technical manager for Africa at IT infrastructure solutions company Siemon, tells Phil Desmond why.

ACCORDING TO THE International Energy Agency (IEA), the buildings sector accounts for 30% of total final energy use globally, more than 50% of global electricity consumption and 25% of energy-related CO₂ emissions.

Can this consumption be reduced? Dinesh OP, technical manager for Africa at IT infrastructure solutions company Siemon, says, "One of the most effective ways of reducing energy consumption in buildings is through the implementation of integrated systems that allow a complete understanding of a building's energy usage. Intelligent buildings monitor and control energy use and are therefore able to significantly lower energy consumption."

This is where remote power comes in. The term remote power or remote powering refers to how power is being supplied to low-voltage building systems and devices including surveillance cameras, wireless access points, lighting and so on.

Traditionally, AC power runs (separate power cables and outlets) would supply the power required. However, many building systems and devices have become IP-enabled, meaning that they can connect to the IT infrastructure built on structured cabling and that they can receive power over the standard twisted-pair copper cabling infrastructure. The electrical infrastructure is no longer needed – with power cables and power outlets becoming obsolete.

OP explains, "This leads to tremendous savings on material and labour (notably installation work). The benefits that remote powering delivers includes faster deployment, 75% less cost than an AC power run and the ability to receive centralised back-up power, to name just a few."

"The more intelligent a building becomes, the greater the opportunity to achieve power savings."



Photo: Siemon

Siemon's Cat6A Z-MAX outlet with PowerGuard technology. To combat the effects of heat build-up, Siemon has incorporated PowerGUARD technology into its Category 6A and 7A cables. For more information: go to: siemon.com/powerguard

Power over Ethernet (PoE) is a specific remote powering technology. The first generation of PoE – IEEE 802.3af Type 1 (15W) – was used for powering lower-power devices like IP clocks, VoIP phones and simple security cameras. Then came the development of IEEE 802.3at Type 2 (30W), higher level IEEE 802.3bt Type 3 (60W) and Type 4 (90W), and POH (100W) for AV applications.

OP says, "Remote powering technology now powers everything from wireless access points, advanced pan-tilt-zoom cameras, access control devices and LED lights to video displays, point-of-sale machines and even desktop computers and laptops.

The opportunity for the devices powered up to 90W / 100W in a building to adopt PoE are endless," he adds.

Besides lighting, wireless access points and access control, there are now devices like thin clients, desktop computers and large mobile devices that are also starting to take advantage of PoE. OP says, "PoE computers are among the most energy-efficient computers in the world; they consume less than half the power of an equivalent desktop computer on average.

"Also," he adds, "the availability of 90W Type 4 PoE will enable larger screens (up to at least 42") or multiple screens and may even expand the role of PoE computing in digital

signage applications."

As for challenges, there is a potential for heat build-up within cable bundles and electrical arcing damage to connector contacts that can be caused by higher levels of remote powering. "It is therefore important to deploy cabling infrastructure that is designed to provide superior remote powering support," says OP.

He continues, "To ensure reliable performance and contact integrity it is important to ensure that the connecting hardware has been independently certified for compliance to the standards IEC 60512-99-001 (PoE Types 1 & 2) and IEC 60512-99-002 (PoE Types 3 & 4). They were specifically developed to ensure reliable connections for remote powering applications deployed over balanced twisted pair cabling and minimal or zero de-rating of cable length at an operating temperature of 60°C and above."

There are of course specific requirements that the cabling infrastructure needs to fulfil in order to support power delivery.

We've mentioned temperature build-up. Here it may be wise to select shielded – rather than unshielded – copper cabling systems. As OP points out, "Shielded category 6A or category 7A copper cabling for example will maintain cabling performance as these

solutions are qualified for mechanical operation of up to 75°C and provide greater thermal stability.”

In addition, to avoid possible damage to contact seating surfaces when the cabling is disconnected from a live device under PoE lead, he recommends the deployment of connecting hardware that complies with IEC 60512-99-001 (PoE Types 1 & 2) and IEC 60512-99-002 (PoE Types 3 & 4).

Do not forget too, that many of the devices that benefit from remote powering technology reside in the ceiling (such as PoE lighting fixtures and IP cameras). Therefore cabling designers must become familiar with new configurations, such as zone cabling topologies.

Overall, the intelligent building concept itself aims to reduce energy consumption while enhancing user experience. According to the EPA [Environmental Protection Agency], intelligent ‘green’ buildings can reduce energy use by up to 70%. “This will translate into

“Policies increasing the availability of affordable internet need to include improving the availability of electricity.”



Photo: Siemon

Siemon's Cat6A Z-PLUG with PowerGuard technology

reduced energy load on local power service providers and backup generators,” says OP.

Another important policy consideration relates to the synergies between electricity access and internet adoption. “Enterprise and business access to electricity is an important driver of internet adoption,” OP points out. “Policies increasing the availability of affordable internet need to include improving the availability of electricity.”

“So,” he says, “with PoE gaining a lot of ground in Africa, especially in sub-Saharan Africa, it is key that the cabling infrastructure is installed properly, is future-proof and is scalable.”

He adds, “Remote powering including Power over Ethernet is a key technology supporting the Internet of Things (IoT). The IoT in turn forms an integral part of smart city developments. Whilst smart city projects in Africa are still a vision for the future, the African continent is experiencing a wave of rapid urbanisation. With more people migrating to cities, cities will need to find new ways of tackling the problems that are likely to affect quality of life, including growing power demands and strained infrastructure, as well as the need for safety and security.” ©

Established in 1903, Siemon specialises in the design and manufacture of high-quality, high-performance IT infrastructure solutions and services for data centres, LANs and intelligent buildings. www.siemon.com

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The second secret to success lies in sharing. While the small cell form factors and the applications need to be diverse to suit any of a multitude of deployment and commercial scenarios, the infrastructure and specifications underneath them must be as unified as possible.

SCF has stepped up its work to drive technical specifications, commercial frameworks and regulatory agreements, to facilitate neutral host and multi-operator models, which are particularly important in emerging markets where ARPU potential may be constrained.

Sharing infrastructure – sites, backhaul, power and other assets – can greatly improve the cost base and ROI for small cell networks. Some regulators are starting to pressurise operators to build shared rural networks to reach underserved citizens.

Sharing of underlying infrastructure is the starting point. Operators are becoming accustomed to sharing cell towers and accompanying power and backhaul resources, and the habit of building on sites that are run by a neutral host, or shared by several MNOs, is spreading to small cells.

Given the number of different sites that

must be built out and maintained to support an industrial zone or even a rural community, shared infrastructure is often the only way to make an outdoor small cell economical at any scale, reducing total cost of ownership by as much as five times, according to a survey of 40 cellular network deployers in Africa and emerging Asia.

This is not just about infrastructure sharing. The more the small cell industry cooperates on technical specs and management models, the lower the cost and time to deploy of a network that can start to support services and revenue streams from day one. Under SCF's auspices, technologies to enable open, multivendor networks, from chip to management layers, have been evolved over a decade. These are important to increase competition and innovation in the industry and reduce TCO.

Another key area of activity, which is critical to the economics of 4G/5G in emerging

Shared infrastructure is often the only way to make an outdoor small cell economical at any scale.

markets, is automation of the provisioning, management and orchestration of small cell networks, which can reduce operating costs by as much as 40 per cent over the lifetime of a deployment.

When all these efforts are combined, the options for bringing broadband connectivity to underserved users are far wider, with many ways to enhance revenue potential and reduce cost. Unified platforms reduce the cost and risk of deployment but maintain sufficient flexibility to be adaptable to many local and regional scenarios. Meanwhile, shared sites transform the ROI and introduce additional financing, from neutral hosts with expertise in infrastructure investment, to the equation.

There are still significant challenges, particularly in backhaul. However, it's becoming clear that small cells can go a long way to make the case for deploying mobile broadband in dense urban environments or rural communities, at realistic cost levels for operators in emerging economies. ©

**SCF members are committed to driving network densification worldwide. To find out more about SCF visit: smallcellforum.org*

Making a date with malware

Mobile internet use is believed to be at or around only 49% in Africa - but take-up is growing fast. This, however, could have major security implications, as Lehan van den Heever, enterprise cyber security advisor, Kaspersky in Africa, tells Ron Murphy.

MOBILE INTERNET HAS a clear appeal in all regions, but in Africa, where access to fixed line communications is not the norm, mobile could eventually be the dominant platform for internet access. Does that mean we should be considering the security implications of widespread mobile internet use?

Lehan van den Heever, enterprise cyber security advisor with cybersecurity company Kaspersky in Africa, suggests education is the key. "If people are not aware of the cyberthreats in the mobile internet landscape, they cannot be expected to defend themselves against them," he says. And of course, given the potential for mobile internet growth on the continent, Africa will become an attractive target for cyberattacks.

Thus, he suggests, the mobile threat trends of 2019 in major markets – including malware, stalkerware and accessibility services exploitation – will turn their focus on the African continent. He warns, "In the rush to embrace the mobile internet and all the associated advantages it brings such as online banking, shopping, accessing streaming content and the like, care must be taken to not ignore cybersecurity foundations and best practices. Much of this comes down to applying common sense – such as not installing apps from unknown sources, checking the permissions of apps, and using difficult-to-guess passwords to log in to online accounts."

As for how well informed end users are in Africa, when a previously disconnected population gets access to mobile internet many people may not understand what constitutes good



A growing number of mobile threat trends are now focusing on the African continent.

Photo: James/Adobe Stock

cybersecurity practice. Van den Heever suggests, "Service providers must take responsibility for education, but, for their part, users must be open to embrace this and learn from it."

Users should therefore consider getting training on how best to use the mobile internet. "A lot of this education is freely available online. However, it comes down to understanding why there is a need for it and then practically applying learnings to online experiences," says van den Heever, adding, "Having a cybersecurity solution installed on devices helps to mitigate against some of the risks, but it is not a silver bullet that guarantees safety against all possible cyberthreats."

Learning procedures have their ups and downs, of course. As van den Heever says, "Free security awareness training on remote

working from Kaspersky and [adaptive learning company] Area9 Lyceum has seen participants enact correct responses 66% of the time. However, even when learners were wrong, they mostly remained confident in their competences. The most difficult learning objectives proved to be virtual machines, updates, and reasons why people should use corporate IT resources even while working outside the office."

There's also a broader concern around hackers continually leveraging newsworthy events – such as Covid-19, the US presidential elections and major sporting events – to distribute malicious software. There's also adult content. "Kaspersky research has shown that even though fewer tags were used to spread threats disguised as porn

in 2019 (as opposed to the year before), the number of users attacked by mobile porn-related threats and potentially unwanted applications doubled – reaching 42,973 users attacked compared to 19,699 in 2018."

Potentially unwanted applications (PUAs) are another growing threat to mobile internet users. "Not only are PUAs increasingly widespread, but they are also more potent than traditional malware. This can partly be attributed to how these applications are more difficult to notice. Even when they are detected, the creators are likely not considered to be cybercriminals. End users are not always aware that they consented to the installation of these applications in the first place. In some instances, these are used as decoys to hide malware downloads." Again he advises that users try to install cybersecurity solutions that can detect the presence of these PUAs, their impact on the device, and their activity levels.

"In the rush to embrace the mobile internet...care must be taken to not ignore cybersecurity foundations and best practices"

Continued on page 21

Ubiquitous connectivity: dream or reality?

2020 saw some impressive announcements in the field of satellite communications, many of them potentially benefiting Africa. But a future when satellites help to ensure that communications are available to everyone, everywhere is still some way off, says Phil Desmond.

THERE'S A LOT going on above Africa; satellite launches with relevance to the continent are a regular occurrence. But does this race for space benefit ordinary Africans in isolated areas?

A glance at some news stories from the past 12 months makes it clear that there has been no shortage of satellite launches and satellite services with implications for African connectivity on the ground and data gathering in remote or underserved areas of the continent.

In October last year, Spacecom, operator of the Amos satellites fleet, and Ignite Power, a pan-African developer of vital infrastructure projects, announced an agreement through which the companies planned to collaborate on installing e-health connectivity solutions in remote clinics. The aim of these initiatives is to provide local medical teams with immediate access to physicians around the world, as well as data analysis over the cloud. Using designed-for-solar medical devices and systems and satellite connectivity, all will be powered by cost effective off-grid solar systems.

The project partners say that with the support of global medical experts, doctors and paramedics in these rural areas will have the opportunity to expand their reach and knowledge to new treatments and procedures.

Amos-17 was again in the news last year when African telco Paratus signed a capacity agreement with Spacecom for its Amos-17 satellite. Paratus South Africa has contracted services to provide connectivity for remote regions and maritime and aeronautical markets.

In November 2020 Athenia Space told the world that the Eutelsat Konnect communications satellite, launched by ArianeSpace in January 2020, was now fully operational. Eutelsat's new geostationary satellite is designed to deliver large-scale internet access to markets in Africa and Europe and will offer broadband services to companies and individuals alike at speeds of up to 100 Mbps. The Eutelsat-owned satellite



Photo: Adobe Stock

is expected to cover at least 74 per cent of the countries in Africa.

Soon after this – in December in fact – Angolan telecommunications company MSTelcom said it was providing services to bring connectivity to rural Angola. The company has successfully deployed a large network across Angola supported by ST Engineering iDirect's Evolution platform, an IP-based satellite communications system.

Another important use for satellites is in backhaul, and in August 2020 Africa Mobile Networks extended its satellite cellular backhaul contract with Gilat Satellite Networks. The largest of its kind in Africa, AMN's network serves several top-tier telecom operators across the continent using Gilat's very small aperture terminal (VSAT) technology.

Spacebridge is another major name in this area. It announced last year that it had delivered a solution for 2G/4G mobile cellular backhaul over satellite network to an unnamed operator in Africa. The company has said that the solution will service unserved remote areas and replace current technology.

Looking further into the future, Vodacom says it has plans to provide mobile connectivity with 4G and 5G speeds through a satellite-based communications service across several African countries in 2023. The initiative forms part of an agreement between parent company Vodafone Group and AST SpaceMobile, which

is building the world's first global broadband cellular network in space to operate directly with standard, unmodified mobile devices.

The first tranche of AST SpaceMobile's launch plans will involve the use of 20 satellites to offer low-latency mobile connectivity that can be accessed by approximately 1.6 billion people living in the 49 largest countries of the world's equatorial regions – including rural and remote areas of a number of markets where Vodafone will integrate the technology into the services provided by its Vodacom, Safaricom and Vodafone brands.

Not to be outdone, Telkom South Africa has partnered with YahClick to offer internet access and voice over IP services to consumers in parts of the country not covered by its network. Rural areas are expected to be a major target for the satellite-aided services.

Intelsat meanwhile has extended its partnership with African telecom group Liquid Telecom to connect more than 2,000 additional VSATs across the continent. The two companies have worked together since 2016 to deliver Liquid Telecom's VSAT service over Intelsat's high-throughput satellite fleet to provide a communications network to communities, schools and businesses in 20 countries across the continent.

Two recent agreements took a slightly different approach, ingeniously combining

Of course, for agribusinesses in remote areas that can afford it, satellite is ideal.

satcoms, post offices and rural connectivity. Amos again gets a namecheck here. Spacecom will be providing Senegal's La Poste (the Senegalese Post Authority) with over double its current capacity, which will not only serve its 200 remote post offices but will provide the rural population with access to internet services for their own use. Network communication will be via the Amos-17 Ku-band beam and will connect La Poste's VSAT sites to its hub in Dakar.

More recently, satellite operator Eutelsat Communications signed a framework agreement with its distribution partner InterSat to provide connectivity services to the Post Office in Côte d'Ivoire. The multi-year agreement will enable the connection of about 170 post offices throughout the country. All the post offices will be equipped with konnect Wifi hotspots in white zones (where coverage is poor), enabling the Post Office to offer broadband solutions to its local customers.

The use of satellite data can help to reduce deforestation, manage pests and track animals.

Of course, for agribusinesses in remote areas that can afford it, satellite is ideal. Broadband satellite services provider MorClick is making it possible for South African farmers in far-flung and remote areas to stay connected via satellite internet. With satellite, all farmers need is a dish, router and subscription that best suits their personal and operational needs. "Since communications satellites are already in space, farmers don't have to pay for one to be launched," says MorClick, underlining two key developments over the past decade: a lot more satellites and a lot more bandwidth.

Satellites offer important agricultural benefits at government and NGO level too. The

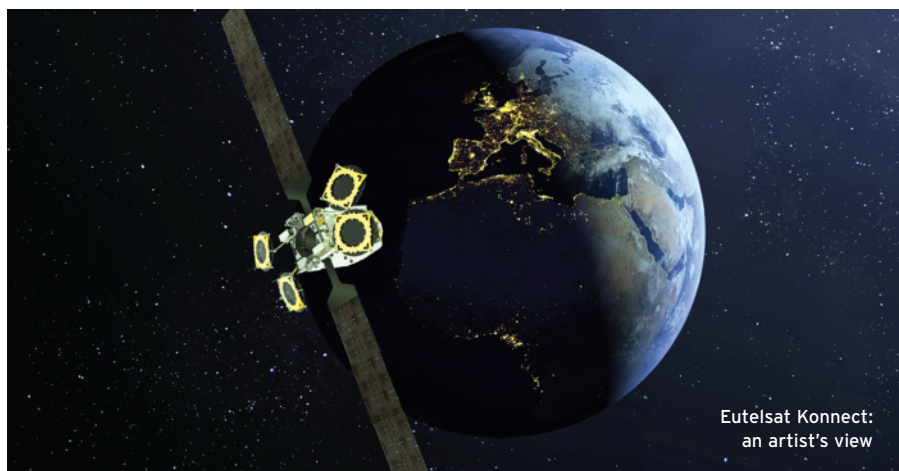


Photo: Thales Alenia Space

use of satellite data can help to reduce deforestation, manage pests and track animals. There's now a free service that sends out alerts about decreases in forest cover in the tropics. There's also a Kenyan-developed app called Kuzi that uses satellite data, soil sensors, local weather patterns and machine learning to deliver predictions on where locusts migrate and breed.

Globalstar, meanwhile, has signed an agreement to supply satellite services to Ceres Tag, a direct-to-satellite animal tracking platform. The Ceres Tag is a smart ear tag that weighs just over one ounce, that attaches to an animal and automatically sends the data to the cloud via the Globalstar satellite network.

These are all encouraging developments – and the role that satellite plays in connecting Africa will expand. As Pieter Paul Mooijman, regional VP Africa, ST Engineering iDirect, has noted, satellite is an ideal solution to provide backbone connectivity to regions such as Africa that have limited access to a fibre or undersea cable infrastructure. Equally importantly, demands for increased capacity and better coverage are driving innovation in geostationary (GEO) satellites and a lot of investment is being poured into non-geostationary satellite orbits (NGSO).

In addition, launch costs are going down,

fuelling the deployments of new low-earth-orbit (LEO) constellations, which are nearer to the earth and therefore offer lower latency. Wireless technology that promises to connect low-earth-orbiting satellites to mobile phones rather than bespoke terminals is not that far off.

And bandwidth availability has been extended, notably with the growth of Ka-band services. Managed satellite service provider SatADSL is widely recognized for providing Ka-band satellite services in Africa's consumer market where it has established 80 local ISP partners and distributors across the region over the past decade. It is now expanding into the enterprise market through its cloud-based services delivery platform (C-SDP).

But the economics of rolling out connections to ordinary people (rather than businesses) in the most isolated parts of the continent remain problematic. Such roll-outs are not likely to happen based on terrestrial networks – but the obvious alternative, coverage from space or the sky, is not always a viable investment for companies and could cost governments tens of millions of dollars.

Ambitious initiatives such as Project Loon, Google's plan to beam high-speed internet signals to Africa's 'not-spots' via hot air balloons, did offer a new way of thinking about connectivity above the earth. But Loon has now shut up shop. There's been no way to get the costs low enough to build a long-term, sustainable business.

In the end, then, it's largely a matter of economics. Governments and NGOs could be convinced to help pay for satellite-led distance learning or medicine or disaster relief. Businesses or rich individuals can afford satellite connectivity in isolated areas. But less well-off consumers in rural or remote areas may have to wait.

However, every year sees more satellite launches – some by African countries – lower launch costs and more and cheaper bandwidth. It probably won't happen anytime soon but over the coming years satellite communications will surely play an ever-greater role in bridging the digital divide. ©



Photo: Loon

Boosting the ride-hailing business in Kenya

With the growth of smartphone ownership in Kenya, it's having a transformative effect on the ride-hailing businesses, as Mwangi Mumbo finds out.



View from passenger seat when riding a tuk tuk. Malindi, Kenya.

KENYA'S ONLINE TAXI business has increased in popularity due to the greater availability of smartphones and the ease of access, seamless ordering and easier payment processes they permit.

The statistics explain this trend. At least 23 million Kenyans use the internet on a regular basis, according to the Communications Authority of Kenya. The country's 3G and 4G networks have a reach of over 90 percent of the country. Not only that but over 52 million people – 98 percent of the population – have a mobile connection; most urban dwellers own a smartphone.

In turn e-commerce has become entrenched in Kenya in recent years, according to Jumia Kenya, an online shop.

It's little surprise, then, that young tech-savvy professional Kenyans have been keen to take up various taxi-hailing service apps being offered by an increasing number of service providers. Another reason for this is that traditional taxi services have been accused of poor service – and even security issues; in recent years, there have been stories of taxi passengers being robbed of cash and other

Technology has revolutionised the industry, putting many of the older taxi operators out of business.

valuables by drivers.

"With due diligence carried out on owners and operators of these taxi-hailing online providers, these vehicles are safe and traceable compared to traditional taxis," observes Ms Jane Kioko, a Nairobi-based banker and a regular user of the online taxi hailing service.

Cab drivers have had to move with the times. Technology has revolutionised the industry, putting many of the older taxi operators out of business, especially in Nairobi and Mombasa.

With at least 33,000 active riders in Kenya, Uber remains the market leader in the country as well in the East African market. In Nairobi, Uber vehicles are easy to spot – some with big logos on their sides as they move through the streets and suburban areas of the city.

In a recent development, Uber and Suzuki Corporation agreed a memorandum of understanding to expand the fuel-efficient Uber Chapchap vehicles across sub-Saharan Africa. The small white Uber Chapchap vehicles are a common sight in Nairobi. They have given thousands of driver-partners and riders a chance to venture into the online taxi business and earn a living.

Uber has also partnered with Stanbic Bank Kenya to finance over 500 vehicles under the Uber Chapchap name as demand for the fuel-efficient vehicles expands.

The Uber Kenya app is available on Google Play Store for Android users and has a user-friendly interface that works well.

Launched in Nairobi in 2016, Bolt – formerly known as Taxify – is another app that has made waves across the country. It has in recent years expanded to other cities including Mombasa, Nyeri, Meru, Kilifi, Nanyuki and Malindi. Bolt is a ride-sharing platform backed by Chinese vehicle for hire company Didi. It is also available in Kampala in Uganda, and other major cities in Africa.

Bolt's most significant feature is the app's intuitive interface; it is also considered

Photo: Lubo Ivanko, Adobe Stock

cheaper than other service providers. Bolt takes only 15% from its drivers, which is lower than the 25% its competitors take. Market analysts say that the lower commission allows Bolt to offer both lower prices for riders and more take-home pay for drivers.

Bolt has also introduced motorcycle taxi hailing services – known as Bolt Boda – for the low-income market.

Another app hailing service provider is Mondo Ride, launched in Kenya in 2016. The United Arab Emirates-owned firm operates in five major cities in Africa.

Another firm, Little Cab Kenya, is considered by many Kenyans to be both cheap and reliable. The parent company, Craft Silicon, has invested millions in offering vital distinguishing features on the taxi's ride request application. A client can, for example, monitor their taxi charges in real time as they ride, while on the app is a corporate option that allows a business to track and manage employee rides down to departmental level.

Then there's Pewin Cabs, which operates a large fleet of independently owned cars, whose drivers are not employees of the company. The firm mainly focuses on business-to-business and local tours. Other Nairobi-based cab hailing apps and firms in the country include Click

While Uber, Bolt and Little Cabs dominate the taxi apps space, the market continues to attract new entrants.

Cabs and Senty.

Wasili Cabs, by contrast, is based in Nakuru – Kenya's fourth largest city – while Safe Boda is a motorcycle-based app. Maramoja and Indriver apps are also angling for a slice of Kenya's cab hailing market.

While Uber, Bolt and Little Cabs dominate the taxi apps space, the market continues to attract new entrants – including American and even Ethiopian firms eager for a slice of the lucrative ride-hailing pie.

A US tech firm called Moovn Technologies recently launched a taxi-hailing app which gives drivers a takeaway of 85% – an interesting move in a market where operators have been complaining about slim margins.

Currently, Uber charges partners a 25% fee on all fares while apps like Bolt and Little Cab charge 15-25% commission from the final price per order.

"Our app is loaded with tons of features and value-added products that will benefit both our

drivers and customers," observed Godwin Gabriel, the founder and CEO of Moovn, during a recent launch in Nairobi. Apart from cars, the app has an option for motorcycles and tricycles (also known as tuk tuks). It is currently in operation in seven states in the US. In Africa, the app is launching soon in Tanzania and Zambia. Meanwhile, Ethiopian taxi-hailing start-up Catch has also entered the Kenyan market, launching in Nairobi. It plans to expand to five other countries in Africa this year. Launched three years ago in Addis Ababa, the app has onboarded over 20,000 drivers and 50,000 riders.

"Our market models ensure strong earnings from drivers and introduce our affiliate programme which allows third parties like drivers, influencer and ordinary individuals to make passive incomes," says Bernard Gavana, Catch's vice-president for growth and expansion.

The entry of cab-hailing apps has changed ways of doing business across Kenya. However, it has also killed many traditional taxi businesses in major cities in the country. As Simon Macharia, a cab driver in downtown Nairobi, says, "Our taxi bay has lost lustre. We have few customers who call on drivers or come here for our taxi service. Many have opted for apps, rendering many of us jobless." ☹

Continued from page 17

Types of phishing and malware vary from region to region. An example of this is the prevalence of malware in dating apps in early 2020 in Africa. Van den Heever explains, "Even though popular dating apps often become bait to spread mobile malware globally, Kaspersky research showed that more than 7,000 attacks on 2,548 users were detected in Africa. As more people connect to these apps (and sites) for the first time, they could easily be fooled into providing personal information for phishing attacks or even downloading malicious code injected in profile or other photos on these sites and apps."

Inevitably cybercriminals adapt their attacks to where the most people are active in a specific region. In one country, people might be on Facebook, while another can see an increase in WhatsApp scams. "It all depends on where these attackers can get the best return on their investment. It is therefore vital for people to continually be aware of the

"Service providers must take responsibility for education, but users must be open to embrace this and learn from it."



Photo: Kaspersky

Lehan van den Heever: "Attacks involving the use of mobile stalkerware have become more frequent."

potential for attack regardless of the platform they are on or the mobile app they use," van den Heever says.

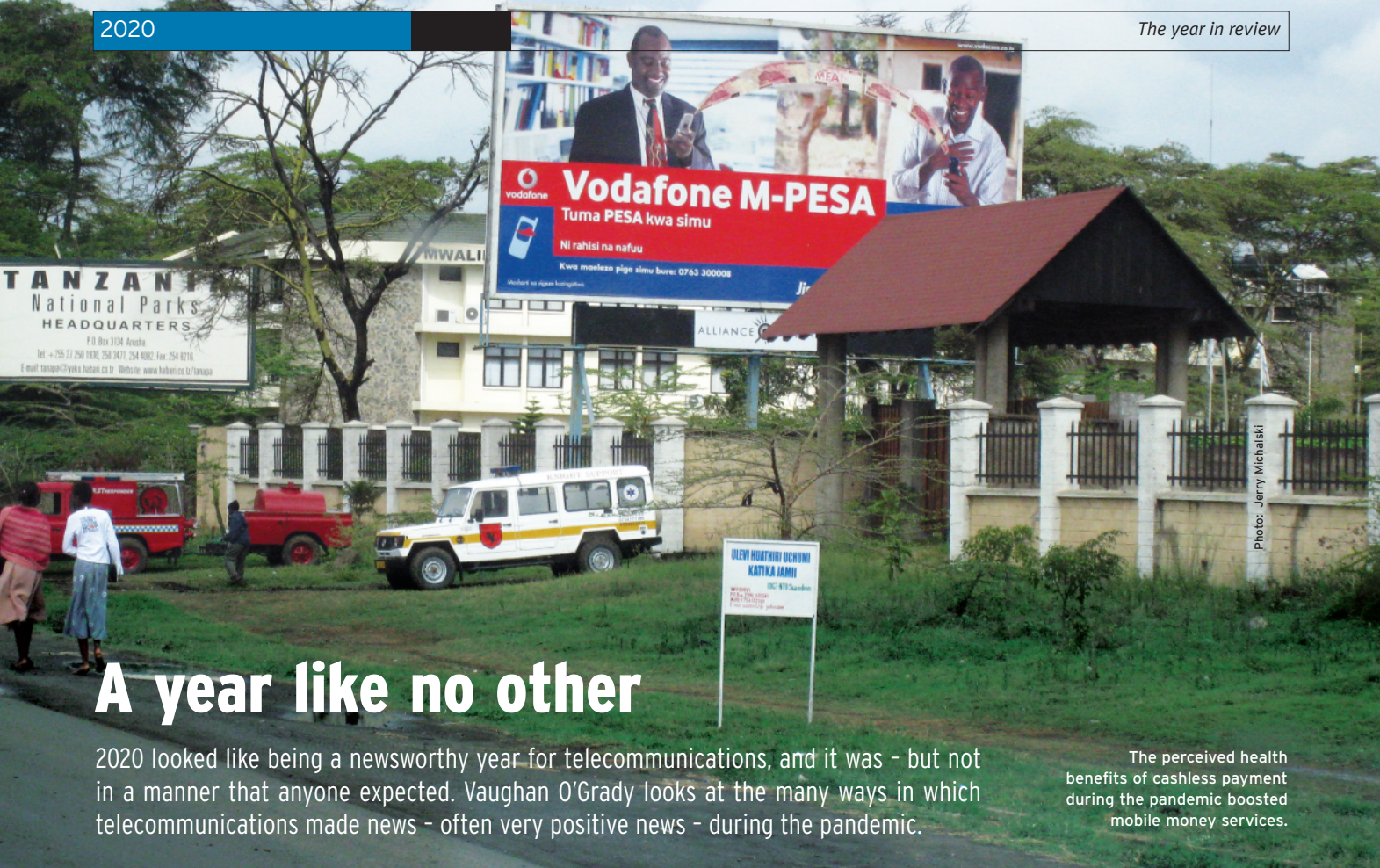
And malware and other attacks on mobile phone security are continually evolving. In 2019, says van den Heever, several highly sophisticated mobile banking threats emerged that could well spawn new threats into the foreseeable future. "Also, attacks involving the use of mobile stalkerware have become more frequent, focusing on monitoring and collecting information about the victim. In

terms of sophistication, stalkerware is keeping pace with its malware cousins."

Cybersecurity vendors are keeping track of all these and other developments to ensure their technologies incorporate the latest innovations to safeguard against these risks. Not just keeping their cybersecurity software up to date but also ensuring the operating system of mobile devices is up to date (to incorporate the latest defensive capabilities) will be essential for end users.

So where will the next mobile-focused threat profile come from? Van den Heever says, "Right now we observe how the 'grey zone' of apps for mobile platforms is increasing. It is easier to monetize legal adware that a user will install without noticing, rather than create a sophisticated scheme of user infection with ransomware. Such programs are marked as potentially dangerous – which means some of them might only influence your smartphone performance – but some might even upload dangerous programs on your phone." ☹

Kaspersky is one of the world's largest privately owned cybersecurity companies, operating in 200 countries and territories, with 35 offices in 31 countries. Over 4,000 highly-qualified specialists work for Kaspersky. kaspersky.co.uk



A year like no other

2020 looked like being a newsworthy year for telecommunications, and it was – but not in a manner that anyone expected. Vaughan O'Grady looks at the many ways in which telecommunications made news – often very positive news – during the pandemic.

The perceived health benefits of cashless payment during the pandemic boosted mobile money services.

THE YEAR 2020 started unexceptionally, at least in telecommunications terms. In issue one of Communications Africa we reported on many of the issues that Africa is addressing – or needs to address – in features that touched on satellite communications, OTT TV, fraud, remote connectivity mobile commerce, 5G and power supply.

Twelve months later, we are still looking at these topics – but through the prism of a world-changing pandemic.

All industries have been affected by Covid-19, mostly for the worse. And certainly, as consumers and businesses reined in their spending, retailers closed and movement was restricted, telecoms was also affected.

Phone purchases suffered just about everywhere, with many end users putting off planned purchases or upgrades as income levels fell. Spectrum auctions were delayed. Engineering and maintenance become more difficult. Investment was held back. Coronavirus has also had a significant impact on production and supply chains globally: network infrastructure and phone manufacture were both hit.

And trade shows – for many, the lifeblood of the industry – were cancelled. In issue one of 2020 we previewed the broadcast, satellite and content show CABSAT. It didn't happen – at least not in the form originally intended. Like many other shows, it went virtual.

By issue two our regular show preview had

been replaced by a look at how African countries were beginning to support access to remote learning during the Covid-19 pandemic.

And that, at least for telecommunications, has been the upside of this health disaster: it reminded everyone of the importance of telecommunications, even – or perhaps especially – in the poorest regions, and what telecoms can do to teach people, to inform them, to help them or simply to bring them together.

For example, televisions, computers and mobile phones have all been adapted for e-learning initiatives through governments, NGOs and operators. It's not the same as being in a classroom but it's much better than not being taught at all.

“This health disaster reminded everyone of the importance of telecommunications, even – or perhaps especially – in the poorest regions.”

Steps were taken in Egypt to implement distance learning and assessment during the school suspension that began on 15 March 2020. In Kenya the ministry of education designed online learning programmes and resources that could also be delivered using radio, television, YouTube and other platforms.

Orange Liberia granted free access to online educational content to students and teachers while schools and universities were closed. South African operator Telkom offered education websites to provide cost-free access to learners. Further north, the Tunisia-based Arab League Educational, Cultural and Scientific Organization (ALECSO) launched an e-learning initiative on 12 March. Ten North African and 12 Arab countries benefited from this initiative.

These were far from the only examples. Telecommunications did much to support continuity in education during this crisis.

Another demonstration of the importance of telecommunications came in the form of mobile money. A flurry of activity in Kenya early in 2020 saw banks and operators make cashless payments easier to carry out. Fees were waived or transfer limits raised.

Many major names – from Mastercard and Visa to NSIA and Ecobank – have embraced the opportunities of mobile or cashless banking to allow them to reach a larger potential market, especially as, since the arrival of Covid-19, the attractions of cashless banking to both governments and consumers have been greatly enhanced.

And many companies have encouraged this. In South Africa, for instance, Ukheshe, a micro transaction platform, launched a 90-day ‘zero rating cash management fee’ to assist South African merchants and consumers using its platform.

The thinking behind encouraging cashless payment has been that less queuing in banks and less handling of bank notes and cash mean fewer opportunities for the contact that could cause the virus to spread. It seems to have been a success – though, ironically, operators like Safaricom and a number of Kenyan banks have apparently lost billions of shillings on the Central Bank of Kenya (CBK) decision to allow free M-Pesa and mobile banking transactions until the end of the year after end users enthusiastically embraced the concept. On the positive side, having tried mobile finance, one hopes that, when the crisis is over, Kenyans will continue to support the concept – even if they have to pay for it.

The pandemic also meant limits to cross-border movement – but more business for Africa-focused money transfer companies. Yes, remittances to poorer countries have fallen due to the pandemic-induced global economic slump, but more Africans have been switching to digital transfer services to send money because travel is often not possible.

And it's not just financial transactions that have been affected. In Tanzania, to help businesses and corporate clients reduce unnecessary movements, Vodacom introduced the DocuSign e-signature platform to aid the signing of various company documents electronically.

Closer to the pandemic front line, the World Health Organisation (WHO) Regional Office for Africa launched the first online training for emergency responders to bolster efforts in tackling the virus. The two-hour session via video link drew 500 participants and focused on the clinical symptoms of the virus and how to triage Covid-19 cases, treat complications and manage severely ill patients, as well as laboratory testing strategy and quarantine strategies.

And social media joined in. In April 2020 Facebook announced it was expanding its Coronavirus Information Centre to 24 more countries in Africa in a bid to deliver news from trusted health authorities.

Meanwhile, as the year rolled on, the virus crept into numerous topics discussed in these pages. In issue 5 one of the articles discussed AI, big data, 5G and smart cities – and how these advances could help us to combat future pandemics. Track and trace initiatives will be less difficult when mobile communications can work with AI to follow the spread of a future pandemic and – who knows? – even help to stop it spreading. Despite the lack of auctions, 5G made headway in 2020. Some countries have gone with 5G non-standalone architecture (NSA), a version of 5G where the network is supported by existing 4G infrastructure. As long ago as 2019 South Africa's MTN announced plans to upgrade its core network to support NSA.

But the virus even influenced 4G and 5G policy. Spectrum allocation was a beneficiary of the health crisis as more and more people used mobile devices to keep in touch or find data. In May, the Postal and Telecommunication Regulatory Authority of Zimbabwe (POTRAZ) allocated free additional 3G and 4G wireless spectrum on a time-limited basis to the country's three mobile network operators – Econet, NetOne and Telecel – in order to help them cope with increased demand for bandwidth during the coronavirus epidemic.

Something similar has happened in Ghana, while earlier in 2020 the South African regulator released emergency spectrum to a number of service providers to ease congestion for the duration of the nationwide lockdown. In fact the virus, it could be argued, even helped to bring 5G forward. Vodacom's temporary spectrum included 1 x 50 MHz in the 3.5 GHz

“Track and trace initiatives will be less difficult when mobile communications can work with AI to follow the spread of a future pandemic.”

band. This spectrum was used to fast-track the Vodacom 5G launch.

We mustn't get carried away by this encouraging news, however. A recent report from analyst firm Analysys Mason says that the telecoms industry will return to modest growth from 2021, but that it will take three years for industry revenue to come back to the pre-Covid-19 level. Revenue may have been helped by greater consumer use of streaming and data, but it has been hit in roaming, prepaid mobile and traditional business services, Analysys Mason suggests that the telecoms industry will suffer a US\$43bn drop in revenue in 2020, equivalent to 2.7% decline from 2019. It foresees a one per cent growth in 2021. The industry is not predicted to overtake the 2019 revenue level until 2023.

In the light of these findings perhaps the most remarkable thing was how much did happen in African telecoms. New low-cost phones appeared, satellites were launched, Loon's (now, sadly, abandoned) plans for balloon-based network support made progress in Kenya and Mozambique, and subsea cables were extended, planned or fixed.

Togocom announced the launch of a commercial 5G network in Lome, claiming it to be West Africa's first. Liquid Telecom is activating 82 km of fibre in a cross-border network into Botswana. Nokia announced a three-year deal to upgrade Airtel Kenya networks, a move that may lay the foundations for a commercial 5G rollout in Nairobi.

There's also been news from the Rockefeller Foundation that satellite imagery is being used for electricity consumption forecasting in Africa for the first time through a new service. Meanwhile, surveys are under way for the massive 2Africa subsea fibre-optic cable project. The cable project, once completed, will connect 23 countries in Africa, the Middle East, and Europe and deliver more than the total combined capacity of all subsea data cables serving Africa today.

All these initiatives are reminders of the importance of telecommunications to Africa's development and economic growth. But in the past 12 months telecoms also showed how it could support people in their efforts to access education, get health information, track the spread of disease, do work or just keep in touch when they couldn't meet face to face, helping, in a modest but important way, to combat the effects of the worst health crisis in decades. ©



When classrooms could no longer be used for teaching, telecommunications stepped in.



Mobile money has been providing a solid platform for new approaches to digital payments. Photo of Vodacom M-Pesa operations Tanzania.

Photo: Vodafone Group

Looking forward to 4G for all

The GSMA's Mobile Economy Sub-Saharan Africa 2020 report is now available*. Akinwale Goodluck, Head of Africa, GSMA, talks to Phil Desmond about some of the topics the report discusses, including the pandemic, mobile money, IoT, the future of smartphone adoption and, of course, a continent adopting 4G and gearing up for 5G.

AKINWALE GOODLUCK, HEAD of Africa, GSMA, has no doubts about the benefits of connectivity in these troubled times.

On the face of it, the news isn't too good. The ongoing pandemic has sparked the African region's first recession in 25 years. Goodluck says, "These developments have significant implications for overall consumer spend, and telecoms spend in particular."

However, connectivity has become even more important during the pandemic, serving as a lifeline for citizens to access essential services. Goodluck explains, "By enabling homeworking, remote education, online shopping and digital payments, connectivity has been crucial in keeping economies active and mitigating the socioeconomic repercussions of the pandemic."

The GSMA's Mobile Economy Sub-Saharan Africa 2020 report addresses this issue – and many more relevant to African communications in the past year.

It has escaped the notice of very few of us, for instance, that, for many mobile operators in sub-Saharan Africa, mobile money has been providing a solid platform from which to leverage opportunities in the digital payments ecosystem. In Kenya, M-Pesa accounts for just over a third of Safaricom's service revenues,

underlining the growth potential of digital financial services for operators. In 2019, the number of registered mobile money accounts in sub-Saharan Africa reached 469 million; this is expected to reach half a billion when 2020 results are assessed. "East Africa is the most mature mobile money market in sub-Saharan Africa, accounting for more than half of total registered accounts," says Goodluck.

As he points out, building on existing mobile money services and the rapid expansion of the fintech ecosystem, mobile operators are introducing innovative features

"The focus in the near term for operators and other stakeholders is to increase 4G uptake."

and establishing new partnerships to better serve use cases in digital payments.

He is especially enthusiastic about the expansion of mobile networks and mobile money in sub-Saharan Africa, which has supported a range of pay-as-you-go (PAYG) business models that make products and services accessible to low-income consumers. "The opportunity for PAYG utility models, and

other applications such as PAYG smartphones, to impact livelihoods across sub-Saharan Africa is enormous," he says.

PAYG utility solutions have a significant social impact by enabling innovative models for energy, water and sanitation services that are affordable, clean, safe and reliable. In sub-Saharan Africa, off-grid households typically rely on kerosene and diesel generators for lighting and power, which have negative health impacts and variable costs. However, PAYG solar models allow people to make incremental payments, often through mobile money, for a solar household system that can power phone and radio charging, as well as appliances such as TVs and fans.

Goodluck sums up, "These innovative PAYG utility solutions demonstrate how enabling users, especially those in low-income segments, to make regular, affordable mobile money payments for crucial energy, water and sanitation services drives both financial inclusion and social impact. The solutions are particularly impactful for women as they often bear the household responsibilities that depend on reliable and safe utility services, such as cooking and childcare. In this light, PAYG utility solutions can also contribute to bridging the gender gap in the use of digital financial services among women."

The GSMA recently launched an Instant Payment Notification Hub to make mobile money integrations easier for mobile operators and innovative utility service providers. Goodluck says, “The platform has demonstrated significant industry value and was recently spun out to [fintech company] Beyonic to reach commercial scale through a competitive selection process. The GSMA Harmonised API initiative also provides the mobile industry with a set of standard specifications that make it easier for third-party integrations. These two tools are key to enabling an ecosystem of more PAYG solutions to reach low-income populations with essential services.”

There are also high hopes for services like the Internet of Things. But what sort of role can cellular IoT (one of a number of approaches to IoT) play in Africa?

IoT has the potential to help address regionwide challenges in key sectors, such as energy, water, agriculture, transportation & logistics, manufacturing and healthcare. However, IoT development in sub-Saharan Africa is still at a nascent stage and faces several challenges. These include limited investment and innovation in solutions and devices that address local use cases, unreliable power supply and low purchasing power among consumers and enterprises.

However, the outlook remains positive. As Goodluck points out, “The number of cellular IoT connections in the region has doubled over the last five years to 16.7 million at the end of 2019. Although this is only a fraction of the 1.7 billion global connections, the upward trend is expected to continue as commercial business models become more viable.”

There were some momentous changes in 2020. For example, the 5G era has now begun in sub-Saharan Africa. However, as Goodluck points out, by 2025 there will be just under 30 million mobile 5G connections in Sub-Saharan Africa – equivalent to almost three per cent of

“The opportunity for pay-as-you-go utility models to impact livelihoods across sub-Saharan Africa is enormous.”

total mobile connections.

As he says, “With significant unused 4G capacity and 4G adoption still relatively low, the focus in the near term for operators and other stakeholders is to increase 4G uptake. This will involve strategies to make 4G devices more affordable and the provision of relevant digital content to drive demand for enhanced connectivity services.”

Vodacom and MTN launched the first major 5G networks in sub-Saharan Africa in 2020, offering 5G mobile and fixed wireless access (FWA) services in several locations across South Africa. This came sooner than expected after the South African government assigned temporary spectrum in the 3.5 GHz range in the wake of the Covid-19 pandemic.

5G trials have been conducted elsewhere in sub-Saharan Africa, including Gabon, Kenya, Nigeria and Uganda. “The immediate opportunity for 5G in South Africa, as well as the rest of the region,” says Goodluck, “is to use FWA to bridge the gap in fixed broadband connectivity for homes and businesses.”

But 4G and 5G growth implies smartphone adoption. However, while at the end of 2019, 272 million people across sub-Saharan Africa were connected to the mobile internet, nearly 800 million people remain offline and excluded from the budding digital economy in the region. “The high cost of smartphones, relative to average income levels, and limited digital skills among rural and less literate populations are the main barriers to mobile internet adoption,” Goodluck explains.

Nevertheless, smartphone adoption

continues to rise rapidly in the region, reaching 50 per cent of total connections in 2020 as cheaper devices have become available. Smartphone financing models are gaining traction, demonstrated by the recent partnership between Safaricom and Google, allowing low-income consumers to pay for 4G devices in daily instalments. Over the next five years, the number of smartphone connections in sub-Saharan Africa will almost double to reach 678 million by the end of 2025 – an adoption rate of 65 per cent.

To put this in context, Goodluck points out, “Smartphone adoption in sub-Saharan Africa is rising, but it lags the global average (64 per cent at the end of 2019) by a considerable margin. Affordability, especially of 4G-enabled devices, remains a key barrier to smartphone adoption.”

On the upside, he adds, “The average selling price of smartphones has reduced significantly in recent years, with the influx of sub-\$100 devices from brands such as Tecno and Infinix, and the growing momentum behind the KaiOS-powered smart feature phones. However,” he continues, “many consumers are still unable to afford the one-off upfront cost of purchasing a device. Against this backdrop, smartphone financing schemes are beginning to gain traction in the region.”

One example came in July 2020 when Safaricom partnered with Google to launch the Lipa Mdogo Mdogo payment plan, allowing customers with 2G and a daily wage to upgrade to 4G devices for a deposit of KES1,000 (\$10) and daily instalments of KES20.

Goodluck explains, “The daily, rather than monthly, payment option reflects the financial culture of low-income users, many of whom earn a daily wage and can only afford smaller payments on a regular basis. More recently, Airtel, Orange and Vodacom Tanzania have launched similar smartphone financing schemes.”

And this brings us back to giving end users access to 4G. “The success of the mobile-enabled pay-as-you-go model for the provision of affordable home solar equipment underscores the opportunity to make 4G smartphones accessible to more consumers through financing schemes,” says Goodluck. “While there are still concerns around the lack of credit-scoring facilities, operators are well placed to leverage account activities, including mobile money transactions, to create a credible credit profile for potential customers.” ©

**The GSMA’s Mobile Economy Sub-Saharan Africa 2020 report is free to download and can be accessed at [gsma.com](https://www.gsma.com). In the second part of this interview, in issue 2, 2021, Akinwale Goodluck will discuss access to digital services, how mobile contributes to economic growth and the future of mobile connectivity in sub-Saharan Africa.*



Smartphone adoption is rising, but cost is still an issue.

Photo: Adobe Stock

African TV goes OTT

As OTT or internet TV become more popular, content providers may be worrying about whether and how they can make money from it. Phil Desmond talks to Digital TV Research principal analyst Simon Murray about global content consumption trends and the future of the African OTT market.

INTERNET TV, OVER-THE-TOP (OTT) TV, mobile TV – whatever you call it, it is having a transformative effect on both transmission and viewing habits everywhere – and Africa is no exception. But do new forms of content consumption offer a workable business model for content providers?

Simon Murray, principal analyst with Digital TV Research, which provides business intelligence for the television industry, notes that the growth of content viewing that doesn't necessarily involve the traditional TV is continuing. As he says, "Globally OTT is booming – albeit, in many countries, from a very low base." He adds, "The US leads the charge with a multitude of options; although several US-based companies have launched, or plan to launch, globally, no other country will have as much choice as the US."

However, as a model for the future direction of other markets, the US could be instructive. Murray explains, "Cord-cutting [the practice of cancelling or forgoing a pay television subscription or landline phone connection in favour of an alternative internet-based or wireless service] has had a devastating impact on the traditional pay TV market – cable, IPTV and satellite – in the US, partly because of the wide OTT choice but also because traditional pay TV is so expensive." He adds, "The US is expected to continue to lose traditional pay TV subscribers."

That said, he believes that traditional pay TV will not die completely. It will survive, he suggests, partly due to distribution partnerships with the OTT players.

So is this a trend? "This level of cord-cutting is not likely to be repeated anywhere else. Traditional pay TV is not as expensive elsewhere and there will not be the distraction of OTT choice seen in the US."

"Mobile-only offers will become increasingly more important – especially in emerging markets with low fixed broadband penetration."

Local players cannot compete on content budgets – except where sport is concerned.



But that is not necessarily good news. "Traditional pay TV will not grow in the developed world," says Murray. "In fact revenues will fall in most of these countries as subscribers convert to triple-play bundles [for example, broadband, landline and TV] – thus spending more overall with an operator, but less on TV."

He adds that there will also be pay TV subscriber growth in many emerging markets that are yet to reach pay TV maturity and where economies are growing.

"For consumers," he adds, "the broadband connection is more important than the TV choice." And he doesn't necessarily mean fixed broadband. "Mobile broadband penetration is a lot higher than fixed broadband in many countries, especially emerging ones," says Murray. And, while it is not an immediate prospect in much of Africa, the rollout of 5G will change things a lot – and could even make


fixed broadband irrelevant.

So what is the future for the big players in this new marketplace? Will competition and costs rein in some more ambitious players like Netflix and Amazon?

Murray believes that OTT – and especially SVOD [subscription video on demand] – will boom for some time, especially given the global rollout plans from big names like Disney+, Paramount+/ViacomCBS, Peacock/NBC Universal and WarnerMedia/HBO. "However," he adds, "not all of these players will survive, with mergers likely."

Relevant to Africa is the fact that, as he says, local players cannot compete with the content budgets of these global players – except where sport is concerned. He suggests that such local players are expected to form alliances on a country-by-country basis with the global players.

Continued on page 30



A number of different actors will be auditioned to find the right voice.

Language lessons

The processes involved in dubbing and subtitling have changed enormously in recent years. Technology has enabled faster and better workflow, but the demands of the market have become more complex too, as Allan Dembry CTO, Iyuno Media Group, explains, in the first of two interviews on the subject.

IYUNO MEDIA Group is known as a market leader in the localisation industry, but this is a position that it has gained, and kept, through a focus not just on high-quality work but on the opportunities that technology offers for improving and enhancing workflow. In a recent interview with Communications Africa, Iyuno CTO Allan Dembry explained what dubbing and subtitling involves and the impact of technology on the process in recent years.

Communications Africa: What is the process involved in dubbing and subtitling – from the arrival of the show or shows to the actual delivery of the subbed or subtitled version?

Allan Dembry chief technology officer, Iyuno Media Group: The full end-to-end process is a complex one, and it's made more challenging by the fact that changes can be made to the materials during the time it's being localised.

We start, of course, with receipt of the materials. At that point quality control is very important, especially for dubbing projects, to ensure that the materials are at the required quality standard. Depending on how many languages we're localising the materials into (and we currently work in over 80 languages), this will determine which localisation teams the work is allocated to. We've got offices around the world in 30 countries, with a large team of both in-house and freelance talent to support the scale at which we operate.

For subtitling the work moves quickly to the linguists who are responsible for the translation and localisation of the dialogue. This means it's not a straight literal translation but takes into account local phrases, culture, idioms and the like to ensure that the translated dialogue is natural to the local languages and both linguistically and culturally relevant.

The local subtitling teams then pick up the translated subtitles and create and conform them. This means that the subtitles have to be timed perfectly to the dialogue on the screen and fit on the screen. They also have to transition correctly between scenes.

The dubbing process is more involved because of the production work required to record and create the localised audio with voice actors,

as well as potentially augmenting the audio with foley sound effects. The dubbing process starts with casting the right voice actors who will provide their voices for the dialogue. Normally a number of different voice actors will be auditioned for each character to cast the right voice to match the character on screen.

Once casting is complete the recording can start in one of our 105 studios spread around the world. These studios are designed and built to very high acoustic treatment standards to ensure the recorded audio is of the highest quality possible and, through our mixing equipment, our engineers are then able to mix and lay back the audio in a number of configurations – from basic stereo through to Dolby 5.1 and right the way up to full Dolby Atmos.

Whether it's subtitled or dubbed, the finished materials go through strict quality control to ensure that the finished product meets both our high standards and the expectations of our clients, the content owners and producers. And all the way through this process our dedicated project managers are running the show, from initial engagement with our

The time saved in some areas is often effectively transferred to other parts of the workflow where video and audio processing takes longer to complete.

clients, right the way through to delivery of the finished localised assets. And if there are any changes to the deliverables or the requirements during this process they are the ones who coordinate with the internal teams to ensure that we still deliver on time and at high quality.

Communications Africa: How has technology speeded up the process of dubbing and subtitling? How much has the equipment used today advanced compared to, say, 10 years ago?

Allan Dembry: Technology has undoubtedly allowed the process to speed up in key areas of the workflow and has also allowed companies

like lyuno to operate at a global scale through providing a single set of tools needed to run global projects for localising content.

For example, lyuno has developed a suite of web tools that allow us and our partners to manage projects, create and conform subtitles, and manage dubbing projects from anywhere in the world; we even support voice actors recording at home now with our iDub product, helping us mitigate the impact of Covid-19. Whereas 10 years ago you'd have needed dedicated client-based software on your PC or Mac to author and conform subtitles, that can now all be done over the internet. Cloud-based workflows also mean the assets that are being worked on can be more easily (but securely) transferred, stored, and processed into a number of formats, using automation where possible, rather than in a dedicated single facility. This in turn allows teams from multiple locations to access, localise, and process content simultaneously.

Of course, all of this has to be balanced against the increasingly demanding overheads of dealing with the myriad modern formats and very high-quality materials we work with. Working with UHD/4K content is not only challenging in terms of the infrastructure needed but also in terms of the complexities of mixing and processing these assets. The time saved in some areas is often effectively transferred to other parts of the workflow where video and audio processing takes longer to complete, often in order to support all the different formats and specifications relevant to the increasingly wide range of broadcast and OTT services that these assets are distributed to.

Communications Africa: One thing that digitisation (as opposed to using tape and reels) has made easier, I assume, is delivery and last-minute changes. Is this the case?

Allan Dembry: Digitisation of assets absolutely resulted in a huge leap forward (not least because of no more tape carts wheeling round the office, emails about lost tapes on people's desks, or large tape libraries) in terms of storage, quality control, processing, editing and mixing. Non-linear editing of course is standard now but those of us who've been around for some time will remember the times when linear editing was still a significant part of the workflow.

Thankfully we deal with very few tapes now, but one challenge many of our content partners face is that they are sitting on large archives of tape-based materials. Digitisation projects can allow these content owners to tap into a deep archive of materials and, of course, once digitised they're able to take advantage of all the benefits of modern workflows, which include being able to make easier (and late) edit decisions and changes. The ability to manage changes through EDLs (edit decision lists), and also the flexible benefits of standards such as SMPTE's IMF (Interoperable Master Format) means that changes can not only be handled more quickly, but also communicated more easily.

We're still some way away from universal adoption of such standards, so for now we're still not completely clear of the last-minute rush when changes do come in, but it certainly makes management easier.

Communications Africa: Are you expecting further technological advances in the coming years?

Allan Dembry: The short answer is yes! I think significant technological advances are a certainty in the localisation space in the short and medium term. We're already seeing the impact of some of these emergent technologies reaching our production workflows and I think there will be some very exciting developments just around the corner.

One example is how AI is providing huge opportunities to improve the translation process. At lyuno we have developed our own NMT (neural



Allan Dembry: "AI is providing huge opportunities to improve the translation process".

Photo: lyuno Media Group

machine translation) engine, which helps us to accelerate the translation process. These AI engines are fed enormous amounts of data to train them such that they learn how to translate between language pairs.

NMT doesn't remove the human element from the process though, as it puts more emphasis on the human quality control steps and the re-training of the engines when they inevitably produce incorrect translations of phrases they've not come across before, or even of the same phrases but being used in a subtly different context. What NMT does allow us to do, however, is reduce the overall time it takes to produce quality subtitles and to ensure that the quality of those subtitles is maintained and even improved.

Another exciting development is around voice synthesis for dubbing. No doubt everyone has been shocked, amused, scared, or probably all of those, on seeing 'deepfake' videos that have been showcased and shared on the internet. This approach is now being applied to dubbing workflows to look at how voice synthesis can help accelerate dubbing workflows in the same way NMT has for subtitling.

Again, this isn't a case of machines removing humans from the workflow, but rather of having a voice actor train the machine to allow that voice actor to have their voice used more extensively, while at the same time reducing overall studio time. Just as with video deepfakes, the human brain is extremely sensitive to synthesis resulting in unnatural speech and acoustic patterns. Getting this right so that it doesn't detract from the content being viewed is one of the key challenges to this technology being used in high-value content. ©

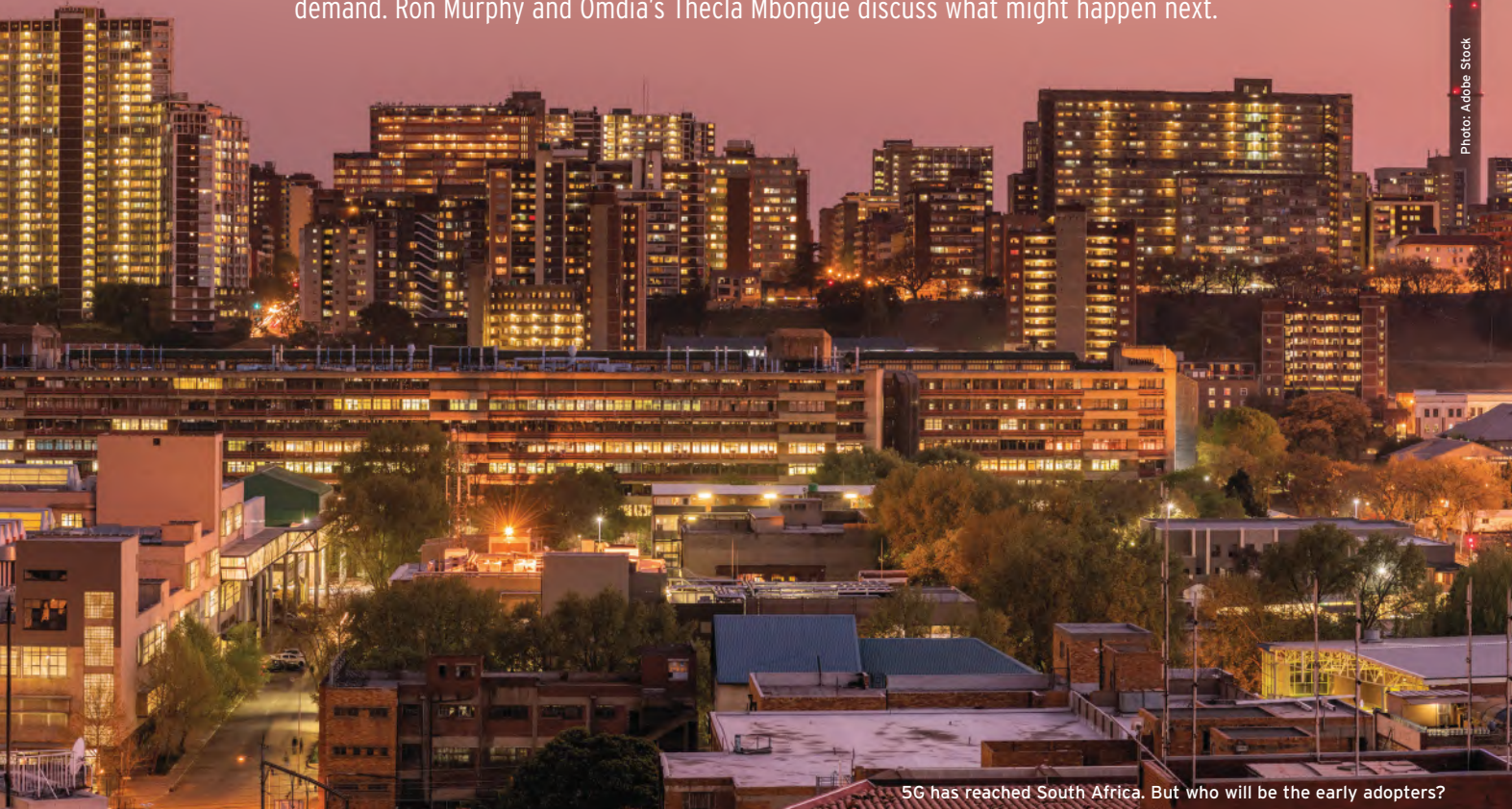
lyuno Media Group (www.lyunomg.com) is the market leader in the localisation industry with leading-edge technology providing dubbing, subtitling, and access services in any language. Visit www.lyunomg.com for more information.

Digitisation of assets resulted in a huge leap forward in terms of storage, quality control, processing, editing and mixing.

As chief technology officer, Allan Dembry oversees all aspects of lyuno Media Group's technology, including its engineering, infrastructure and networking teams. In part two of this interview we look at the role of voice actors, the demands of the OTT world and the changing requirements of African markets.

After the emergency

5G has come to South Africa earlier than it has to most African markets. But it came via emergency spectrum only available to operators for temporary use to meet Covid-19-generated demand. Ron Murphy and Omdia's Thecla Mbongue discuss what might happen next.



5G has reached South Africa. But who will be the early adopters?

WHY WAS TEMPORARY 5G spectrum offered to South African operators? It has made the country a global front-runner in 5G rollout but Thecla Mbongue, senior analyst with Omdia, a leading global research group, notes that 5G was not necessarily meant to happen so soon.

“The Covid-19 crisis has accelerated the release of spectrum,” she says. “There was a need for more capacity on the network side and in terms of efficiency that is possible by increasing the spectrum range that operators had.”

The operators had been making their case for some time, but the need to increase broadband efficiency and capacity via more spectrum was clear as the lockdown started.

That is not surprising. Government, like everyone else, felt the effect of the country's lockdown. “They themselves got to experience and understand the need for increased usage of broadband for whatever reason – home working, entertainment, home shopping.”

So further spectrum, which the operators had been waiting to see auctioned in due course, was issued early.

The result was a number of operators delivering 5G connectivity well ahead of time. For instance, in the summer of 2020 MTN was able to offer 5G in a number of areas at 3.5 GHz, 2100MHz, 1800MHz, 700MHz and 28GHz.

However, mass-market customers may not be an immediate target. Many operators are attempting fixed wireless access (FWA), for which 28GHz, a high frequency bandwidth offering great speeds, is ideal.

The Covid-19 crisis has accelerated the release of spectrum.

In fact, FWA is the entire business model point of one service provider: the mobile data-only operator Rain. It was known as a 4G operator, but in September 2019, it launched what has been called the African continent's first commercial 5G network.

The network was a fixed-wireless 5G broadband service, offering unlimited broadband access with a downlink of up to 700Mbps. Despite the absence of dedicated

spectrum, Rain was able to deploy 5G wireless data in certain parts of Johannesburg and Tshwane in late 2019 leveraging its 4G data networking infrastructure.

This use of refarmed 4G spectrum for 5G services has been applied by a number of operators around the world, sometimes alongside dedicated 5G spectrum, but often as a way to roll out 5G before dedicated spectrum is available.

This approach has limitations, notably that it does not involve new spectrum. However, in South Africa, the release of temporary spectrum has overcome such challenges.

Nevertheless, many operators are now using spectrum they do not actually own. The auctions are now expected to take place in March. At the end of November 2020, the temporary spectrum validity was extended from the end of November 2020 to March 2021. Until November, there was no charge for using the spectrum. However, regulator ICASA (the Independent Communications Authority of South Africa) has ruled that this extended use of spectrum will now involve a fee.

What happens when the auctions take place? Mbongue says, “Rain might apply for

more spectrum. Vodacom, MTN and Telkom have made clear that they would definitely bid."

The fourth-placed South African mobile operator, Cell-C, however, probably will not. "They were saying they're going to pull out from the network – concentrating more on selling services than running their own network. And we've heard a lot about their financial issues. It's very difficult to guess what Cell-C's next move is going to be."

The auctions themselves have an unusual extra facet. ICASA has issued two invitations to Apply (ITA) at the same time: one for the wholesale open-access network (WOAN), and another for spectrum that will be assigned directly to individual network operators like Vodacom, MTN, Telkom, Rain and Liquid Telecom.

With a WOAN, to quote a GSMA provision paper, "Citizens are promised better coverage, more competition, and as a result, more affordable prices." The South African government, the GSMA says, "proposes a public-private consortium to develop an open access wireless network. The consortium is proposed to include a wide range of private participants on a voluntary basis, including existing mobile operators (MNOs and MVNOs), infrastructure companies, private equity investors, ISPs, and OTT players."

The GSMA, it needs to be said, is not a big

We're five years late in terms of reallocating spectrum that was initially used by the broadcasting industry.

supporter of the WOAN model – but in its defence it is largely untried so far.

There is another issue dogging the auctions: delay. Of problems early in 2020, ICASA stated, "The delay was occasioned by, among others: the prioritisation of the release of the Covid-19 emergency spectrum [and] the additional considerations, particularly on the viability of the WOAN, as well as the fact that the council was almost inquorate for a period close to three months."

Assuming the auctions take place before the end of March, the spectrum will be in the 700 MHz, 800 MHz, 2.6 GHz and 3.5 GHz bands. 3.5 GHz is seen as key for 5G and according to some media, reserve prices for lots in this band range will start at around \$588,000, rising to about \$4.5 million.

For Mbongue, the delays have been "one of the challenges we have in some markets – especially in Africa". It has already happened with 4G. "That was the case in South Africa, whereby at some point the regulator ICASA had launched the [4G] auction, but then it was blocked by the ministry in charge of

telecommunications."

She continues, "Obviously they had their reasons, but it's unfortunately an example of how lengthy regulatory processes can be – and how lengthy regulatory processes hinder the growth or the rollout of broadband networks."

And hold-ups are not just affecting South Africa. "In most of these [African] markets the broadcasting digital switchover which had happened ages ago in Europe was meant to be complete by 2015. For most of this market it hasn't happened yet. So we're five years late in terms of reshuffling spectrum and also reallocating spectrum – initially used by the broadcasting industry – that is meant to be allocated to the telcos or the broadband industry."

At least pricing is not likely to be a contentious issue in this market. Mbongue says, "The South African government is a bit more flexible compared to many other African markets where it's obvious that they want to make a lot of money out of it."

So what are the big names, like Vodacom and MTN, going to do with their 5G spectrum? Could IoT be in their plans?

Mbongue is not so sure. "Vodacom and MTN were doing IoT before 5G. I guess they will go further into that space now. But what they have been doing since the launch back in June is broadband access to high-end residential and enterprise customers." ©

Continued from page 26

Meanwhile Netflix, as we have seen in recent news stories, is experimenting with cheaper, mobile-only subscriptions and commissioning more locally produced shows.

So what is the future of mobile-only offers? Murray says, "Mobile-only offers will become increasingly more important – especially in emerging markets with low fixed broadband penetration. Mobile-only fees are usually lower than normal ones. Netflix and Amazon Prime Video have non-exclusive pan-African distribution deals with Multichoice – an example of a more traditional player partnering with SVOD platforms."

An interesting recent development is news of OSN (Orbit Showtime Network) signing a multi-year partnership with Vodafone Egypt. Murray comments, "OSN exclusively distributes HBO and Disney in the Arab-speaking countries. The assumption is that both HBO and Disney did not think that the Arab market was big enough to justify going it alone. The same reasoning could easily happen in Africa."

Whatever the business model, mobile OTT clearly has a market in Africa. But is it the only guaranteed way to get big audiences in developing markets where few people own computers or smart TVs? Is there a sound business model?

"Mobile OTT is the best way to reach an audience in Africa – and will remain so. This will provide a good source of additional revenues for the

global players. However," Murray warns, "to succeed, SVOD platforms must win guarantees from the mobile operators that they will not charge subscribers for data – which can be a large additional cost."

Research indicates that Netflix has 1.4 million subscribers. That compares with almost 20 million customers signed up to African pay-TV company MultiChoice Group Ltd. Why is MultiChoice so successful?

"Multichoice is very successful but it has had the advantage of having been around for quite a few years," says Murray, adding, "The quality of its content, especially sport, is great. However, this makes it expensive. Multichoice has grown its subscriber base but subscribers are converting from its most expensive tiers to cheaper ones, especially given the competition from the likes of StarTimes." He adds, "Multichoice's SVOD platform Showmax is available in most African countries. Showmax has recently introduced mobile-only pricing on top of its normal pricing."

A perennial question is whether subscribers are willing to pay for content. But what if this is local content? Is that something African subscribers are more likely to pay for?

Murray's response is a careful one. He says, "Everyone in the world likes Hollywood content. However, this is not necessarily enough. People like to see local content. Some players such as Netflix have started to produce some African content." He adds, however, "Price is a major issue in Africa. Few Africans can afford to pay for a full-priced Netflix for example, so the platforms have to be flexible. More competition will keep prices down."

Digital TV Research Ltd provides business intelligence for the television industry. digitaltvresearch.com

"SVOD platforms must win guarantees from the mobile operators that they will not charge subscribers for data."

Affordable spectrum – achievable coverage

How can African regulators auction spectrum in a way that benefits not just governments but operators and consumers – especially consumers in underserved areas? Vaughan O’Grady suggests that a recent spectrum auction process in Austria may have the answer.

SPECTRUM IS OFTEN in the news. And as countries around the world find and prioritise additional spectrum for 4G and 5G, there will be more questions than ever about spectrum management and pricing.

Ironically, the ongoing pandemic has had one positive effect for those keen to assess the usefulness of new spectrum: it gave some operators, notably in South Africa, a chance to trial 5G with temporary spectrum released by governments to cope with demand.

Higher-capacity mobile broadband will spread across the region over the course of the next decade, driven, one suspects, by 2020’s pandemic-led growth in broadband-enabled homeworking, remote education, online shopping and digital payments.

Of course, in much of Africa, mobile broadband is the only broadband game in town. However, numerous questions need to be answered. Firstly, are the needed spectrum resources available? Is the time right for launch? Is there a business model? Do end users even need 5G? Can 4G do the job for now?

High spectrum prices have been shown to lead to reduced mobile broadband rollout and weaker coverage.

Don’t forget, 4G can address many use cases and 5G will be expensive to roll out. Therefore sustainable business models need to be established. There will be many more base stations required (the higher frequency bands that offer more 5G capacity offer only modest coverage) and much more backhaul. New, more open approaches to hardware design may make radios and cells much more affordable.

Technology-neutral spectrum licensing, assigning sufficient amounts of mobile spectrum to operators in a timely manner and freeing up sub-1 GHz coverage spectrum bands (which offer less capacity but increased coverage as needed for rural areas) is also important.

But two regulatory considerations in particular are going to encourage or discourage operators from buying into 5G – and they are the ones we are focusing on in this feature:



Could an investment-friendly framework for spectrum auctions be the best way to bring coverage to rural areas?

Photo: Adobe Stock

spectrum pricing and licence terms such as coverage obligations.

High spectrum prices have been shown to lead to reduced mobile broadband rollout and weaker coverage. And governments that insist on both overpriced spectrum and ambitious coverage goals may end up discouraging bidders. But could a ‘making targeted obligations worthwhile’ approach help governments to avoid these issues?

Well, interestingly, it seems it could. Real Wireless, the world’s leading independent wireless advisory firm and a regular contributor to this magazine, was recently involved in a spectrum auction process that has made money for government and encouraged operator participation. It will also bring coverage to many currently underserved rural areas.

A few years ago Austria’s Regulatory Authority for Broadcasting and Telecommunications (RTR) decided to establish an investment-friendly framework for spectrum auctions: that means more than 20-year licences, a reserve price for spectrum in the 700 MHz, 1500 MHz and 2100 MHz bands totalling €295 million, and a liberal sharing framework.

This is very modest compared to, say, India, Germany or a number of other countries where spectrum valuation does not seem to consider the bidders’ RoI or indeed the social and economic benefits of 5G coverage and ubiquitous connectivity.

There’s no mandated wholesale access either, although the usual stringent coverage conditions did apply. However, RTR did create an affordable framework, one that left MNOs with money to invest while putting in place a cleverly devised mechanism that improves population, street and remote/rural coverage.

The role of Real Wireless in advising RTR was to look at densification of the existing MNO networks in line with the requirements to estimate the number of sites needed (and cost incurred) for an MNO to meet coverage obligations.

As long ago as 2017 Real Wireless predicted the achievable 700 MHz coverage from all the Austrian MNOs’ site infrastructure and the additional sites needed to meet certain coverage obligations (such as population, roads and landmass). It also provided the cost for these additional sites – including distance

from built-up areas, which is important for the estimation of power and fibre digging costs.

Did this help the auction process? Well, the Austrian 5G spectrum auctions are now over. They achieved their aim of offering a pricing model that attracted investment and achieved a high level of coverage – even to underserved areas.

That, however, is because of an interesting extra aspect to the coverage obligation process.

As you might expect, on top of covering areas of high population, applicants were required to roll out minimum downlink and uplink speeds to 98% of highways, expressways and selected rail links, and to 90% of federal and state highways. The mobile operators were also required to deliver 30 Mbps downlink and 3 Mbps uplink connectivity to 900 underserved municipalities as part of the 700 MHz licence obligations.

But here's the clever part. For each underserved municipality that mobile operators committed to cover, *above and beyond the 900 minimum municipalities*, they received a rebate on their spectrum bids. In the end 1700 underserved municipalities (out of 2100) were covered – a genuinely impressive result.

Real Wireless chief operating officer Oliver

The Austrian 5G auction attracted bids that took 700 MHz coverage for underserved municipalities up to about 81% of the total.

Bosshard explains, “Real Wireless helped RTR to identify the 2100 municipalities deemed to be underserved. Then we created site placement algorithms and coverage models that showed not only how many different sites would be needed to hit coverage obligations but what it would take for a mobile operator to cover additional underserved municipalities. It might be possible, for example, for one optimised site location, correctly planned, to cover two underserved municipalities, thus saving money whilst meeting coverage obligations.”

Real Wireless then presented the results to both RTR and Austria's mobile network operators for validation and acceptance. Armed with this information and an investment-friendly auction system, this part of

the 5G auction attracted bids that, as we have said, took the 700 MHz coverage number for the underserved municipalities up to about 1700 – approximately 81% of the total.

Could African governments and MNOs adopt this approach? Yes, but to achieve this model involved a good understanding of existing coverage and a lot of detailed coverage and cost modelling.

Nevertheless it delivered what most governments aim for: a model that successfully balances revenue acquisition with maximum achievable coverage and social and economic benefit. It also helped the bidders to address – and exceed – coverage obligations at a price that seemed worthwhile.

It starts, however, with regulators taking a pragmatic approach to the auction of spectrum. This hasn't always been the case in a number of countries but, in Austria at least, it laid the groundwork for a successful auction. ^②

Real Wireless is the world's leading independent wireless advisory firm. Its network of experts includes engineers, physicists, economists, security advisors, business strategists and deployment specialists. www.real-wireless.com

Decision time

Akinwale Goodluck, head of Africa, GSMA, on why spectrum management matters.

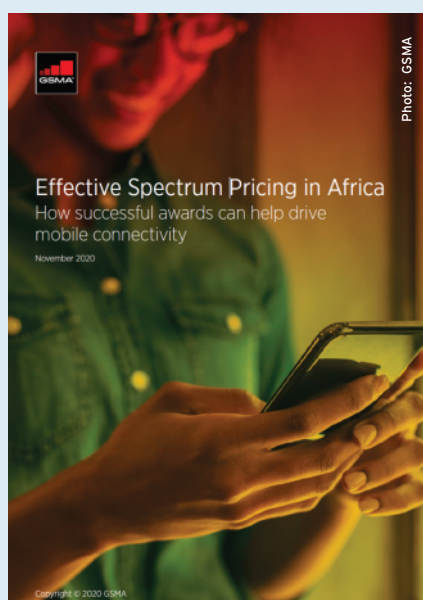
EFFICIENT AND EFFECTIVE management of spectrum is key to maximising the opportunities that mobile connectivity can bring to society. Countries such as DRC, Ghana, South Africa and Zimbabwe have highlighted how mobile operators and policymakers can work together to improve mobile capacity and coverage by providing temporary access to much-needed spectrum.

The 2020s will see strong growth in the number of Africans connected to mobile broadband. As 4G and 5G grow together throughout the decade, spectrum preparation can drive cost-efficiency and promote growth.

The launch of commercial 5G services in South Africa is an important milestone for sub-Saharan Africa. We expect the technology to spread across the region over the course of the next decade.

However, it is important that policymakers start planning now. Making sure the needed spectrum resources are available under the right conditions when the time is right to launch will lower broadband costs, increase coverage and boost connectivity. 5G needs a significant amount of new harmonised mobile spectrum, so ensuring the timely availability of prime bands – including those whose use requires defragmentation – should be prioritised.

For governments that want consumers and



businesses to benefit from the best possible mobile broadband experience, support for technology-neutral spectrum licensing is a must. It is widely recognised as best practice when assigning spectrum to mobile operators. It enables 2G or 3G spectrum to be re-farmed for 4G as well as 5G, at a pace driven by market demand. Beyond mobile broadband, the rapidly growing IoT market is

also making the need to adopt neutral licences more urgent.

Increasing access to the internet is one of the great challenges that policymakers and the mobile industry face. Only together can they improve coverage and access to jobs, education, healthcare and, more widely, the information needed to fully participate in social, political and economic life.

Spectrum licensing decisions such as pricing are essential to speedy adoption of mobile services and better networks for consumers in Africa. Our new Effective Spectrum Pricing in Africa report* is unprecedented in scope and depth, tracking spectrum assignments across nearly 50 African countries for the 2010–2019 period. Key findings include that licensing more spectrum earlier at affordable prices is strongly linked to higher mobile service coverage, download speeds and adoption.

Other important findings include that governments in Africa have assigned half the amount of mobile spectrum compared with the global average – and that African countries account for a large proportion of the highest spectrum prices globally.

**This report was published in November 2020. It is available free of charge at www.gsma.com*

EnGenius unveils next-gen outdoor Wi-Fi 6 access point

WIRELESS COMMUNICATIONS COMPANY EnGenius Technologies has announced its high-capacity outdoor access point Wi-Fi 6 (802.11ax).

The new weatherproof AP uses the latest Wi-Fi 6 technology needed to support the growing bandwidth requirements of densely congested outdoor environments such as stadiums, airports, smart cities and parks.

Backed by EnGenius' expertise in outdoor wireless networking, the new EWS850AP paves the way for the outdoor use of the top features of Wi-Fi 6. Armoured with IP67-rated dust and water-resistant enclosures, the EWS850AP is fully capable of withstanding harsh weather conditions, including prolonged exposure to sunlight, extreme cold, frost, snow, rainfall and moisture.

It features four external 5 dBi high-gain, 360° SMA module antennas that optimise the Wi-Fi signal, reception and bandwidth of the connected devices through beam forming. Major benefits include:

Superior connectivity: With up to two streams across both 5 GHz and 2.4 GHz bands, the EWS850AP includes downlink and uplink MU-MIMO and OFDMA to simultaneously manage and transmit data between AP and client devices.

Powerful computing: Dynamic data processing and management to boost data throughput by up to 25% with 1024QAM and expand connectivity capabilities.



Photo: EnGenius

The EWS850AP is fully capable of withstanding harsh weather conditions.

Viasat introduces satellite-based internet phone service for SMBs

VIASAT, A COMMUNICATIONS company, has announced the availability of Viasat Business Voice – a new cloud-based phone service optimised to work over Viasat's satellite network.

When combined with the company's advanced Business Internet and Business Hotspots, Viasat Business Voice will provide small and medium businesses (SMBs) with enterprise-grade tools enabling them to do business anywhere, even in the hardest-to-reach locations.

According to FinancesOnline, the cost savings of switching from a landline telephone service to a voice over internet protocol (VoIP) system are significant and range from 30% to 75% across monthly bills, local calls and operating costs. Viasat Business Voice now offers SMB customers the opportunity to maximise operational efficiencies and reduce costs.

"Businesses like restaurants, boutiques, professional and personal services, public administration, construction and more no longer need to settle for traditional, expensive landline phone service or unreliable cell coverage to scale business communications," said Cody Catalena, vice-president and general manager, Global Business Solutions, Viasat.

"Viasat is committed to bringing enterprise-quality communication services to SMB customers where cable and fibre are unable to provide service."



Photo: Adobe Stock

Viasat Business Voice now offers SMB customers the opportunity to maximise operational efficiencies and reduce costs.

Corning introduces smaller, 5G-ready connectivity solutions

TECHNOLOGY COMPANY CORNING has introduced its latest innovation to help telecommunications network operators meet the exploding demand for bandwidth: 5G-ready terminals and connectors that are miniaturised to accommodate more fibre connections in smaller spaces.

Corning's Evolv Hardened Connectivity Solutions with Pushlok Technology are designed to simplify fibre deployment for all types of communications networks. As connectivity requirements continue to grow – with video streaming, remote work, e-commerce and related applications – network operators must deploy more fibre in space-constrained environments. That need will accelerate with 5G deployments.

Corning engineers designed Evolv HC Solutions to meet those needs: Pushlok hardened connectors are half the size of existing offerings, connecting to terminals that are up to four times smaller. The smaller size allows operators to lower their costs, speed their deployments, and stay ahead of demands for high-speed connectivity.

"With the Evolv HC Solutions and Pushlok Technology, Corning is working with our customers to reduce barriers in deploying 5G-ready networks," said Bob Whitman, vice-president of market development, Carrier Networks, Corning Optical Communications.



Photo: Corning

The compact, easy-to-install terminals can be deployed in the ground, on a pole or facade, or on a strand.

ORBCOMM's launches satellite communication device

ORBCOMM, A PROVIDER of Internet of Things (IoT) solutions, has launched the ST 2100, a satellite communications device that enables solution providers to easily add satellite connectivity to their IoT applications and expand to dual-mode connectivity in remote areas with limited cellular coverage.

ORBCOMM's robust and environmentally sealed ST 2100 is targeted for a number of vertical markets, such as fleet management, shipping and utilities, including fixed and mobile assets.

ORBCOMM's ST 2100 can be quickly and easily integrated into a wide range of IoT applications with minimal development. Solution providers may use the versatile ST 2100 to provide backup satellite connectivity or serve as the sole communication device where cellular networks are unavailable or unreliable, including areas with high network congestion. Power-efficient devices offer reliability and security by allowing messages to be sent during temporary power loss. The device also includes an integrated navigation module that enables global location data reporting to provide full visibility for industrial IoT solutions.

In addition, over-the-air satellite updates enable the ST 2100 to receive updated firmware versions without having to send a technician to the site, saving time and money to enable new features. The company's new device enables providers to deliver ubiquitous and affordable dual-mode connectivity to customers.



Photo: ORBCOMM

ORBCOMM's new device enables providers to deliver ubiquitous and affordable dual-mode connectivity to customers.

Satellite imagery helps improve electricity planning in Africa

THE NEW E-GUIDE service, a collaboration between the Rockefeller Foundation and four leading universities, helps utilities and system planners improve the planning and supply of electricity in Africa.

The e-GUIDE initiative launched the Electricity Consumption Prediction Service for Africa. The service, which will be freely available, provides estimates of future electricity consumption at high spatial resolution and combines satellite imagery with historical and large data sources.

The service improves the planning and supply of electricity to end energy poverty, and helps direct investment and scale up projects that support the economic recovery of communities devastated by the Covid-19 pandemic. The e-GUIDE initiative is a collaboration between The Rockefeller Foundation, UMass Amherst, Columbia University, Carnegie Mellon University, the Rochester Institute of Technology, and Colorado School of Mines.

The service addresses the challenges faced by utilities, regulators, system planners, off-grid companies and researchers in terms of matching supply and demand and identifying the most appropriate investment technology solutions. By combining datasets and applying machine learning



The service will be expanded in the coming year to forecast the consumption of small and medium-sized enterprises.

techniques, the service will, for the first-time create a comprehensive picture of the expected demand for each region across Africa.

In countries with limited historical consumption data, the service will extrapolate insights based on consumer profiles in similar environments, allowing learnings to flow across borders.

The development of the service, led by Simone Fobi, PhD student at Columbia University, and pursued in collaboration with utilities and off-grid

electricity providers, will initially provide intelligence on residential consumption in Kenya, Uganda and Rwanda. The service will be expanded in the coming year to forecast the consumption of small and medium-sized enterprises. Coverage for all of Africa is expected by the end of 2021.

The launch of the e-GUIDE service, funded by the Rockefeller Foundation, comes as Joseph Nganga joins the Foundation as executive director for Power & Climate in Africa. As the executive director, Joseph will lead efforts to expand transformative distributed renewable electrification projects across the continent.

"Electricity is essential for a modern economy and services including healthcare and education, and for communities' resilience and ability to adapt to crises including Covid-19. But hundreds of millions of people in sub-Saharan Africa still lack this essential tool," said Nganga. "The impact of the pandemic, particularly on vulnerable households, should serve as a prompt for us to redouble our efforts to achieve universal electricity access in an equitable and sustainable way. The Electricity Consumption Prediction service is a transformative and vital tool that will help direct investments to solve this profound challenge."

Powermat unveils 50W mid-range drill-free wireless charging solution

POWERMAT TECHNOLOGIES HAS unveiled a built-in mid-range wireless charging platform designed to charge various telecom and IoT devices requiring up to 50W.

The platform, which provides more charging power and more spatial freedom, provides OEMs with an end-to-end wireless charging solution when charging devices through thick surfaces such as walls, glass (windows, for example) and various other non-metallic materials.

The company's new platform is designed to deliver up to 50W of wireless power and to charge devices over a distance of up to 20 cm.

"What we are learning from our clients is that many of today's products that require mid-range and drill-free wireless power are in need of a cost-effective and seamlessly integrated solution. I'm enormously proud of our team for the breakthrough of our through-surface 50W wireless charging platform. This is yet another big step in the right direction towards powerful, simple, and cost-effective wireless power solutions for OEMs and beyond," said Elad Dubzinski, CEO at Powermat.

"The demand for OEM-driven wireless power solutions that often require unique engineering is expected to rapidly grow in the coming years," said Dinesh Kithany, lead industry analyst on wireless power and power supply at Omdia.

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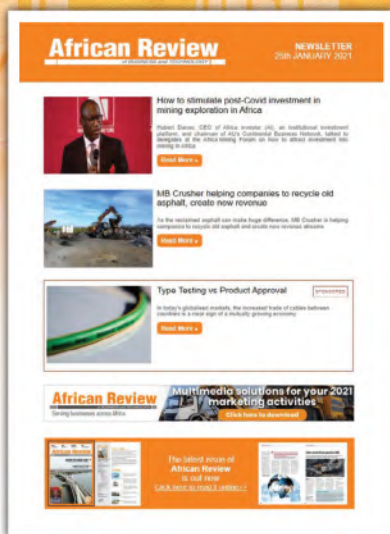
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