For communications professionals in southern Africa

SOUTHERN AFRICAN WIRELESS COMMUNICATIONS

SEPTEMBER/OCTOBER 2023 Volume 28 Number 2

- Connecting remote renewable assets
- Does South Africa need faster internet?
- Designing smarter cities

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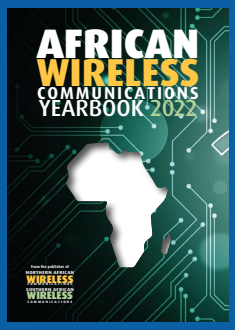
It's that time of year again – The African Wireless Communications Yearbook 23/24 is on the horizon – and we're looking for those active in Africa's wireless communications marketplace to take part.

The definitive guide to Africa's wireless landscape, featuring a review of the year across the continent, exclusive interviews, and vital statistics, the yearbook is your one stop source for everything Africa.

This year's issue includes technology chapters on cellular networks; data centres; critical communications; broadband; fibre; satellite communications; fixed wireless access; value added services; and all new for 23/24 is the towers chapter.

Have you been active in Africa this year? Then we want to hear your views around the latest developments in technology, policy, and regulations, as well as your success stories and expectations for 24/25. Get in touch with editor Amy Saunders today to discuss having your say.



Enjoy the issue!

Amy Saunders
Editor

KADIUM

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EDITORIAL:
Editor: **Amy Saunders**
Designer: **Ian Curtis**
Deputy editor: **Gerry Moynihan**
Contributors: **Tero Pesonen, Paul Colmer, Alastair MacLeod, Kelvin Chaffer Annet Wanjiru**

Editorial enquiries:
amys@kadiumpublishing.com
Tel: +44 (0) 1932 481729

ADVERTISEMENT SALES:
Sales: **Kathy Moynihan**
kathym@kadiumpublishing.com
+44 (0) 1932 481731

Production & circulation: **Karen Bailey**
karenb@kadiumpublishing.com
Tel: +44 (0) 1932 481728

Publishing director: **Kathy Moynihan**
kathym@kadiumpublishing.com
+44 (0) 1932 481730

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SoftBank and Rwanda test HAPS

SoftBank and the government of Rwanda have conducted a 5G communications trial from a high-altitude psuedosatellite or platform station (HAPS).

For the test, SoftBank's proprietary 5G communications payload was used in the stratosphere, which ranges from four to 12 miles above the Earth's surface to around 31 miles.

According to SoftBank, the payload delivered 5G connectivity continuously for approximately 73 minutes at a maximum altitude of 10.5 miles and enabled a 5G-based Zoom video call between a 5G smartphone located at the Rwanda test site and a SoftBank team in Japan.

The results of the trial were "far beyond" the company's expectations, according to Junichi Miyakawa, president and CEO of SoftBank.

"This test marks an important step forward in our aim of bridging the digital divide with HAPS and other NTN solutions. We are grateful to the government of Rwanda for their unwavering support and look forward to working with them to study use cases for commercial implementation," said Miyakawa.

To date, HAPS have been used largely for temporary coverage, such as during disaster recovery, but there is increasing hope that they may be used for more enduring and reliable coverage in unconnected areas, as they are not subject to the high costs associated with other infrastructure like cell towers and satellites.

"The successful 5G delivery stratospheric test we conducted is promising. It represents a significant step towards narrowing the digital divide and enhancing digital inclusion with innovative solutions," said Paula Ingabire, minister of ICT and innovation of the Republic of Rwanda.

With a successful trial complete, Softbank and the government of Rwanda plan to explore possible HAPS use cases, as well as what commercial implementation might look like in Rwanda and surrounding regions.

Airtel Rwanda launches 4G-enabled $16 smartphones to boost uptake

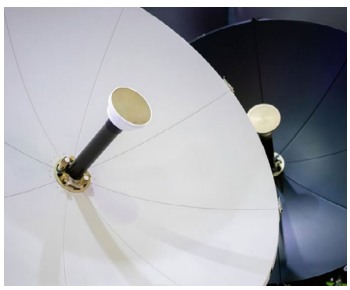
Airtel Rwanda has launched a new range of 4G-enabled smartphones to accelerate the adoption of digital services in the country in partnership with the Rwandan government and American philanthropist Reed Hastings, co-founder and director from Netflix. The devices are sold at a unit price of 20,000 Rwandan francs ($16.42).

The project is part of the Rwandan government's ConnectRwanda 2.0 program which aims to provide a smartphone to more than one million Rwandans by the end of 2024. According to Paula Ingabire, minister of ICT and innovation, only 23% of Rwandan households own smartphones.

"This initiative addresses the affordability barrier and we believe it will help bridge the digital divide and enable more Rwandans to conveniently access essential e-government services," said Ingabire.

ICASA concludes broadcasting licence process for community radio

The Independent Communications Authority of South Africa (ICASA) has concluded the licensing process to issue Community Sound Broadcasting Service (CSBS) and Radio Frequency Spectrum (RFS) licences for the provision of community sound broadcasting services.



Of the 56 applications that were admitted to Phase 1 of the licensing process, just 5 applicants complied with all the pre-registration requirements and were admitted to Phase 2 of the licensing process. The second phase was undertaken in terms of section 17 of the Electronic Communications Act, 2005 (Act No. 36 of 2005) and in line with the criteria set out in Schedule B of the Invitation to Pre-Register (ITP-R).

ICASA has now announced that the 5 applicants were successful in the licensing process and were subsequently awarded CSBS and RFS licences. The community radio sector is a beacon of diversity, bringing in the harmonious social cohesion while also uniting the voices of communities.

"Community radio plays a big role in South Africa as a source of information, education, and entertainment," said Adv. Luthando Mkumatela, Councillor, ICASA. "I encourage the successful applicants to use this vehicle to serve their communities and contribute to the diversity of the community broadcasting sector. It also remains important for community radio stations to comply with their license terms and conditions and have proper governance structures to ensure the success of the radio stations."

Telecom Namibia to deploy 500 new towers in five years

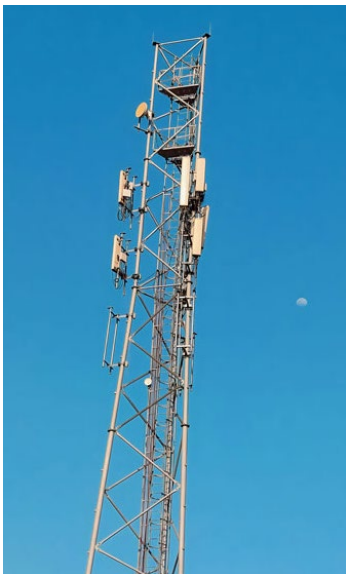
State-owned Telecom Namibia plans to deploy 500 new telecom towers across the country over the next five years to improve the quality and coverage of its network.

This initiative is part of Telecom Namibia's telecoms network modernization strategy. The company revealed in 2022 that it would invest N$2.3 billion in its fixed and mobile network infrastructure over five years. It also invested $5 million for the installation of Google's Equiano submarine fibre optic cable, in partnership with Paratus.

Once deployed, the 500 new telecom towers are expected to help Telecom Namibia reach thousands more people and meet the growing demand for high-speed connectivity.

"There are a lot of people who have been left behind when it comes to connectivity. For us operators, these are the key issues we need to address if we want to bridge the digital divide," said Stanley Shanapinda, general manager of Telecom Namibia.

The initiative is also expected to help strengthen the financial health of Telecom Namibia as well as its position in the national telecoms market.



Blueline and Eutelsat deliver nationwide internet to Madagascar

Blueline has launched a very high-speed satellite internet solution that transcends the geographical borders of the Big Island.

Konnect by Blueline, designed in partnership with Eutelsat, promises to provide fast, reliable and accessible internet connectivity to everyone, anywhere in Madagascar.

The new service permanently eliminates areas without connection, guaranteeing that every village, every island, every site on the island is connected to the rest of the world, with very high identical flow and performance. This achievement marks a crucial milestone in our commitment to providing fast and reliable internet connectivity to all Malagasy people wherever they are.

Konnect by Blueline is powered by cutting-edge technology from Eutelsat, which offers an uptime rate of 99.5%, ensuring that all online activities are never interrupted. With speeds up to 50Mbps, Konnect provides a seamless online experience for all users, whether individuals, businesses, or organizations. This fast connectivity not only allows users to take full advantage of the internet, but it also allows businesses to optimize their internal management processes, paving the way for increased productivity and better performance.

5G to bring $11 billion to SSA by 2030

5G will account for more than 6% of the overall economic impact of mobile connections in sub-Saharan Africa. Much of the technology benefit will materialize through to 2030, as some countries are in the early stages of deployment and 5G economic benefits will increase as the technology starts to achieve scale and widespread adoption.

While 4G rollout has accelerated in Africa - partly driven by the growing demand for faster speed among younger consumers - 5G technology is also growing momentum with deployment in urban areas and industrial locations where there is a greater need for the technology.

5G adoption is expected to grow more quickly in the second half of this decade, rising to 17% by 2030. Sub-Saharan Africa will have 226 million 5G connections in 2030, equivalent to an adoption rate of 17%. Nigeria and South Africa will account for almost half of these connections. However, the growth of 5G in the region will be slow but steady, as a larger share of the customer base will continue to migrate to 4G.

As a result of extensive 4G network buildout and growing 5G network deployments in Sub-Saharan Africa, capex will be on an upward trajectory over the next few years.

Malawi launches free internet project

The Malawian government recently launched a project to provide free internet connectivity to public establishments and institutions like schools, courts, police stations, prisons, hospitals, markets, etc., in the country.

More than 500 public establishments have been connected over the last three months. The Malawi government now wants to expand the program into its next phase and push for the country's mobile phone companies to further reduce data costs.

The initiative is part of Malawi's digital transformation agenda, 'Digital Malawi,' which is financially supported by the World Bank.

Mozambique to tax e-commerce

The Mozambican government wants to start taxing e-commerce from the 2024 financial year to increase state revenue, according to Carla Louveira, deputy minister of economy and finance.

Louveira said that the taxation of cross-border digital services requires an in-depth analysis adapted to the Mozambican reality and international comparative experience. A pilot phase of the concept of control and taxation of online transactions in the tourism sector is thus planned beginning November 2024.

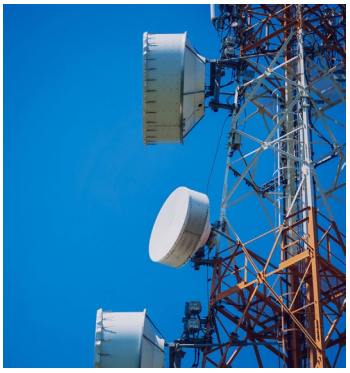
A taxation unit has already been set up within the Tax Authority. The government has also developed three key guiding instruments, namely the Digital Economy Taxation Strategy, the IT Platform Conceptual Model, and the Digital Economy Taxation Model.

Zimbabwe targets country-wide digital transformation

The Posts and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ) has funded the relocation of 11 telecoms network towers across the country to improve network coverage and capacity, particularly in areas where demand is highest or with higher population density.

The project saw the relocation of 10 Econet telecom towers and one NetOne tower. The total number of relocated towers is expected to increase to 13 by the end of the year if Telecel and NetOne complete their current projects.

This POTRAZ initiative is part of the Zimbabwean government's drive to expand mobile connectivity across the country, especially in underserved rural areas.



Zambia ponders mobile money tax

The government of Zambia is now considering introducing a tax on mobile money transactions, according to Situmbeko Musokotwane, the country's minister of finance and national planning.

The proposed tax applies exclusively to person-to-person transactions. It ranges from 8 ngwee to 1.80 kwacha, depending on the value of the transaction.

According to Felix Mutati, minister of technology and science, mobile money transactions in Zambia reached 170 billion kwacha in 2022, up from 95 billion kwacha in 2021. Through this tax, the government wants to ensure that everyone contributes to the provision of public services.

"Introducing a tax on mobile money will mean people will pay more. For those on lower incomes, every ngwee counts, a lot of explanation is needed," said Postle Jumbe, president of the Alliance of Zambia Informal Economy Association (AZIEA).

South Africa's Department of Communications and Digital Technology signs digital transformation MoU

South Africa's Department of Communications and Digital Technology (DCDT) has signed a memorandum of understanding with Cisco to continue their collaboration in the area of digital transformation.

The two parties will implement a new phase of Cisco's Country Digital Acceleration (CDA) initiative in the country. The global program is aimed at accelerating national digital transformation programs. The next phase of the program in South Africa will notably focus on economic development, increasing digital skills and talent development, sustainable critical national infrastructure, cybersecurity, and digitalization of government services.

"With digitalization driving economic growth, we are proud that Cisco's collaboration with DCDT is contributing to the growth of the South African economy. Together, we will accelerate digital skills transformation, empowering South Africa's youth and SMEs, while enabling an inclusive future for all," said Mondli Gungubele, minister of communications and digital technologies.

Paratus launches Starlink in Zambia

Paratus Group has signed a reseller agreement with Starlink and has launched its business services.

"It is a very exciting opportunity for us to be involved in this initiative. We recognise and applaud the hard work done by our government, regulator, and other authorities, in conjunction with Starlink, in ensuring this leading-edge technology is available to the Zambian market," said country manager of Paratus Zambia, Marius van Vuuren. "As Paratus, we pride ourselves on being technology and telecommunication leaders; and being directly involved with Starlink aligns to this. We are well prepared to take the Starlink service to our customers, both existing and new, having ready access to the equipment with skilled and trained satellite engineers, along with the required support structures. We firmly believe our value-add is an essential ingredient in making Starlink a huge success in Zambia."

Paratus Zambia enables businesses to streamline their operations. When ordering enterprise services online, businesses face the cumbersome task of placing individual orders for each terminal. This means 10 terminals require 10 separate orders; however, Paratus overcomes this and simplifies this process for businesses by allowing multiple links to be included in a single order, saving valuable time and effort.

"We have our own stock on-site here in Lusaka and this means we will be able to deliver and provide an installation service and technical support expeditiously," said van Vuuren. "As a business focused service, we are aware that customers probably also have 'behind the router' services such as connecting their office LAN, Wireless Access Points, and other similar devices. Because of our extensive technical experience, we are also able to incorporate these into the Starlink service ensuring a fully functional end to end service. We also offer SD-WAN services in conjunction with our Starlink offering."

Paratus will not only provide business customers with both fixed and mobility services with immediate effect but also 24/7 technical support.

"With our Starlink offering, Paratus will offer industry sectors – such as energy, mining, hospitality, education, healthcare, agriculture, manufacturing and more – the reliable and constant connectivity they need to flourish, no matter how remote they are," said van Vuuren.

MTN Rwanda showcases 5G at MWC Kigali

MTN Rwandacell PLC has showcased the country's first live 5G network technology demonstration at Mobile World Congress (MWC) Africa in Kigali.

"5G represents more than speed; it's a gateway to a world of endless possibilities. It holds the potential to revolutionize sectors such as healthcare, education, agriculture, and many more," said Mapula Bodibe, CEO, MTN Rwanda. "For instance, with 5G, remote medical consultations and procedures could become a norm, significantly impacting healthcare accessibility in remote areas. Demonstrating new technology is not just about staying at the forefront of innovation; it's about exploring new ways to improve the everyday lives of Rwandans and positioning the nation as a technology leader on the continent."

The 5G technology demonstration marks a new era for internet connectivity in Rwanda and exemplifies MTN Rwanda's unwavering commitment to innovation and its dedication to enhancing the lives of Rwandans with leading network connectivity solutions. With 5G, Rwanda is poised to offer enhanced digital experiences and emerge as a leader for digital advancements on the African continent.

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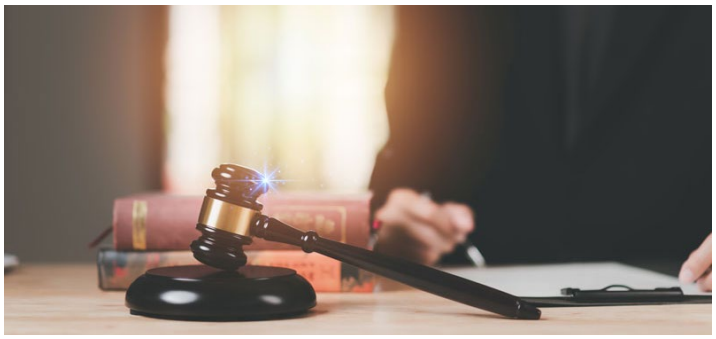
Vodacom fined R1 million for customer 'intimidation'

South Africa's National Consumer Tribunal (NCT) has imposed an administrative fine of R1 million on Vodacom following the accusation that it behaved 'unreasonably' by preventing customers from terminating their fixed-term contracts between 2020-2022.

Customers have claimed that Vodacom used intimidation tactics and imposed a termination penalty of up to 75% on them. Vodacom also allegedly required customers to pay all due fees and the penalty before the contracts were terminated upon request, violating the South African Consumer Protection Act.

Thezi Mabuza, acting national consumer commissioner, said that most affected customers wanted to terminate their fixed-term contracts during the "peak COVID-19" period due to job loss or salary cuts that they had suffered.

"The Commission welcomes this verdict, because we believe it will deter other suppliers and operators from adopting the same behaviour. We also see this as a victory for South African consumers who, for a long time, have been subject to supplier-biased contracts," said Mabuza.



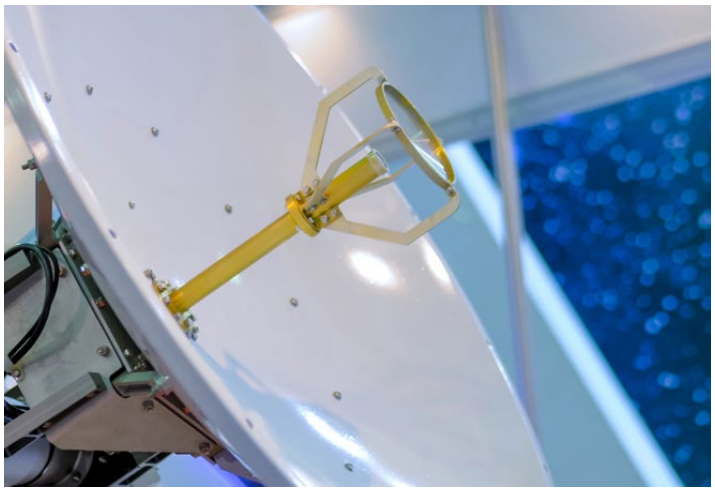
Starlink comes to Zambia for a pricey 770.5 Zambian kwachas per month

Starlink's services are now available in Zambia at a price of 770.5 Zambian kwachas per month, plus 10,774 kwachas for hardware.

It is the sixth African country after Nigeria, Rwanda, Mozambique, Kenya, and Malawi to benefit from the commercial services of billionaire Elon Musk's company.

The commercial launch comes four months after the Zambian government awarded an operating license to Starlink following discussions in September 2022.

The advent of Starlink should help accelerate Internet coverage in Zambia, including remote and landlocked areas, therefore difficult to access for mobile operators' terrestrial networks.



AngoSat-2 already serving 150 remote locations

Angola's AngoSat-2 satellite is already used to provide telecoms and internet services to more than 150 remote locations in 16 of the country's 18 provinces, revealed Mário Oliveira, minister of telecommunications, information technology and social communication.

According to the minister, the government has installed more than 150 VSAT terminals in the various localities concerned to capture satellite signals and provide telecom services to the populations.

This project comes approximately ten months after Angolan President João Lourenço authorized, by decree, the commercialization of AngoSat-2.

The satellite was orbited in October 2022 and by March 2023, was already providing free high-speed internet connectivity to hospitals, administrations, schools, and universities in seven provinces of Angola.

Angola Telecom has launched the 'Conecta Angola' to provide free internet connectivity in remote areas of Angola where none of the country's mobile operators are active by relying on the capacities of the AngoSat-2 satellite. The project targets in particular public institutions such as schools, hospitals, and municipal administrations.

Meanwhile, Namibia is reporetedly interested in using the commercial services of AngoSat-2 to assist or reinforce the operation of Namibian Public Television (NBC).

The director general of NBC, Stanley Similo, recently met with Angola's minister of Telecommunications, Information Technologies and Social Communication, Mario Oliveira, to discuss the possibility of commercial leasing.

Located at 23 degrees East, AngoSat-2 has six transponders in the C-band that cover all of Africa and part of southern Europe and 24 beams in the Ku-band that cover the Southern region and part of the centre of Africa.

AU urges countries to prioritise broadband connectivity

The African Union (AU) has urged member countries to create strategies and policies to provide citizens with internet connectivity, including the upgrade of broadband infrastructure such as fibre-to-the-room (FTTR) technology.

The FTTR solution extends fibres to rooms and provides various gigabit WiFi 6 master/slave FTTR units, all-optical components, and optical cable assembly tools, delivering consistent gigabit WiFi experience in every corner of the room at all times.

"We will require broadband access at all levels, particularly broadband access for all citizens. As a result, let us prioritise the allocation of broadband infrastructure and engage in accelerating broadband adoption across the population," said Magalie Anderson, director of management information systems at the Africa Union Commission.

Anderson added that access to broadband by African families will allow citizens to participate in the development of Africa's industries and startups and urged member nations to create plans and policies aimed at providing individuals with broadband access.

"We want them to use best practices from existing global implementations. Use cutting-edge broadband technologies and, more significantly, encourage and foster a culture of broadband adoption," said Anderson.

Mauritius mobile users must re-register SIMs by 30 April 2024

Subscribers to telecom services in the Republic of Mauritius will have to re-register their SIM cards before 30 April 2024 or risk seeing them deactivated, as per the Information and Communication Technologies Regulatory Authority (ICTA).

The measure is provided for by the 'Information and Communication Technologies (Registration of SIM) Regulations 2023,' which comes into force on 31 October.

The re-registration of SIM cards will be done online through websites or applications that mobile operators will make available to the public at the start of the financial year. Telecom subscribers who do not have access to the online system will be able to re-register in person with the operators my.t, Emtel and Chili, which will communicate the terms of re-registration to their subscribers very soon, specifies the regulator.

In June 2021 the new regulations on the registration of SIM cards in Mauritius were initially developed following the recommendations of the report of the Commission of Inquiry on Drugs published in 2018.

"The aim is to ensure that at the end of this exercise, each SIM in use is registered in the name of its user, in order to protect subscribers against all types of fraud, identity theft and other misdeals," said ICTA in a statement.

CRAN concludes 5G spectrum auction

The Communications Regulatory Authority of Namibia (CRAN) has concluded the auction of frequency spectrum in the 700MHz and 800MHz bands.

The transaction, which raised 28.5 million Namibian dollars, awarded 5G mobile technology licenses to Telecom Namibia (TN) and MTC, as well as to internet service provider Loc8 Mobile.

Loc8 paid NAD 5.1 million for lot A consisting of 2 x 20MHz in the 700MHz band. TN won lot B consisting of two blocks of 2 x 10MHz in the 700-800MHz band with an offer of 8 million NAD. MTC obtained 2 x 20MHz in the 800MHz band (lot C) for 15.4 million NAD. Spectrum licenses are valid for 10 years and can be renewed for a similar period. They may also be cancelled or transferred in accordance with regulations.

The CRAN authorized the experimentation of 5G services/networks for three months through to 31 December 2023. In addition, the regulator required license holders to increase the coverage of the population in 4G, particularly in the regions of Kunene, Zambezi, Otjozondjupa, Omaheke, Hardap and Kavango West, where less than 80% of the population is covered. Licensees are required to provide 4G and 5G mobile services with a downlink data speed of 20Mbps or higher, and that meet quality of service (QoS) regulations.

The award of 5G licenses is an important milestone in the regulator's vision to improve access to telecommunications services in Namibia and accelerate the fourth industrial revolution.

World Mobile Group launches first telecoms aerostat in Mozambique

World Mobile Group has launched its first telecoms aerostat in Mozambique. The infrastructure was deployed at an altitude of 11m near the Limpopo River and will later rise in altitude to provide internet access within a radius of 70km.

This first balloon will allow World Mobile to collect data sets using custom radio payloads. This data will serve as the basis for World Mobile to deploy other commercial aerostats in Mozambique, Africa, and other under-connected regions of the world.

World Mobile continues to expand across the African continent as part of its vision 'to connect the unconnected' throughout the world. The company launched its blockchain-based commercial telecommunications network on Tanzania's Zanzibar archipelago in May 2023. In December 2021, it had already launched its internet balloons which later served as the backbone of its mobile network.

"Through our aerostats, we can cost-effectively bring internet access to millions of people who have been left behind by the digital divide," said Micky Watkins, CEO of World Mobile.

Mobile data prices increase in SSA

After recording a continuous decline between 2017 and 2021, the median price of 1Gb of mobile data in sub-Saharan Africa increased to 3.5% of monthly income per capita in 2022 from 3.3% in 2021, according to the GSMA.

The state of mobile Internet connectivity 2023 said that the price of mobile data in the region remains the highest globally. It is well above the affordability threshold, which has been set at 2% of monthly per capita income set by the International Telecommunications Union (ITU).

The report also reveals that sub-Saharan Africa had 290 million mobile internet users at the end of 2022, or 25% of the region's population, compared to just 17% in 2017. This regional average, however, masks disparities between sub-regions. At the end of last year, mobile internet adoption ranged from 33% in Southern Africa to 17% in Central Africa.

On a regional scale, around 85% of the population is now covered by a high-speed mobile network. The coverage gap concerns 180 million people, 15% of the region's population. Despite this high coverage rate, some 680 million people living south of the Sahara do not use mobile internet even though they live in areas covered by a high-speed mobile network. The usage deficit has reduced over the past year but remains significant at 59% of the region's population.

South of the Sahara, around 17% of the population uses mobile internet on a smartphone and 8% on a feature phone. 32% of mobile internet users do not connect via a smartphone. In addition, 69% of smartphones used to access mobile internet are only compatible with 3G networks while 65% of the population was covered by 4G networks in 2022 compared to just 19% in 2017.

Talking critical

Tero Pesonen, chair, TCCA Critical Communications Broadband Group

The key elements of a critical communications network

'Critical communications' are exactly that: communications services that are critical for the successful delivery and completion of the missions, tasks and operations of professional users who rely on being in contact when it counts. There are many and varied types of operations which need critical communications. These include public safety and security, emergency services, critical infrastructure, public utilities, transportation, critical industries, and related activities where failures in critical communications would lead to catastrophic degradation of services. This in turn could place critical services and citizen safety and security at immediate risk.

Critical services must be able to cope with high peak demands and provide ubiquitous coverage, as well as extremely high guaranteed availability, reliability, and resilience. Disasters, whether natural or man-made, and other events putting safety of life, property, or public security at risk, can occur anywhere and at any time. They are not limited to areas of dense population. For example, an aircraft or train can crash anywhere along its route and the resultant major incident may be a long way from the closest populated area.

The purpose of critical communications networks is to provide uninterrupted service reliably also under exceptional circumstances meeting the operational requirements. They are often a tool for enabling other processes and functions to perform – profit generation by the network is secondary. In critical networks commonly the life of the user is at stake – the connection is literally the lifeline.

As well as coverage, sufficient capacity to address tasks or incidents that demand drastically more than normal operations is also critical. The service offered needs to be available at all times with foreseen resilience against loss of power or equipment. In terms of performance for instance group call setup – the capability of bringing potentially hundreds of participants to the same call – needs to appear instant without any loss of content. It is vital to deliver a command of 'Don't shoot' immediately and to all.

Integrity is critical among other security related aspects. Critical communications networks may be used to control power grids, water supply, oil and gas pipelines, or may carry very sensitive personal information such as health records. The information needs to be protected against eavesdropping and manipulation.

Technology is advancing, but the fundamental requirements essentially remain the same. However, the possibilities to fulfil the requirements have evolved whilst at the same time new functional requirements have arisen. Furthermore, whilst in the past such requirements were rather specific to blue light organisations, power utilities and for instance railways, today more and more enterprise and general society processes such as payments demand very similar availability, and even consumers expect coverage, access, and capacity at all times.

2G and 3G mobile cellular networks could not meet the requirements thus fit for purpose designed technologies such as TETRA have been developed and rolled out as dedicated networks for critical communication use. For 4G and 5G network technologies a tremendous amount of work has been done in 3GPP standardisation and elsewhere to enable these networks to address the original requirements, but also the needs of today's societies that cannot be met by any narrowband technology simply due to the limited bandwidth.

Probably the most significant change is that everything is data – including voice. The public safety radio communication operational model has been voice-centric for the past hundred years. Talk groups have been established to provide a connection between operatives on the field and control centre for commanding and control. The introduction of messaging has enabled exchange of status information and position, but it is a rather limited media working at its best when the information is pre-structured.

The ability to transfer dynamic on the spot-generated data such as video changes the situation. The paradigm can shift to Information Centric Operation where the concept of Information Value Chain can be applied. The data generated in one format may merge with other data and be presented in different forms and shapes to each receiver according to their need and consumption capabilities. Real-time image and video transmission are paving the way into this direction enabling both the leadership and field operatives more accurate situational awareness and more informed decisions.

This type of evolution naturally impacts the requirements for network capacity as well as coverage. When video feed becomes a standard part of each operation then also the capability to deliver it – be it in an underground garage or at the end of the road in wilderness – becomes mandatory. It should be noted that this is end-user organisation and country specific. For many organisations throughout the world the coverage is already provided.

Going forward, in 3GPP the critical communications community represented by TCCA supports strongly the inclusion of Non-Terrestrial-Network (NTN) access to complement other 4G/5G tools to provide redundant connectivity for the users. Vehicle to Everything (V2X) device-to-device communication belongs to the same category.

On the communication itself we expect the introduction of haptic capabilities to mature to enable humans to interact remotely with a combination of senses. These combined with augmented reality as well as virtual reality create interesting operational and technological avenues to explore. Machine-to-machine communication with ever increasing data flow of internet of things (IoT) sensors will provide better situational awareness, predictive operation and much more. At the same time, it requires very sophisticated and balanced artificial intelligence (AI) to manage the massive information amounts. Up-to-date regulation will certainly be a challenge.

What is certain is that society is dependent on communication networks more than ever before – they are already regarded as critical. Attention needs to be paid to their development and operation today and in the future to ensure they do actually meet the critical requirements to keep societies and their citizens safe.

Unleashing the power of innovation: How to revolutionise energy efficiency

By Jan Liebenberg, Customer Chief Technology Officer for Southern Africa at Nokia

Digital connectivity is the lifeblood of society, and the telecom industry stands tall as the backbone of this interconnected world. But with great power comes great responsibility. The pervasive networks that fuel our modern lives are also substantial consumers of energy. The challenge is therefore to balance the insatiable demand for connectivity with a commitment to sustainability. The imperative is clear: enhance energy efficiency and shrink the carbon footprint of Communication Service Providers (CSPs).

The Rising Call for Sustainability

Embracing sustainability isn't just a moral choice; it's a business necessity. Customers, stakeholders, and regulators are demanding environmentally responsible practices. For CSPs, reducing carbon emissions and energy consumption isn't just a path to meeting these expectations; it's also a strategy to stand out in a cutthroat market. Demonstrating a dedication to sustainability not only attracts eco-conscious customers but also fosters crucial partnerships.

A recent GSMA report cast a spotlight on energy consumption in wireless cellular networks, pinpointing key areas for energy savings. Nokia and the GSMA have estimated that 80% of mobile network energy is consumed by radio access. The rest is accounted for by transport, core, and OSS networks. Interestingly, 5G technology disrupts the conventional narrative. Unlike its predecessors, 5G can handle 100 times more traffic without increasing energy consumption, thanks to innovations like lean frame structures, massive MIMO with beamforming, and new 5G spectrums.

Nokia's Vision: A Greener Tomorrow

Nokia recognizes the urgent need to reduce energy consumption in the telecom sector by addressing legacy issues and pioneering new solutions. One standout initiative is the Single RAN software, which employs common hardware for all radios from 2G to 5G, reducing energy consumption by up to 45%. Energy-saving features like sleep mode settings and optimized micro-sleep periods ensure significant energy savings without compromising network performance.

The modernization of 2G, 3G, and 4G equipment with energy-efficient Single RAN software and hardware compensates for the energy consumption of new 5G radio sites, resulting in a 46% reduction in energy consumption, as proven in Nokia's People and Planet report of 2022.

AI: The Game Changer

Nokia's AVA Artificial Intelligence (AI), a blend of telco expertise and intelligent automation, predicts optimal times for implementing energy-saving actions. This technology ensures a delicate balance between energy conservation and network performance, guaranteeing an uninterrupted customer experience.

Moreover, Nokia's AVA Energy Efficiency AI supports multi-vendor capabilities, so savings apply not just to the equipment of a single RAN vendor (Radio Access Network), but for the whole RAN network. It provides a holistic, overarching approach to energy savings on active and passive equipment, with the unique ability to maintain the required balance between energy consumption and network performance and growth, ensuring the customer's quality of experience is not impacted.

Real-world Impact

AI will play an important role in reducing CO2 emissions and lowering network energy costs across new applications without having an impact on network performance or customer experience. In fact, it provides a real-world immediate opportunity for cost savings.

Nokia's energy saving solutions will help our customers concretely reduce carbon emissions across their value chain. In fact, in addition to new energy-saving features for network equipment, we also introduced a radio network software feature that helps reduce the energy consumption of mobile devices. This can make a big difference when our customers are reporting their Scope 1, 2 and 3 emissions.

CSPs must prioritise sustainability and reduce their carbon footprint. By optimizing network infrastructure, improving energy management practices, and leveraging software solutions, we can pave the way for a greener and more sustainable telecom industry.

Setting Ambitious Targets

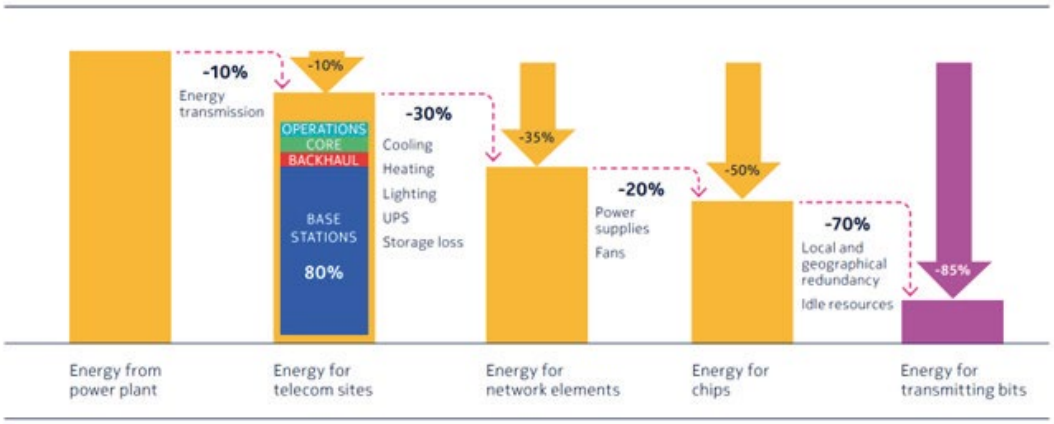
At Nokia, we understand the urgency of the climate crisis. We've set our sights on substantial reductions in greenhouse gas (GHG) emissions. Through the Science Based Targets initiative (SBTi), we've committed to reducing our GHG emissions by 50% between 2019 and 2030 across our entire value chain (Scope 1, 2, and 3). To put this into action, we've pledged to have 100% renewable electricity powering our facilities by 2025, aligning ourselves with the RE100 initiative. Moreover, we're working closely with our main final assembly suppliers, encouraging them to achieve zero GHG emissions by 2030 for the portion of their manufacturing attributed to Nokia. These targets reflect our dedication to a greener future.

Digitalization: A Force for Good

Beyond minimizing our own footprint, Nokia believes in the power of digitalization to transform industries and promote sustainability. We're pioneering solutions like precision farming, leveraging 5G, wireless remote monitoring, private networks, digital sensors, and AI-based analytics to revolutionize agriculture. The impact is staggering - increased yields, reduced costs, and significant water savings. Imagine the potential: if 15-25% of all farms adopted precision farming by 2030, we could see a substantial increase in yields, massive cost savings, and a significant reduction in water usage.

But our efforts don't end in agriculture. At Nokia, we're developing solutions that facilitate improved decarbonization, productivity, resource efficiency, and safety across various industries and cities.

In essence, Nokia's commitment to sustainability isn't just a pledge; it's a movement towards a greener, more connected future. As Nokia, we continue to innovate and drive change, and we invite the world to join us in this endeavour. Together, we can create a tomorrow where technology doesn't just connect us; it sustains us. ■



UPS: Uninteruptable Power Supplies
Source: Nokia calculations based on published operator figures

Africa's MNOs call for new policies

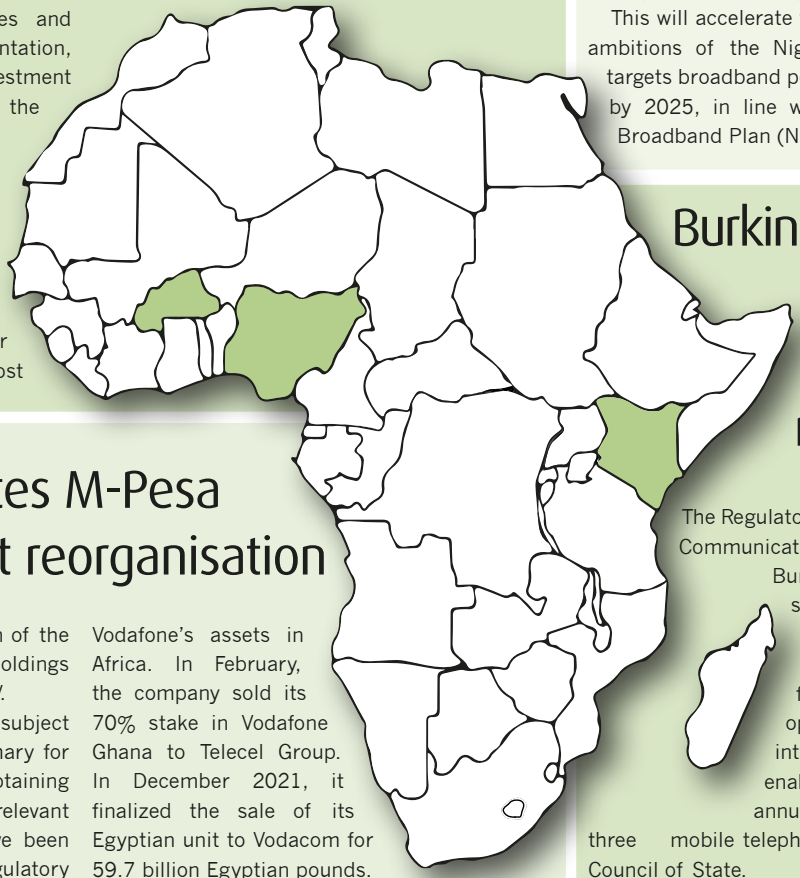
Six CEOs of Africa's largest MNOs have urged governments to establish new policies to expedite the positive and inclusive impacts of mobile technology, to address investment and usage gaps, following a meeting at Mobile World Congress (MWC) Kigali 2023.

The group - Segun Ogunsanya, Airtel Africa Group; Hassanein Hiridjee, Axian Group; Frehiwot Tamru, Ethio Telecommunications; Ralph Mupita, MTN Group; Jerome Henique, Orange Middle East and Africa; and Shameel Joosub, Vodacom Group – met to discuss the prospects and obstacles for stronger partnerships with African governments, to achieve digital inclusion and mobile infrastructure development across the continent.

"Success is a team game. And further political support, across the continent, is essential to register meaningful progress. This includes facilitating the right market structures and conditions to avoid unnecessary fragmentation, and policies that support the investment environment needed for success," said the group of CEOs in a statement.

The group argued for tax rationalisation for the mobile industry through the development of targeted fiscal policy reforms that support economic growth and digital development, deepening digital and financial inclusion, and aligned with national targets; for example, removal of tax on low-cost smartphones and sector-specific tax. They are also seeking regulatory support to implement the recommendations of the UN Broadband Commission's '21st Century Financing Models for Bridging Broadband Connectivity Gaps.' In addition, they have called for climate action policies which must improve access to renewable electricity for corporate buyers, as this is essential for the mobile industry to achieve its climate targets.

"Together, we believe passionately in the power of mobile to act as a catalyst for economic and social inclusion across Africa. We extend an open invitation to other African heads of state to engage with us in driving solutions that focus on deepening digital and financial inclusion in the continent for the benefit of all African citizens," said the group.



Aminu Maida joins NCC as executive vice chairman

Nigerian President Bola Tinubu has appointed Aminu Maida as executive vice chairman of the Nigerian Communications Commission (NCC). He succeeds Umar Danbatta.

Prior to his recent appointment, he was the executive director of technology and operations at Nigeria Inter-Bank Settlement System Plc (NIBSS), the country's central switching company.

In his new position, he will coordinate the activities of the NCC to create an environment conducive to competition among operators in the sector and ensure the provision of quality and efficient telecommunications services throughout the country.

This will accelerate the digital transformation ambitions of the Nigerian government which targets broadband penetration of around 90% by 2025, in line with the Nigeria National Broadband Plan (NNBP 2020-2025).

Burkina Faso suspends new mobile rules

The Regulatory Authority for Electronic Communications and Posts of Burkina Faso (ARCEP) has suspended the new terms applicable to permanent and promotional offers from mobile telephone operators, which came into force on 13 September, enabling the appeal for annulment made by the three mobile telephone operators to the Council of State.

"The Council of State, in its decision, rendered in summary proceedings on October 4, 2023, ordered the suspension of the execution of the decision while waiting to rule on the appeals for annulment," said ARCEP.

The new rules included:

- The opening of bonuses to all networks
- The temporary blocking rather than the deletion of unused credits and packages upon their expiration
- The progressive deduction of advantages according to the shortest validity period
- The granting a minimum period of 30 days for packages of at least 1Gb

Safaricom completes M-Pesa acquisition in asset reorganisation

Safaricom has completed the acquisition of the entire issued share capital of M-Pesa Holdings from Vodafone International Holdings B.V.

"Completion of the transaction was subject to the satisfaction of conditions customary for transactions of this nature, including obtaining approval from shareholders and relevant regulatory authorities, all of which have been duly satisfied, and all approvals regulatory requirements have been obtained," said Safaricom in a statement.

Vodafone had previously agreed to sell all the shares in M-Pesa Holdings to Safaricom for $1 as part of the broader strategy to reorganize Vodafone's assets in Africa. In February, the company sold its 70% stake in Vodafone Ghana to Telecel Group. In December 2021, it finalized the sale of its Egyptian unit to Vodacom for 59.7 billion Egyptian pounds.

Vodafone held the intellectual property rights of M-Pesa until April 2020, when Safaricom and Vodacom joined forces to buy the platform from Vodafone in a US$13.4 million transaction. Prior to this, the two companies that operated M-Pesa in Africa were required to pay Vodafone royalties which amounted respectively to 2% of M-Pesa's annual revenue for Safaricom and 3% of its intellectual property fees.

The acquisition of M-Pesa Holdings should allow Safaricom to simplify the management of M-Pesa and strengthen its control over the financial services segment which has become one of the engines of its growth.

CRAN bids to tax devices

The Communications Regulatory Authority of Namibia (CRAN) wants to reduce taxes on electronic devices as part of a plan to flood the market with affordable devices, solving accessibility challenges.

Emilia Nghikembua, director general of CRAN, said that the institution is preparing a study on the issue which will be forwarded to the Ministry of Information and Communication Technologies (ICT). This initiative is part of the Namibian government's ambition to accelerate the adoption of digital services to accelerate the country's digital transformation.

"We all know that operators are profit-driven entities, that they need to be viable and sustainable and that some areas are so remote that they just don't want to go there," said Nghikembua.

According to the GSMA, there were 2.81 million cellular mobile connections in Namibia at the start of 2023, equivalent to 108.7% of the total population. Such statistics tend to be skewed as many users have multiple devices and subscriptions.

Richard Gadd joins Commvault as new SVP EMEAI

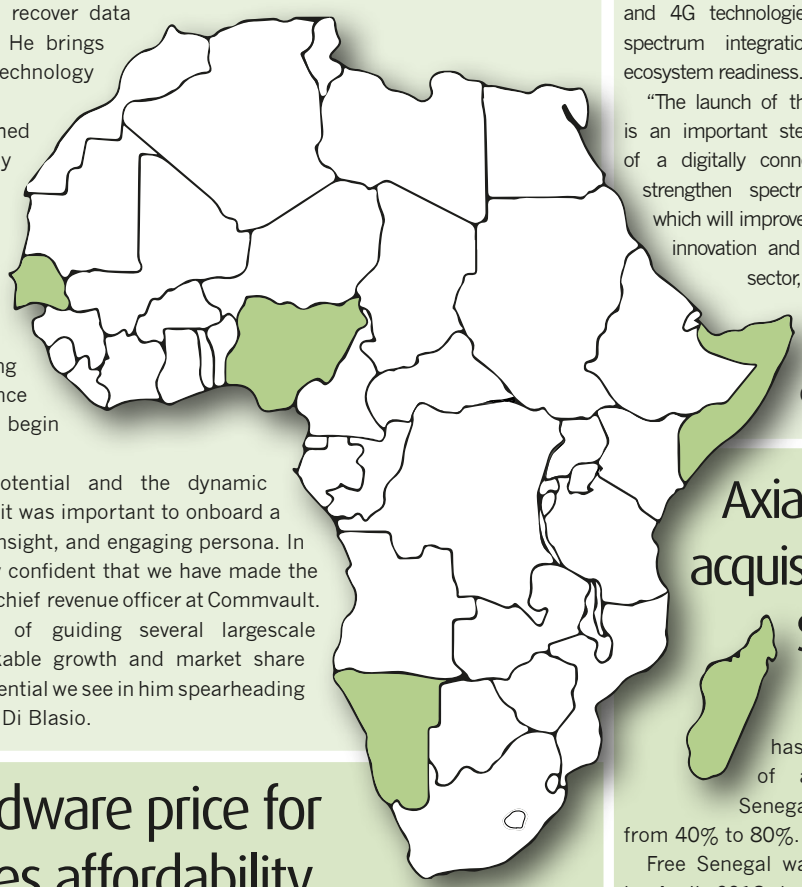
Commvault has appointed Richard Gadd as senior vice president of Commvault's EMEA and India (EMEAI) region.

Gadd will lead the region in empowering global organisations with industry-leading cyber resilience offerings that protect and recover data from today's biggest cyber threats. He brings 25 years of sales experience in the technology industry to Commvault.

"To join one of the longest-established companies in the industry is incredibly exciting," said Richard Gadd, senior vice president EMEAI. "With its strong pedigree in innovation and ground-breaking technology, I'm looking forward to being able to lead and contribute to the Commvault team's excellent work in empowering global organizations' cyber resilience going forward. I am very excited to begin this new challenge."

"Recognizing the tremendous potential and the dynamic momentum within the EMEAI region, it was important to onboard a leader of the right calibre, business insight, and engaging persona. In appointing Richard, we are incredibly confident that we have made the right choice," said Riccardo Di Blasio, chief revenue officer at Commvault.

"His distinguished track record of guiding several largescale organisations to accomplish remarkable growth and market share aligns perfectly with the vision and potential we see in him spearheading Commvault's team in EMEAI," added Di Blasio.



Starlink cuts hardware price for Nigeria, enhances affordability

Starlink has reduced the price of its low Earth orbit (LEO) satellite network supporting hardware in Nigeria by about 21%, from 378,000 naira ($495) to 299,000 naira.

The company has additionally promised to provide a partial refund for customers who ordered the kit in the last 30 days before the discount became available.This decision is the culmination of negotiations with Umar Danbatta, executive vice-president of the Nigerian Communications Commission (NCC). The initiative is part of the actions undertaken by the regulator to accelerate the adoption of telecommunications services, as well as the achievement of the government's digital transformation ambitions. The regulator wants to increase broadband penetration to 90% by 2025, and well beyond 50% by the end of 2023, in line with the Nigeria National Broadband Plan (NNBP 2020-2025).

The reduction in hardware prices is expected to drive adoption of Starlink's services in Nigeria and expand broadband internet coverage in the country.

Somalia launches Spectrum Monitoring Operations Center

The Somali National Communications Authority (NCA) has launched its Spectrum Monitoring Operations Center (SMOC).

The centre will facilitate monitoring and analysis of spectrum usage, identification of unauthorized or illegal activities and rapid resolution of interference issues.

It will also provide real-time data and information to support decision-making processes, ensuring efficient allocation of spectrum resources.

The launch of the Spectrum Operations Center comes around three weeks after the regulator launched a consultation process for the National 5G Strategy it is developing, which will provide a special roadmap for the allocation of 5G spectrum in line with the broader spectrum strategy, which also encompasses 2G, 3G and 4G technologies. It emphasizes harmonized spectrum integrations in different bands and ecosystem readiness.

"The launch of the Spectrum Operations Center is an important step towards realizing our vision of a digitally connected nation. This center will strengthen spectrum management capabilities, which will improve the quality of services, increase innovation and strengthen competition in the sector," said Jama Hassan Khalif, minister of communications and technology for the Somali National Communications Authority.

Axian completes acquisition of Free Senegal shares

Madagascar's Axian has closed its acquisition of additional shares in Free Senegal, increasing its holding from 40% to 80%.

Free Senegal was taken over from Millicom in April 2018 by the Saga Africa Holdings consortium, which consists of Xavier Niel's investment firm NJJ Group, Teyliom Group and Axian Group (via Axian Telecom).

"This transaction underscores the significance of Free Senegal as a key player in the market and its pivotal role in transforming Senegal's telecommunications landscape," said Mamadou Mbengue, CEO, Free Senegal.

"Together, we are strongly positioned to drive forward the digital transformation agenda, focusing on deploying relevant technologies to ensure an enhanced experience for individuals and businesses alike," added Mbengue.

Nigeria to go from 4 to 30 operators imminently with new MVNOs

Nigeria will go from having four mobile providers - MTN, Globacom, Airtel and 9Mobile - to nearly 30 in a few months, which is expected to transform the country's telecommunications market.

The Nigeria Communications Commission (NCC) recently awarded 25 mobile virtual network operator (MVNO) licences. As a licensing fee, the 25 corporations paid the government a total of $7.7 million.

MVNOs are expected to provide competitive alternatives in the telecoms industry, reduce subscribers' phone and data expenses, and improve rural connectivity.

The NCC's strategy is to increase competition in the mobile sector and help bring mobile telecoms services to the country's rural, remote, and underserved areas. Nigeria has over 226 million mobile lines, but only 60% of the population has access to mobile internet, while just 4% of the population has access to 4G.

The new MVNOs are currently finalising their mobile business plans and will soon be launching, aiming to deliver services on 4G and 5G, while also dealing with legacy network disruption.

National Bank of Ethiopia to support mobile money market

The National Bank of Ethiopia (NBE) has issued a new directive on the issuance of payment instruments for mobile money providers in the country. The measure aims to promote security, stimulate competition and innovation among Ethiopia's different mobile money service providers.

The new directive increases the daily electronic account balance limit from 30,000 birr to 75,000 birr and introduces a new daily aggregate transaction limit of 150,000 birr. Exempt from transaction limits are utilities, taxes, airline tickets, fuel, and mass payments. In addition, the directive allows banks to establish subsidiaries specializing in the provision of mobile money services.

According to the NBE, the revision of the directive is part of its ongoing efforts to modernize the financial sector in line with the National Digital Payment Strategy (2021-2024). The central bank recently amended the payments law to allow foreign investors to offer mobile money services in the Ethiopian telecoms market. This allowed Safaricom to launch its M-Pesa digital payment service in Ethiopia to compete with incumbent operator Ethio Telecom's Telebirr service.

NuRAN Wireless gains Category 1 license in Cameroon

NuRAN Wireless has obtained a Category 1 license in Cameroon, enabling it to build and operate a shared passive infrastructure for the country's electronic communications networks.

NuRAN Wireless has an ongoing contract with Orange Cameroon for the deployment of 122 telecoms sites under the Network-as-a-Service (NaaS) business model. The company will not only be able to complete this order, but also better position itself to win contracts with other telecom service providers, as they seek to expand their networks to meet the growing demand for high-speed connectivity in the country.

The initiative can also be part of NuRAN Wireless's expansion strategy in Africa. NuRAN aims to have 10,000 telecoms sites under contract in Africa over the coming years. At last count, it had 4,642 telecoms sites under contract in Cameroon, the Democratic Republic of Congo (DRC), Sudan, South Sudan, Namibia, Ivory Coast and Madagascar.

MTN celebrates 25 years in Rwanda

MTN Group has celebrated its 25th anniversary of operating in Rwanda with a ceremony attended by guests, including President Paul Kagame.

"Who else would have found it easy to invest in a country that had just emerged from our tragic history, as we know it? We both took risks; you took a risk with us, and we took a risk with you, but 25 years later, I believe we can say we are pleased," said Kagame.

"We will continue to invest in Rwanda and are committed to continuing to work with the government and people of this beautiful country to achieve our shared goal of a prosperous and digitally connected nation," said MTN Rwanda CEO Mapula Bodibe.

The company is continuing to invest in networks and systems in order to broaden its reach and bring the benefits of a modern connected life to all Rwandans.

Togo and Benin to launch free roaming between countries

The Regulatory Authority for Electronic Communications and Posts of Togo (ARCEP Togo) and its Beninese counterpart (ARCEP Benin) plan to set up free roaming between the two border countries and have signed a bilateral memorandum of understanding.

The initiative will allow nationals of one of the two countries traveling in the territory of the other to keep their telephone numbers and benefit from local pricing conditions. The agreement considers voice services, SMS in roaming situations and mobile Internet. It also includes the reduction of international communications rates between the two countries.

The initiative complies with Regulation No. C/REG.21/12/17 relating to roaming on public mobile communications networks within the Economic Community of West African States (ECOWAS) which was born in Praia, Cape Verde, in October 2017. Last July, Ghana and Ivory Coast became the first two countries in the community to implement the said regulation. Ghana and Togo have also initiated discussions with a view to implementing community roaming.

Tanzania's telcos invest $13 million in the economy

Vodacom, Airtel, and Tigo in Tanzania are investing $13 million in additional infrastructure development to strengthen connectivity and economic growth.

"We formalised this agreement with the Ministry of Information, Communications, and Information Technology," said Vodacom Tanzania said in a statement. "It is a watershed moment in terms of expanding communication services to citizens and creating economic growth. As part of this initiative, Vodacom Tanzania joins the Consortium of Telco Operators, solidifying the collaboration between the private sector and the government. This agreement enables us to pass over around 3,000 km of communication infrastructure to the government, improving connectivity across the country."

Ezra Chiloba resigns from CA

Ezra Chiloba has resigned as director general of the Communications Authority of Kenya (CA). The regulator's board of directors has accepted the resignation letter.

The resignation comes one month after Chiloba was suspended from his functions, for reportedly having granted himself a mortgage loan of 25 million Kenyan shillings without first submitting it for review and approval by a higher authority.Christopher Wambua, director of communications and public affairs, has been appointed as interim director.

Ezra Chiloba was appointed director general of the Kenya Communications Authority in September 2021, replacing Mercy Wanjau. Before that, he was the director general of the Independent Electoral Commission (IEBC).

"On behalf of the Authority, I wish the outgoing director general every success in his future endeavors and appreciate his invaluable contribution to the organization and the ICT sector in general," said Mary Mungai, chairman of the CA.

Talking satellite

Annet Wanjiru, engineer, Access Partnership

How a satellite-IMT solution can break barriers

Africa's digital landscape has made significant progress in recent years, with several commendable efforts to bridge the digital divide and improve internet infrastructure. However, the continent still faces significant challenges in ensuring broadband internet access is universally available. Despite these challenges, there have been notable improvements in internet connectivity, with an increase in the average broadband download speed from 2.68Mbps in 2019 to 8.18Mbps in 2022, and a decrease in the average price of 1Gb from 10.5% to 5% of the monthly GNI per capita. Myriad new strategies centred on implementing 4G, 5G, and related technologies have been formed, with the aim of enhancing mobile connectivity across the continent. To this end, at present, over 1.3 million kilometres of terrestrial fibre links have been rolled out.

Satellite technology has the potential to provide comprehensive coverage even in the most inaccessible regions of Africa, enabling communication, education, and critical healthcare services. It can help extend broadband coverage to rural and remote regions of Africa – where terrestrial infrastructure deployment is challenging due to geographical barriers and low population density.

There is still considerable progress to be made in ensuring reliable and affordable internet connectivity across Africa; only 6% of rural areas in the continent have digital connectivity. Nevertheless, promising solutions can help bridge this gap, such as integrating satellite technology into the existing IMT infrastructure to form a hybrid network. This presents a unique opportunity to transform the communication infrastructure in Africa, and would result in greater efficiency, reliability, and accessibility, while contributing significantly to the economic growth of the continent. Incorporating technologies such as terrestrial 5G and its derivatives with low Earth orbit satellite constellations can help Africa achieve its objective of becoming a prosperous and well-connected hub for innovation and growth. In such cases, the satellite can be used as the base station, while the ground stations act as relay stations, or vice versa.

Unlocking new opportunities

Africa is on the brink of a remarkable transformation – a hybrid network that combines IMT and satellite technologies can be the spark that ignites this change. This network has immense potential to connect the unconnected, drive economic growth, and revolutionise healthcare and education. It can bridge the digital divide and provide underserved communities with access to broadband internet, mobile communication services, and educational resources. The hybrid IMT-satellite network can empower individuals, businesses, and governments, and create a vibrant digital ecosystem that fosters entrepreneurship, enables e-commerce, and facilitates efficient supply chain management. Improved connectivity can additionally attract foreign investment to Africa and instil confidence from businesses across the globe.

Moreover, integrating IMT and satellite technologies can transform healthcare and education delivery, enabling remote consultations, specialist referrals, and distance learning programmes. This can create a more equitable education system and improve healthcare access for underserved communities. The network can provide critical resilience in natural disasters and humanitarian crises, enabling emergency response teams to coordinate more efficiently with relief efforts and ultimately save lives.

A robust hybrid network can inspire innovation and encourage scientific research across Africa, allowing researchers to collaborate seamlessly and share knowledge in real time. Entrepreneurs can leverage the network to develop and scale innovative solutions, thus furthering Africa's homegrown technological advancements in agriculture, climate change mitigation, renewable energy, and other critical sectors. The possibilities with this technology are endless, and the potential for transformation is infinite.

Breaking barriers for satellite and IMT integration

Integrating satellite and IMT networks requires a collaborative and comprehensive approach from all stakeholders. This necessitates the development of a regulatory framework that supports the integration of these networks while fostering cooperation and coordination among industry players, regulatory authorities, and government bodies. The regulatory framework should be designed with a keen understanding of the technological requirements of satellite and IMT networks. This requires close consultation with industry experts and a thorough assessment of the technical and regulatory challenges that may arise during the integration process.

Furthermore, the regulatory framework should be designed to facilitate infrastructure sharing between satellite and IMT networks. This calls for a careful balancing of the interests of all stakeholders involved. By doing so, we can pave the way for a new era of seamless connectivity that serves the needs of all stakeholders while promoting innovation and driving economic growth.

Efficient radio frequency spectrum management is imperative to successfully integrate satellite and IMT systems, and coordination with national and international regulatory bodies is a prerequisite to appropriately allocate frequency bands for these systems. Advanced spectrum-sharing techniques and leasing arrangements can be employed to ensure optimal utilisation of the available spectrum and compatibility between different systems. These measures are essential to manage the radio frequency spectrum's finite resources and meet the ever-growing demand for wireless services.

However, broadband affordability remains a significant hurdle in Africa, with prices often exceeding the international target of 1Gb for no more than 2% of monthly GNI per capita, with the current average being 5%. To address the affordability challenge, there needs to be stakeholder engagement that addresses the fair share debate. Governments and regional bodies can offer incentives for both satellite and IMT operators to reduce the cost of connectivity and enhance seamless connectivity in rural areas by leveraging existing infrastructure. Effective regulations are necessary to encourage healthy competition, prevent monopolies, and ensure fair pricing for consumers.

We can establish a robust African digital ecosystem through joint efforts that promote innovation, entrepreneurship, and economic growth – with satellite and IMT technology serving as the linchpin.

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Connected societies: South Africa doesn't need faster internet

Paul Colmer, EXCO member at Wireless Access Provider's Association (WAPA)

When Ray Kurzweil coined the phrase 'the second half of the chessboard,' I don't think he foresaw it being used to describe the technology quandary we find ourselves in today.

If you're not familiar with the story, it goes something like this:

A king once asked a wise man what he would like in payment for his services. The wise man presented the king with a chessboard and said he would like one grain of rice that doubles for every one of the 64 squares on the board. Without thinking, the king accepted, not realising that by the time he reached the second half of the board, he'd be paying the man more rice than the kingdom could produce in a year.

Moore's Law suggested that processing speeds would roughly double every two years, and for the past decade or more, it's held true. If you think about it, we're also there or thereabouts in most aspects of technology, including internet speeds. From the early days of dial-up internet, today's consumers are already getting used to surfing the web at close to 1Gbps and more, and there's no sign that we're going to slow down anytime soon.

As such, every new square in our proverbial chessboard represents a quantum leap forward, as it was from 4G, to 5G and now 6G. But here's the thing: we don't need faster internet.

Now that we're in the second half of the chessboard, technology advances are getting to a point where they're outgrowing their own usefulness. Take TV resolution, for example. We've watched the steady progression from the first HDTVs, yielding massive improvements from standard definition, to 720P, true high definition, and then 4K. Now we're seeing a proliferation of 8K TVs, and even 16K TVs have been prototyped.

Already with 8K, we've starting to reach the limits of what's useful to us as humans. Our evolution has gotten us to the point where there's not much benefit to the extra resolution because our eyes can't perceive the differences between 8K and previous-generation 4K screens. Similarly, we now have super wideband audio systems that far exceed the top and bottom ranges of human hearing.

Switching to internet speeds, 5G was touted as a quantum leap, and while technically it is, it's the equivalent of our 8K screens. The hype has mostly been driven by manufacturers needing to keep pushing the envelope to have something 'new and better' to sell, rather than addressing any real end user needs. In fact, I'm not aware of any overwhelming 5G success stories anywhere in the world, let alone here at home, where the digital divide is wider than ever.

As if that's not enough, we haven't even started hitting our stride when it comes to 5G adoption and some vendors are already talking up the coming 6G evolution, which South Africa is quite simply not ready for.

What are we possibly going do with 6G? There's a limit to how fast we move and process information. We can't watch movies at three times the speed. 6G proponents will have you believe the next-gen technology will enable interpersonal human communication, using internal implants like Neuralink to transmit information faster than what our senses can handle.

However, 6G uses extremely high millimeter wave transmission, which doesn't penetrate beyond free airspace, not even through human skin, which makes it useless for what the technology is touted to enable (unless we all start wearing external antennas).

Sound familiar? After all, 5G was touted as the catalyst for 4IR (the fourth industrial revolution), but it hasn't exactly set the world on fire.

It's my opinion that mobile networks operators are having a 'G-race,' but this is nothing new. Since the pioneering Wright brothers first flight, the aviation industry has yearned for speed, from propellers to jets, and peaking with the revolutionary Concorde hitting supersonic speeds in 1969.

Ever since Concorde was decommissioned in 2003, and despite 30 years' of massive advances in aviation technology, nobody has launched another commercial supersonic aircraft. Why? Because we simply don't need to go that fast and the cost of doing so is too high. The business case does not work, and if it did someone, would have done it.

The moral of the story is this: we don't need to rush headlong into the second half of the chessboard when we haven't even started to saturate society with the technology we already have. We don't need 6G – or even 5G; what we need is every person connected to 4G internet, to have affordable access to a smartphone, and to shrink the digital divide.

Instead of trying to turn science fiction into fact in the relentless pursuit of profits, as WISPs and cellular operators we can far more realistically and responsibly look to meet the government mandate of not leaving anyone behind.

Should we not be diverting our efforts to what existing technologies can deliver and creating truly connected societies, especially in Africa where we need it most? ■

Building smarter cities

Across the world, populations are rising, and urbanisation is expanding; but what role do communications service providers have to play in the digitisation of the cities of tomorrow?

Global population growth is continuing upon its (environmentally devastating) rise, placing new pressure on governments and city planners to provide an adequate quality of life for their citizens amidst increasingly urgent calls for environmental sustainability.

With the rapid rollout of high-speed connectivity, increased coverage, and the fall in pricing, smart cities, utilities, grids, buildings, etc., are becoming an affordable way to better manage city life while mitigating the impact on the environment. Indeed, Internet of Things (IoT) technologies are beginning to have a very real effect on the efficiency, sustainability, and liveability of the modern world.

Addressing urbanisation

Africa is the second most populous continent after Asia with 1.4 billion residents as of 2022. The region's growth rate has remained above 2.45% since 2000, with women birthing on average 4.2 children each. The United Nations predicts that, by the end of the century, Africa will be home to 3.9 billion people, a whopping 40% of the global population. But where will they all live?

With an increasingly digital world and an extremely youthful population, urbanisation is on the rise across both the globe and the African continent – where it has expanded from 35% in 2000 to 56% in 2021. More and more young people are moving to urban centres in search of opportunities, placing greater burden upon city centres, both environmentally and operationally.

"There is no silver bullet to address the challenges of a growing global population, but smart city technology can certainly play its part in addressing challenges with urbanisation," believes Kunal Shukla, senior vice president of technology, Digital Barriers.

The smart city revolution is well and truly in force across the continent, with revenues expected to reach US$8.86 billion by year end, as per Statista, and continue to grow at 17.34% annually to hit US$19.71 billion by 2028. Indeed, the many challenges of increasing urban density – overcrowding, lack of housing, sanitation, water supplies, environmental degradation, transportation, crime, etc. – can be tackled with effective smart city planning, a fact which is increasingly being recognised by governments and city officials.

"As urban environments become increasingly connected and data-driven, communications service providers can provide the essential communication networks and city services, using smart devices, sensors, and IoT to gather data and optimise various processes, manage critical infrastructure and transportation systems, and enable access to public services," shares Dominic Smith, marketing director, Cerillion.

New technologies are opening the door to an era of increased connectivity, efficiency, and a greener way of living: "evolutions in communications technology such as 5G, AI, edge and other advancements are driving efficiency in the way we live, work, and interact as a society," agrees Shukla. "For example, making it easier to monitor and make adjustments to traffic flow, public transport and emergency response."

Securing the smart city

Research shows that, by 2024, there will be more than 1.3 billion smart city connections, increasing the complexity in managing and securing infrastructure and data alike. Moreover, with cyberattacks on the rise globally and the proliferation of sensitive data available via the dark web, securing the smart city – which relies on the integration of a variety of technologies and data sources · has become paramount. Finding the right balance between supporting the future of connected cities and managing the associated risks is key.

"Communications services providers' expertise in connectivity, data management, security and

monetisation, are all vital for the successful implementation of intelligent, efficient, and sustainable smart cities in Africa," asserts Smith.

Within a smart city, inexplicable volumes of data are collected every minute from sensors across the network. This data is transported throughout the city across a fragmented collection of often inadequately secured networks which provide cybercriminals many points of entry to pick between. Each endpoint, be it an IoT traffic monitor, a CCTV camera, or an equipment sensor on the smart grid, represents a new opening to attack, presenting a serious challenge.

"Data privacy and security are essential aspects of smart cities and modern day living. With the enormous amount of data being collected and analysed, it is imperative to take a holistic approach that prioritises data privacy and security by design at all layers within smart city solutions," says Shukla.

Indeed, data security must be guaranteed for enterprise, government, and consumers in today's smart cities, for the maintenance of trust and the protection of sensitive information. End-to-end encryption for data in transit and at rest to protect data from interception or unauthorised access, utilising secure communication protocols and encryption algorithms, is considered vital.

"From a technology standpoint, the implementation of strong protocols for authorisations, and authentication and the use of data anonymisation wherever feasible are just some of the protections that should be put in place," agrees Shukla.

Other methods to help minimise the risks prevalent within the smart city ecosystem include regular audits and monitoring; data minimisation; data classification, with highly sensitive data facing stricter controls; secure data transmission utilising virtual private networks (VPNs); security awareness and training for employees, contractors, and users; and robust device management complete with authentication mechanisms and regularly updated software and firmware.

"Technology is very important here, as are the people and processes that surround it," says Shukla. "For example, a privacy impact assessment should be conducted for all smart city deployments that collect or process personal data. There should also be clear governance frameworks in place to ensure privacy and security are always front of mind in the design, development, and operation of smart city solutions."

One of the key challenges in securing smart cities across Africa is the skills shortage. Without adequate home-grown talent, securing the smart cities of today or the future, becomes an impossible feat. However, many projects are underway across the continent to upskill the youthful population in ICT capabilities, helping nations plan for a digital future.

Connectivity is key

For these technologies to be truly effective, as well as ensuring adequate security and a skilled workforce, communications service providers must deliver reliable, secure, always-on connectivity.

"Smart cities depend on reliably connecting sensors, devices, and people so that data can be securely collected, processed, and shared in real-time for the benefit of its inhabitants. Communication networks therefore play a critical role," asserts Shukla.

Smith agrees that communications service providers are crucial to meeting the task at hand, "leveraging advanced technologies to enhance the quality of life for their residents, improve efficiency, and promote sustainability."

Current estimates by the United Nations say that by the end of the decade, over 60% of the global population will be concentrated in cities. "Nowhere will this growth be more evident than in Africa, dramatically challenging the delivery of connectivity and public services," adds Smith.

According to Shukla, by providing reliable, secure, and high-speed connectivity, communication networks can help to improve the efficiency of city operations, make better decisions, and ultimately improve the quality of life for citizens.

"There are multiple types of communication networks that can be used in smart cities including licensed and unlicensed cellular (2G/3G/4G/5G/CBRS), Low Power WAN (Zigbee, LORA), WiFi, satellite-based communications, and others (DRSC, NB-IoT, mesh networks)," explains Shukla.

However, coverage and access remain patchy, with many regions still awaiting reliable 4G coverage. As of September, 5G – which is expected to be the big enabler as far as IoT/smart city technologies go – was available in 16 markets, primarily in major city centres. Coverage is expected to expand notably in the coming years, reaching 67% of South Africans, 21% of Kenyans, and 15% of Nigerians, by 2025, highlighting the need for further investment by operators.

Nevertheless, Africa's smart city projects forge ahead, with both private and public projects making the headlines in Egypt, Morocco, Rwanda, Kenya, South Africa, etc. Utilities management, water supply, building security, traffic management and crime prevention have all been prioritised in the implementation of Africa's new smart city projects, paving the way for a more efficient, safer, and brighter tomorrow.

Overall, "smart cities can be a valuable tool for addressing the global population challenge and in conjunction with other strategies, such as sustainable development and environmental protection, can improve our quality of life for today and generations to come," finishes Shukla. ■

Egypt goes smart

Egypt is building a New Administrative Capital for 14 government ministries, as well as up to 37 smart cities throughout the country to create a digital society.

Residents of the New Administrative Capital benefit from smart cards and apps for building access, making payment, and utilising public WiFi supported by streetlights. Some 6,000 cameras will monitor the city's pedestrians and vehicles and help manage traffic flow.

Within the new capital, Siemens is building the country's first residential complex operating on an AI-based building management system; Nokia is delivering 'intelligence everywhere' to help bring IoT use cases to residential and enterprise users; and Schneider Electric is driving system optimisation – including water management – with its EcoStruxure platform.

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Mobile money breaks the mould for Africa's MNOs

Mobile money is proving a game changer for MNOs struggling with stalling core business revenues; but what are the challenges in further expanding its reach?

Mobile money is one of the biggest telco topics globally right now. As per GSMA data, there are more than 1.6 billion registered mobile money accounts – 400 million of which were added during the COVID-19 pandemic. Daily global transaction values surpassed all expectations, exceeding $3.45 billion by the end of 2022.

The mobile money revolution is spread unevenly, with a huge focus on the African continent.

"Africa has been the leading light in mobile money," says Dario Betti, CEO, Mobile Ecosystem Forum. "Mobile money can fill a real lack of professional infrastructure in some parts of Africa. Some communities do not enjoy a solid financial offer, or availability of services and the cost of services is high. Mobile technology has spread fast and wide, and building on this technology has allowed the development of the 'mobile banking first market.' Compare that with European and American markets where mobile money was competing with existing banking services and emerging near field communications cards."

Making money

The GSMA reports that in sub-Saharan Africa, the number of live accounts grew by 17% year-on-year (yoy) to 763 million in 2022, served by 154 live services; transaction volumes increased by 21% yoy to 45 billion, and transaction values expanded by 22% yoy to $832 billion. In MENA meanwhile, 31 live services accounted for 59 million live accounts (up 7% yoy), transaction volumes boomed by 53% yoy to 357 million, while transaction values exploded by 45% yoy to $21 billion. Regionally, southern Africa experienced the largest yoy growth of live accounts, up 16% yoy to 18 million; western Africa reported the largest growth in transaction volumes, up 29% yoy to 12 billion; and northern Africa saw the largest yoy expansion in transaction value to $4.6 billion.

Mobile money offers financial inclusion,

including to those residing in remote or rural regions where physical bank branches are scarce. It has provided millions of unbanked or underbanked consumers with access to basic financial services, allowing them to save money, make payments, and access credit, with significant improvements impacting on economic development and poverty reduction.

Arnold Ponela, senior research analyst, data & analytics - client devices at International Data Corporation for South Africa and sub-Saharan Africa, concurs: "limited access to traditional banking services in many African countries has led to a significant majority of the population being unbanked. For instance, Nigeria, the continent's largest economy by GDP, had about 60% of its sizable population unbanked in 2022. The widespread availability of mobile phones has made mobile money services easily accessible, further advancing financial inclusion among previously marginalized populations. Innovative features like tailored savings accounts, credit facilities, and insurance products contribute to its success. Additionally, the platform's capability to receive remittances from abroad aids adoption, as many in the population rely on these remittances."

The prevalence of smartphone ownership – 78% in MENA and 51% in sub-Saharan Africa in 2022 - throughout the African population makes mobile money an ideal solution for the underbanked.

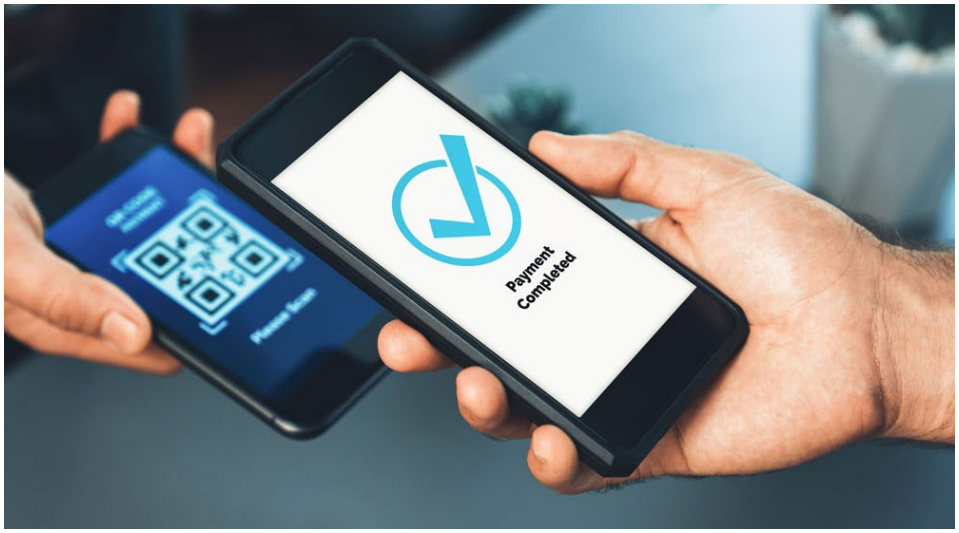
"Africa has a large and growing population of mobile phone users. In 2022, there were over 600 million mobile phone subscribers in Africa, and this number is expected to grow to over 800 million by 2025," outlines Nael Hailemariam co-founder and CEO at Chapa Financial Technologies S.C. "Mobile money provides a convenient and affordable way for these people to send and receive money, pay bills, and make purchases. Further, mobile money is supported by governments and regulators in many African countries. This has helped to create a safe and secure environment for mobile money transactions."

Recent years have seen many African governments recognise the potential of mobile money to drive financial inclusion and economic growth, resulting in the implementation of supportive regulatory frameworks and policies to encourage the growth of mobile money services while ensuring security and consumer protection.

"In some cases, mobile money came before the legislations. High demand and supporting laws were the main ingredients, but we have to admit that new silicon valleys of Africa have become established. Kigali and Lagos are attracting companies, talent, and capitals for mobile money," says Betti.

Diversification = monetisation

Africa's MNOs are facing stagnating profitability for core business services as increasing competition drives rates down and increasing costs for network maintenance and upgrades, fuel prices, etc., impact the bottom line.



"MNOs globally are seeing challenges in growing their core business," agrees Betti. "Roll out of network technologies is a high-cost business, and consumer average revenue is not growing fast. Monetising existing network is a good solution."

Accordingly, MNOs are seeking new ways to monetise existing network infrastructure with a whole host of value added services (VAS), including mobile money.

"MNOs can diversify their offerings, leveraging their extensive customer base and established brand recognition to attract users to their mobile money platforms," says Ponela. "Mobile money transactions, like remittances and bill payments, boost their overall profitability by complementing traditional telecommunication services. M-Pesa's 85% penetration rate in Kenya as of December 2022 underscores the widespread adoption of mobile money services, supporting MNOs' pursuit of this opportunity to stay ahead in the evolving tech landscape and expand their service portfolio."

Mobile money is proving quite the money maker for early adopter MNOs. Safaricom reported that in its 2023 financial year, M-Pesa revenue expanded 8.8% yoy to KShs 117.19 billion, and customers were up 5.2% yoy to 32.11 million. MTN, meanwhile, reported that in the year ending December 2022, active mobile money users grew by 21.4% yoy to 69.1 million, transaction volumes were up 33.9% to 13.4 billion, transaction values were up by 15.8% to $221.3 billion, and fintech revenue was up 14.3% yoy. Airtel Africa also cites positive results for its mobile money segment in the year ending March 2023, including a 29.6% yoy increase in revenues to $692 million and a 20.4% yoy increase in users to 31.5 million.

"Mobile money is a profitable business. In 2022, the mobile money market in Africa was worth over $1 trillion," reports Hailemariam. Moreover, "mobile money helps to increase the number of active mobile subscribers. This is important for MNOs because they generate revenue from airtime sales and data usage."

Mobile money is also widely considered a positive for boosting customer loyalty, says Hailemariam: "mobile money helps to reduce churn, when customers switch from one mobile network to another. It can help to reduce churn by making it more convenient for customers to stay with their current network," says Hailemariam.

Despite offering a promising new potential revenue stream, challenges remain: "mobile money is a nice way to build new services on top of existing networks. However, this is not free money. Many MNOs have had to recognise that the market is very competitive, and that know-how is required to manage mobile money services," warns Betti.

Securing mobile money

While mobile money has proven widely successful across Africa to date, MNOs continue to face significant hurdles around safety, security, traceability, and transparency.

"In 2021, there were over $1 billion in mobile money fraud cases in Africa," says Hailemariam. "This has led to concerns that security could hinder the uptake of mobile money. However, mobile money operators are taking steps to improve security. For example, they are using encryption and biometric authentication to protect customer data. They are also working with regulators to develop and enforce security standards."

"Previous fraud, security breaches, and unauthorised transactions on certain mobile money platforms caused users to hesitate fully adopting mobile money services," says Ponela. "To counter these issues, mobile money providers and governments have been actively working on enhancing security measures, implementing regulations, and raising awareness about the safety of mobile money transactions. Moreover, technological advancements and increased experience with mobile money services have likely contributed to improving the security landscape."

Security is always a trade-off, reports Betti. "In many cases mobile money represents an improvement to the previous services, especially

when it is the first digital service. However, digital services create new challenges such as cybersecurity fraud, and also and more importantly education. This is a new tool and users have to get familiar with the 'does and don'ts.' Consumer education is potentially the biggest challenge to security right now."

In seeking to further secure mobile money networks and enhancing traceability, blockchain is emerging as a potential solution. Blockchain - a shared, immutable ledger that facilitates the recording transactions and tracking assets in a business network - could enable secure and transparent transfers and transaction recording. It can also be used to build a decentralised financial system in which no single entity, such as a bank or government, has control. This could help combat criminal activity and corruption.

"Blockchain offers promising solutions for the future of mobile money services as it addresses challenges related to efficiency, security, and transparency," says Ponela. "Its decentralised and tamper-proof nature ensures heightened security, reducing the risk of fraud and unauthorised transactions. Through the elimination of intermediaries and decreased transaction fees, blockchain can facilitate cross-border transactions and remittances, particularly benefiting African users amidst high remittance flows."

Hailemariam highlights that blockchain could also be used to reduce the cost of mobile money transactions. Cross-border remittances, of which a huge number occur daily in Africa, cost an average of 6.8% fees due to currency conversion, financial institution fees, and government taxes. Blockchain-based remittance systems cut out the middleman, eliminating the need for intermediary banks or transfer operators, while also accelerating transaction speed.

"However, Africa's potential adoption of blockchain technology faces hurdles related to technology readiness, scalability, and interoperability with existing financial systems," says Ponela. "Furthermore, Africa faces challenges with user literacy, accessibility, and connectivity which will compromise the successful integration of blockchain technology into mobile money services."

According to Betti, while blockchain is a great technology, it is not a solution to all issues. "In mobile money for instance, the African markets have shown how it is possible to create secure and reliable systems without using blockchain. Blockchain has got some disadvantages that might limit its uptake: complexity in usage, storage security, a high computational requirement."

World-leading results

Africa has shown the world that mobile money can be a powerful tool for financial inclusion, and the market is now reaching a level of maturity not seen in other countries.

"Mobile money can help to bring banking services to people who do not have access to traditional banks. It can also help to reduce poverty and improve economic growth. The rest of the world can learn from Africa's experience and adopt mobile money to improve financial inclusion and economic development," says Hailemariam.

Ponela agrees: "The world can learn from Africa's mobile money market by embracing innovation, encouraging collaboration, and prioritizing user experience for increased adoption. Africa's success also showcases the potential for leapfrogging traditional banking and overcoming connectivity challenges with the right strategies. Africa's mobile money success emphasizes the significance of understanding local contexts, embracing innovation, and prioritizing user experience in mobile payment services, providing valuable lessons for global providers to create more inclusive, efficient, and user-friendly payment solutions."

For lessons on mobile money, the world is looking at Africa, opines Betti. "Africa has got the widest implementation of services and a high level of take up. Many other countries have not managed to reproduce the uptake seen in countries such as Kenya. Recently we've seen the diversity and creativity in new ancillary services, financing, cash discounts and loyalty and business to business payments. The creativity of the mobile payment operators in Africa is now becoming a key element of attraction."

It remains unlikely that mobile money will ever reach the impressive heights in developed world regions like western Europe, the UK and the USA, given the preference for digital wallets and near field communications technologies. However, for other emerging economies like much of Asia, there are valuable lessons that can be learned from Africa in the widespread rollout of mobile money. ■

Overcoming interoperability challenges: keeping remote renewable assets connected

Alastair MacLeod, CEO, Ground Control

The ability of different systems and devices to communicate and work together seamlessly – interoperability – has transformed industry. In the renewables sector, interoperability is key to keeping remote renewable assets including wind turbines, solar installations, and energy storage systems connected.

The Internet of Things (IoT) has already enabled unprecedented levels of connectivity, data collection, and analysis across industry, and the renewables sector is no exception. IoT devices can be used to monitor the performance of renewable energy assets such as turbines and generators, utilising real-time data to improve efficiency and reduce downtime.

But these devices rely on interoperability to function effectively. IoT devices must be able to communicate with each other and other systems, such as cloud-based platforms and data integration tools to deliver increased efficiency, cost reduction and improved sustainability.

Why interoperability matters

In the renewables sector, interoperability is essential for ensuring that all hardware and software systems can communicate with each other, regardless of the manufacturer or technology used. As renewable energy assets are often situated in remote locations, where terrestrial coverage is intermittent or unavailable, it can be difficult to maintain connectivity and monitor performance.

Real-time data exchange between different systems allows for more accurate and comprehensive data management. Given the inherent unpredictability of wind, sun, and water patterns, the ability to improve the speed and accuracy of output forecasting can be a game changer.

This data can also be used to inform predictive maintenance ensuring at-risk parts are replaced

before failure, avoiding costly downtime. The early detection of turbine damage, for example, can save wind farm owners millions annually. And the same goes in myriad other examples in solar and other renewable settings and environments where early intervention is crucial.

What's more, interoperability makes it easier to add new systems and devices to existing infrastructure, making it more scalable and adaptable to changing energy needs. This is especially important in the renewables industry, where new sources of energy are constantly being developed and added to existing energy systems – secure, stable connectivity with the grid is essential.

Interoperability challenges faced by the renewables industry

One of the most significant challenges to achieving interoperability is communication and integration issues between different hardware and software systems. Renewable energy systems are often composed of different components and technologies that may not be compatible with each other. For example, solar panels from one manufacturer may not be able to communicate effectively with inverters from another manufacturer. This can result in inefficiencies, data silos and increased costs.

Interoperability can increase the vulnerability of renewable energy systems to cyber-attacks. When different systems and devices are connected and exchanging data, it can create new attack vectors that may not have been considered in the design of the original system.

In addition, currently there is no universally accepted standard for renewable energy systems, which can make it difficult for different systems to communicate and exchange data effectively. This can lead to inefficiencies, reduced data quality, and increased costs.

What's more, often renewable energy assets such as wind turbines or solar farms, are located in remote areas. These areas may experience intermittent or even complete lack of traditional terrestrial coverage, which can make it difficult to establish reliable connection for data exchange and remote monitoring.

The importance of resilient and ubiquitous connectivity

At present, a mere 15% of the Earth's surface is supported by conventional terrestrial communications infrastructure, some of which is complex, vulnerable, and expensive to maintain. Satellites in contrast, can provide global coverage and are comparatively resilient – unaffected by, for instance, natural disasters.

As assets such as reservoirs and wind turbines are in remote, rugged environments, often it's not financially viable to build or maintain the infrastructure required to support these assets via terrestrial or fibre connectivity. In fact, a recent survey by Inmarsat found that 91% of business leaders felt satellite connectivity was key to improving the effectiveness of IoT solutions.

Perhaps unsurprisingly then, satellite has become an increasingly popular solution for assets outside traditional terrestrial coverage to ensure reliable, blanket network coverage.

Important considerations for satellite integration

Some integration challenges are regulatory (spectrum allocation and licensing, for example), while others are capital, not least the cost of deploying satellite-enabled devices. But in short, hardware compatibility and power management are important considerations for anyone looking to introduce satellite IoT modules into their network.

Satellite IoT modules typically use different communication protocols and hardware interfaces than traditional IoT devices, so it is important to ensure that the modules you select are compatible with your existing hardware and software infrastructure. Selecting modules which support the communication protocols and physical interfaces required by your network is key.

In addition, satellite IoT modules may require different power management strategies due to their reliance on satellite connectivity and potentially long battery life requirements. So it is important to select modules that are designed to operate efficiently in low-power environments, and to implement power management strategies that minimise power consumption and maximise battery life.

Finally – cost. Due to the added complexity and technology required to support satellite networks, satellite modules and indeed satellite airtime, can be more expensive. However, there are several ways this can be integrated within your network to ensure you get the right balance of performance and cost. Just one such example, in the case of one of our customers managing a water treatment works; sensors utilised LoRaWAN to transmit data to a hub, the hub then optimised the data payload to reduce transmission costs, and transmitted this via satellite only when cellular connectivity was unavailable. This solution has proved very successful and stands as a great showcase of the possibilities available with integrated networks.

Seamless network integration

Thinking about interoperability and integration more generally, it's key renewables organisations evaluating hardware and software solutions, consider systems and components that are designed to work together. Though not always possible, it's important to consider factors such as compatibility, data exchange standards, and communication protocols. By choosing solutions that are designed to work together, companies can streamline communication and improve efficiency.

APIs provide a standardised way for different systems to communicate and exchange data, while data integration tools enable companies to consolidate and manage data from multiple sources. By leveraging these tools, companies can improve data quality, reduce data silos, and streamline communication between different systems. Simply, APIs and data integration tools are powerful tools for achieving interoperability.

Moreover, cloud-based solutions can play a critical role in enabling remote connectivity for renewable energy systems. By storing data in the cloud, companies can access data from anywhere with an internet connection, enabling remote monitoring and management of renewable energy systems. Cloud-based solutions also provide a scalable and cost-effective way to store and manage data, enabling companies to optimise energy resources more effectively.

> "Cloud-based solutions can play a critical role in enabling remote connectivity for renewable energy systems. By storing data in the cloud, companies can access data from anywhere with an internet connection, enabling remote monitoring and management of renewable energy systems."

Managing growth, and costs

In Europe, solar and wind power generated 22% of all electricity in 2022 according to European Electricity Review 2023 – outstripping fossil fuel (20%) for the first time. However, according to Wood Mackenzie Power, $8.5 billion was being spent on unplanned repairs and corrections caused by component failures in wind operations.

Though the substantial growth in renewables demonstrates a clear appetite for the global commitment to hit eco targets, this must be balanced with managing economic investment. Given that many of these costs can be mitigated with reliable monitoring and control, preventative maintenance, especially for devices in hard-to-reach areas; it's no great surprise that satellite IoT is becoming increasingly popular within the renewables sector.

Ultimately, the renewables industry has had to cope with managing remote and harsh environments for many years and has done so adeptly, evolving with the technology to support remote management.

There will always be challenges of course, but with satellite, issues associated with operation visibility and control could be a thing of the past. With the availability of reliable connectivity anywhere on the planet, renewables operators have the chance to turn what was once a major challenge, into a cost saving, and efficiency bearing advantage. ■

Bringing broadband to Sudan's gold mines - via satellite

Sudan, one of the largest gold-producing countries in the world, is home to many mining companies. In an increasingly competitive environment, mining corporations need to make decisions quickly to minimize risks to their business; however, these decisions can only be made after assessments of operational information from multiple sites. To gain competitive advantage, companies urgently require internet-based communication systems, which can facilitate transfer of data in real time.

However, mobile connectivity remains patchy across the country, with significant coverage gaps in both terrestrial broadband and mobile internet. Moreover, mining activity is mainly concentrated in areas unserved by cellular networks, leaving companies few options beyond satellite broadband to connect remote sites and manage operations. Such areas are generally inaccessible, rendering data transmission challenging - underground areas are difficult to access with traditional radio waves weakening and unable to penetrate obstacles and mine surfaces. Besides, there is a high probability of wired communication systems getting damaged in landslides or explosions.

Satellite networks have enabled mining companies to overcome all technological barriers and provide high-speed broadband to remotely based work teams. Satellite communications systems ensure that users can exchange real-time information regardless of location, thus accelerating the decision-making process.

Serving Sudan's mines – from space

Early in 2021, a gold prospecting company approached YahClick for high-speed satellite broadband to link its multiple work sites, monitor onsite operations and dormitories.

The customer needed a robust and scalable solution capable of withstanding extreme conditions, while delivering uninterrupted communications as site maintenance of terrestrial systems is difficult in remote environments. Satellite broadband, public WiFi and Point-to-Point services to link multiple work sites and crew on the move, were part of the desired solution.

After discussion, it emerged that YahClick's high-speed satellite broadband service could simultaneously serve the customer's multiple sites and workgroups. Covering 180 remote locations, the project commenced in February 2021. By June, YahClick's satellite broadband service was activated at 40 sites across Sudan.

Due to the remoteness of locations, transportation of terminals and other hardware proved to be difficult. Fuel shortage, vehicle malfunctions and non-availability of spare parts further complicated the deployment process. To expedite work, YahClick's support personnel switched to travelling in convoys instead of solitary vehicles. Moreover, they ensured that the equipment had a stable power source in off-grid areas, working closely with the client's IT department to set up the internal network and identify locations to install the terminals.

YahClick's' ecosystem consists of Ka-band links, Mikrotik routers, Mesh access points, network controllers, Point-to-Point access points and IP phones. YahClick has been commissioned to provide its services for five years.

Extending to local communities

As a result of the installation, internet is readily available in areas where it was previously non-existent. The mining company can now survey isolated belts and expand operations without worrying about lack of broadband connections. Satellite internet has considerably reduced the time and effort spent in exchanging information from remote camps to the headquarters.

"The availability of YahClick internet has greatly improved the lives of workers in the mining industry by boosting social communications with their families, enabling electronic banking services and helping overcome distances," said a YahClick customer, Mohamed Sheikh El Din.

YahClick was able to create a highly responsive system that is contributing to the expansion of the client's business, as well as the advancement of local communities. Internet usage has increased exponentially within the neighbouring communities, as satellite broadband is universally available. They now rely on YahClick to learn and reach out to the world through e-classrooms and other online platforms. YahClick's solutions are simple to configure and easy to use, delivering internet everywhere, including the farthest outposts of Sudan, without complicated procedures or bill shocks.

"After installing YahClick's satellite internet solution, we could successfully introduce modern systems for greater operational safety and secure data exchange at our mine that had previously been isolated from the world, as the nearest cellular network is 150 km away," said a YahClick customer, Nizar El Tijani. ■

Nungu Mine goes smart with 5G and IoT, enhancing worker safety

South Africa's mining sector contributes some 18% of the country's GDP and provides employment for around 500,000 workers. In the dangerous, dirty business that is mining, safety and effective communications are essential.

This has been recognised by the Nungu Mine in Elandspruit, where 5G wireless technology installed at the end of 2022 has delivered unparalleled enhancements in worker safety and business productivity.

"This is a game changer for the entire industry and the hundreds of thousands of people it employs," said Neo Phukubje, managing executive at BCX Wireless Solutions.

Enhancing safety and efficiency

Instantly addressing a wide range of challenges, the deployment is set to radically enhance the mine's operational efficiencies and safety, providing vital data analytics and automation that enables video monitoring via drone technology, integrated connectivity with handheld devices and tablets, and a facial recognition proximity detection system.

"Data is a valuable asset for miners, enabling 'Data Driven Decision-Making' in the critical mining environment," said Wang. "5G connectivity will make the South African mining sector globally competitive. We are excited about working together with our partners like BCX to drive digital transformation in the mining sector, which is such a crucial industry in the economy."

5G wireless technology solves for use-cases within businesses, where speed, reliability and reduced latency are critical. It creates possibilities to transform every area of the operation, from workplace safety to improved productivity through predictive intelligence. Each of the ecosystem partners, including Huawei, MPI Holdings, Umnotho Technologies, and Dahua, played a pivotal role.

"The importance placed on the partner ecosystem in the project helped develop vital innovations in safety," said Gert Venter, MPI. "This includes 5G-enabled proximity alert between two heavy vehicles for collision prevention, which can mean the difference between life and death."

According to Frenndy Wang, channel department director at Huawei South Africa's enterprise division, in addition to improved safety and operational efficiency, another differentiator is that 5G allows for AI-based real-time data analytics, a key to smart mining.

Two phase deployment

The project at the Nungu Mine was completed in two phases.

In the first phase, BCX deployed 5G-enabled cameras at critical points at the mine to enable proximity detection, enabled by Internet of Things (IoT) sensors and digital processing technologies. A stockpiling monitoring system, enabled by footage collected via drones and processed via the digital edge computing systems, was installed. Meanwhile, in-car connectivity to monitor driver fatigue and collision prevention to minimise the number of incidents and collisions were enabled, and a pedestrian protection system, enabling the safety and monitoring of miners on site.

These wireless technologies are bringing smart mining to South Africa, enhancing their ability to monitor the mines on a 24-hour basis, enhancing the security and safety of employees, and increasing productivity, while actively minimising incidents at the mines.

The second phase saw the extension of connectivity underground to enable a fully connected smart mine that will increase security, supply motion sensors that trigger an alarm, and enables the mine's control room to monitor underground activity effectively.

"As proven with this launch, wireless technology can be harnessed in powerful ways that make a lasting difference. It builds on our confidence and excitement to work in partnership with all industries from finance, aviation and agriculture to healthcare so they too can benefit from becoming 5G-enabled, fully integrated and connected to a new world of infinite possibilities," said Phukubje. ■

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Going further in critical communications

Thuraya and Cypod Solutions launch industry-first CyLock Satcom Product for global logistics sector

Thuraya Telecommunications Company has released Cypod Solutions' CyLock-Satcom Product, an industry-first IoT tracking and monitoring product that seeks to transform shipping logistics.

Developed by Cypod Solutions using Thuraya's mobile satellite system, the product is expected to revolutionize container tracking and safety across the global logistics industry due to its versatility across land, sea, air, and rail. Whilst traditional shipping provides limited information on the exact shipment location or surrounding conditions of its cargo, CyLock will provide additional features and tools which will optimize container freight operations and increase business efficiency. It is expected to meet the diverse demands of the global logistics sector and stand out as the ideal choice for businesses which are seeking to optimize their container shipping operations, enhance safety measures, and secure the transportation of sensitive and critical merchandise.

"CyLock-Satcom's launch is an important step in Yahsat's IoT growth strategy and is a testament to our enduring commitment to deliver innovative Products that address real-world challenges. As a first-mover in the market, CyLock-Satcom, coupled with Thuraya's state of the art system, holds tremendous potential to transform the container shipping landscape and enhance the capabilities of businesses in the transportation sector. We are excited to witness the impact of this new product as it revolutionizes container tracking and safety across the globe," said Ali Al Hashemi, group chief executive officer of Yahsat.

CyLock Satcom has primarily been developed for the global logistics sector and benefits from advanced technology that will provide businesses with a wide range of unique tracking features to enable efficient container tracking; container safety solutions; transportation of sensitive material; and transportation of critical merchandise.

"CyLock is a game-changer for the global logistics sector, offering a comprehensive IoT solution that addresses the specific needs of container shipping operations across land, air and rail transport," said

Roar Berg, CEO of Cypod Solutions. "We understand the challenges faced by businesses in this industry, and CyLock-Satcom is here to provide the most advanced tracking and safety features."

CyLock-Satcom employs a dual-mode tracker that enables it to work on satellite and terrestrial 2G/3G/4G LTE-M/NB-IoT. It can be easily installed within containers and has its own power source. The system also consists of a Thuraya SM2700/3700 module.

Es'hailSat launches Playout Services for MENA

Es'hailSat has launched a state-of-the-art Playout Services tailored for television broadcasters. This comes as a collaborative effort between Es'hailSat and leading technology innovators and experts, aimed at bringing the very best of broadcast management and delivery to Qatar and the MENA region.

With a commitment to providing television broadcasters an unparalleled edge, Es'hailSat's Playout Services offer a comprehensive solution encompassing scheduling, content preparation, graphics integration, and seamless transmission. Broadcasting professionals across Qatar and the MENA region can now optimize their operations, ensuring an uninterrupted and engaging viewer experience. Leveraging cutting-edge automation, real-time monitoring, and 24x7 multi-lingual professional support, broadcasters can focus on crafting exceptional content while entrusting the intricate aspects of scheduling and delivery to our robust and reliable platform. As a result, audiences can look forward to enriched programming, while broadcasters maximize their efficiency and impact.

Es'hailSat brings together the combination of playout and distribution in one package, together with enhanced flexibility that delivers peace of mind and forms the key value proposition for our playout services. The state-of-the-art playout service is built on a scalable model that allows for the inclusion of features catering to multi-channel broadcasters while at the same time it is able to adapt and support the needs of single channel broadcasters. This also does away with extensive upfront capital investment and offers long-term flexibility in both operational and commercial models. The system can be easily configured to accommodate changes in requirements related to programming or transmission such as live editing. Coupled with long-standing and reliable satellite broadcast network covering the entire Middle East and North Africa region, Es'hailSat's playout services broadcasters can not only create their TV channel but also reach millions of viewers in one step.

"The launch of Es'hailSat's Playout Services signifies a pivotal moment in the media landscape in Qatar, reflecting our dedication to embracing innovation and enhancing the quality of content delivered to households across Qatar and the MENA region," said Ali Ahmed Al-Kuwari, president and CEO, Es'hailSat. "This culmination of effort and collaboration between Es'hailSat and playout technology providers marks a significant leap forward in transforming the broadcast industry, setting new benchmarks for excellence, efficiency, and content delivery."

5G FR1 Omnidirectional antenna provides continuous connectivity in harsh environments

PCTEL, Inc. has introduced its new 5G FR1 Omnidirectional antenna optimized for industrial IoT applications.

The demand for reliable, secure wireless connectivity and extensive coverage is increasing. PCTEL's new 5G FR1 omnidirectional antenna has been designed to meet the requirements of today's wireless networks and to provide continuous connectivity in the harshest environments.

Suitable for a wide variety of mission critical communication applications such as utilities, smart cities, factory automation, retail/security failover, and overall Industrial IoT applications, PCTEL's new 5G

FR1 omnidirectional antenna offers a mechanically robust design, flexible installation, superior bandwidth, and superior coverage within the full 5G FR1 frequency range.

"At PCTEL we are always offering innovative solutions that address the connectivity challenges in mission critical communications," said Denis Dmitruk, PCTEL's technical product manager.

"The new 5G FR1 Omnidirectional antenna is a reliable, cost-effective solution that has been tested in the harshest environments and offers high performance across the whole 5G FR1 frequency band," added Dmitruk.

Anritsu picks Comprion SIMplifier for fully automated mobile device testing

Anritsu has seamlessly integrated the new Comprion SIMplifier hardware in its test setup to offer customers a fully automated test solution for speeding up and easing GCF/PTCRB conformance and carrier acceptance testing.

The Comprion SIMplifier, a compact and portable hardware device, aims to improve the efficiency of mobile device testing by eliminating the manual process of removing and reinserting the SIM card for profile updates. This is achieved by integrating a PC/SC card reader and a device connector.

"The device is specifically designed to optimise productivity and streamline various test procedures such as GCF/PTCRB protocol conformance testing, regression testing and development testing. In addition, it can be seamlessly integrated into existing test systems, offering versatility for a wide range of use cases. We are pleased that the Comprion SIMplifier meets Anritsu's requirements for full test automation," said Udo Willenbrink, product manager at Comprion.

Anritsu has integrated the SIMplifier hardware in its ME7834NR 5G NR Mobile Device Test Platform which is used by MNOs, chipset, and mobile device manufacturers to perform network operator carrier acceptance and GCF/PTCRB conformance tests. For these type of tests, physical SIM cards had to be exchanged in order to make profile updates.

"By integrating the SIMplifier in our test setup, we save time, simplify configuration changes and unlock total automation to enable our customers to run tests overnight without the need for a test engineer present. In order to contribute to the expansion of the 5G mobile market, we would like to future strengthen our collaborative relationship with Comprion," said Keiji Kameda, general manager of mobile solutions division at Anritsu Corporation.

RedCap device emulation enhances 5G testing for private networks and IoT

Viavi Solutions Inc. has launched the industry's first Reduced Capability (RedCap) device emulation for 5G network testing, enabling true performance validation for Internet of Things (IoT) and private networks based on a new class of simpler, lower-cost devices including wearables, industrial wireless sensors, and video surveillance.

This solution is based on the TM500 network test platform, used by most network equipment manufacturers for base station performance testing.

3GPP introduced RedCap devices, also known as Broadband IoT or NR-Light, in 5G NR Release 17. These mid-tier IoT devices have average speed and latency requirements, in between high-end use cases like Ultra Reliable Low Latency Communications (URLLC) and lower-end Low-Power Wide-Area (LPWA) applications. In so doing, 3GPP formalized support for devices being deployed at the network edge for IoT and Industry 4.0 applications.

With early validation efforts focused on conformance and network emulation, VIAVI has filled a significant gap with the availability of RedCap device emulation. Based on the widely accepted User Equipment (UE) emulation capabilities of the TM500, RedCap device emulation enables equipment manufacturers to create realistic scenarios of thousands of such devices carrying traffic.

With the upgraded TM500, RedCap device testing can be seamlessly integrated into the existing test environment. The platform provides the capability to simulate RedCap-like traffic patterns, generate RedCap-specific signaling, and evaluate the network's performance for RedCap use cases.

One of the key advantages of using existing integrated solutions like TM500 for RedCap testing is the ability to reuse the well-established, embedded, per-device fading channel models. Fading channels emulate real-world wireless propagation conditions, including multipath propagation and signal fading, which are crucial for testing the performance and reliability of a live network environment. The TM500, combined with fading channel models, allows for accurate simulation of different scenarios and helps assess the performance of RedCap devices in challenging propagation conditions.

"5G deployment may be stabilizing globally, but industrial and private networks are just getting started," said Ian Langley, senior vice president, wireless business unit, VIAVI. "RedCap specifications provide the missing link for the class of devices used in such applications, so equipment manufacturers and operators can pursue development and deployment with confidence. The TM500 adds essential validation capabilities with device emulation, further accelerating RedCap adoption."

Look out for...

Regenerative LEO 5G RAN solution to meet eMBB and IoT demand from space

AccelerComm, Radisys Corporation, RFDSP, and TTP are jointly formulating a high-performance Regenerative 5G RAN reference solution and architecture based on 3GPP for deployment on low Earth orbit (LEO) satellites.

The partnership proposes a 5G regenerative gNodeB solution that will support high-performance 5G services in the challenging environment of a non-terrestrial network (NTN).

In a typical LEO deployment, a constellation of fast-moving satellites covers a wide geographical area using many beams per satellite to cover subscribers. The 5G Regenerative NTN solution includes Option-2 split gNB with a distributed unit (DU) on the satellite payload with a ground-based centralized unit (CU) and 5GC. The solution handles unique regenerative NTN-specific requirements of extremely high mobility with frequency re-association between the DU, GW and CU serving a region and large-sized cells spanning multiple countries requiring country-specific CN routing.

The joint LEO Regenerative reference solution will meet the growing demand for satellite-based eMBB (enhanced mobile broadband) and IoT services. This makes it an ideal solution for businesses and organizations that need to connect people and devices in remote locations, or for governments looking to provide internet access to all citizens. The solution will support many beams and high subscriber density and will be delivered on a space-hardened platform optimised for low power and size. It includes a range of advanced developments in the areas of beam-to-cell mapping, beam forming, NTN beam management and well-defined interfaces to satcom infrastructure.

Airtel and Ericsson implement RedCap for IoT applications

Bharti Airtel and Ericsson have successfully tested RedCap software on Airtel's 5G network, which Airtel hopes will open up new IoT use cases for 5G in India.

The Airtel RedCap trial utilized Ericsson's pre-commercial RedCap software and Qualcomm's 5G RedCap test module on Airtel's 5G TDD network, marking the first implementation and validation of RedCap in India.

RedCap (Reduced Capability) is an enhancement of 3GPP Release 17 that enables less complex, low-power devices to use 5G NR networks. In essence, it's the 5G equivalent of NB-IoT, which enables IoT use cases for LTE networks. RedCap makes it feasible for devices such as wearables and industrial sensors to connect via 5G. While RedCap IoT devices by design don't leverage the full capability of 5G NR, in future they can potentially support 5G NR features such as enhanced positioning and network slicing.

"We believe with RedCap's broader applicability, Airtel will further innovate various use cases such as new applications for consumers, industries and enterprises," said Airtel CTO Randeep Sekhon.

Claro expands 4G to 48 remote and rural communities in Cordoba

Claro has announced the expansion of its 4G coverage to connect 48 rural and remote localities in the department of Cordoba.

This expansion will benefit more than 58,800 people who, for the first time, will have access to high-speed mobile internet. Cordoba residents can now seamlessly connect for various purposes, including education, work, healthcare, and entertainment, from the convenience of their homes.

"We are convinced that technology is a powerful tool to transform lives and contributes to making a better Colombia possible. Our purpose is to improve the quality of life of Colombians, with the arrival of 4G mobile Internet in these rural towns, we contribute to the development of the inhabitants of Cordoba, who can now access study, work, health and online entertainment," said Claro Colombia in a statement.

This 4G expansion project, aimed at fostering economic development and offering new opportunities to residents, includes a wide range of rural localities to benefit more than 58,800 inhabitants. In addition to these newly connected rural areas, Claro said it already offers 4G coverage in all 29 municipal capitals throughout the Cordoba region.

In the coming years, Claro will connect 37 more rural locations in Cordoba, for a total of 85 in this department, to positively impact more than 85,000 people. The telco noted that the expansion of high-speed internet is a significant step towards a more inclusive and connected future for remote and underserved regions.

INTEGRASYS donates communications equipment to Ukraine's Ministry of Defence

INTEGRASYS has announced its collaboration with the Ukrainian MoD to extend support to Ukraine.

The company will donate crucial equipment and smart solutions aimed at bolstering the country's capabilities and demonstrating unwavering commitment during these difficult times of war.

The donation includes a range of advanced solutions that will empower Ukraine in various aspects of its operations. These solutions are geared towards enhancing strategic and tactical capabilities, enabling seamless communication in congested and contested electronical environments, and providing essential tools for the country's ongoing efforts to defend from invasion by enabling to communicate and obtain spectrum superiority.

The main goal of the contribution is to provide Ukraine with strategic and tactical equipment and smart solutions that are easy to use and integrate seamlessly into existing infrastructure deployed regardless of size, remotes or platform type. INTEGRASYS is dedicated to supporting Ukraine's efforts and standing by its side during these challenging times.

"INTEGRASYS is honored to work with the Ukrainian Embassy to support Ukraine in its time of need," said Alvaro Sanchez, CEO at INTEGRASYS. "We believe that the solutions we are donating will greatly benefit the country and contribute to its overall resilience and security. We are committed to providing ongoing support and assistance to Ukraine with our growing presence of systems and people devoted to the cause and support."

Airtel Xstream Play surpasses 5 million subscribers

Bharti Airtel's video streaming service, Airtel Xstream Play, has crossed the five million paid subscriber milestone, and continues to be the fastest-growing OTT aggregator in the country.

Launched in February 2022, Airtel Xstream Premium, in an industry-first, aggregates content from multiple leading video apps with a single login, search, and subscription.

"Although India has 40+ OTT apps and a wide selection of premium video content, discovering and paying for this content is challenging. Airtel Xstream Play helps to bring together the largest selection of premium OTT apps under one app and one price. We recently added Alt Balaji, Fancode and Playflix bringing us still closer to our ambition of having the widest selection of premium content and twenty million subscribers," said Airtel Digital in a statement.

Crnogorski Telekom launches voice over WiFi

Crnogorski Telekom (CT) has launched a Voice-over-WiFi (VoWiFi) service, reportedly the first in Montenegro.

This service enables customers to make voice calls using a WiFi connection in places where the mobile signal is unavailable or weak. The operator also recently announced the rollout of a VoLTE (Voice over LTE) service as well, allowing voice calls over the 4G LTE network. With VoLTE, users can simultaneously use the internet while on a call, experience better sound quality, and make calls faster, as highlighted by CT.

CT said that VoLTE shortens the call establishment time to only 2-3 seconds if both users use VoLTE, and using 4G instead of the 3G network saves the battery of the mobile phone.

GSMA: mobile internet usage gap prevails as adoption growth slows

According to the GSMA, some 54% of the world's population owns a smartphone, but the rate of new mobile internet users has slowed.

The GSMA said that 4.3 million people now own a smartphone according to its annual State of Mobile Internet Connectivity Report 2023. Around 4.6 billion people are using mobile internet; 4 billion are doing so through a smartphone which accounts for 49% of the population. Meanwhile, 8% of the population (600 million) are using the internet through a feature phone.

69% of smartphone owners are using mobile broadband through 4G-enabled devices due to mass global 4G and 5G deployments in mature markets such as North America, East Asia and Pacific. Meanwhile, 69% of smartphones users access mobile internet in sub-Saharan Africa; 33% do so in the Middle East and North Africa, but on 3G-enabled devices. This means 2G and 3G networks remain a staple of coverage for millions in low and middle income countries.

Around 3.4 billion people remain unconnected to the internet, the majority of the unconnected are in areas covered by mobile broadband networks, showing a continued usage gap. The gap has dropped from 40% of the population in 2021 to 38% in 2022, representing a substantial 3 billion people. For comparison only 5% of those not using mobile internet live in areas with no coverage.

Sub-Saharan Africa and South Asia are the regions with the least connected populations where the usage gaps are 59% and 52% respectively. Adults in rural areas of lower middle income nations are 29% less likely to use mobile internet than those in urban areas, while women are 19% less like than men to use mobile internet. The report also found two-thirds of people who live in areas covered by mobile broadband network and not tapping into services, do not own a mobile phone with the GSMA pointing to challenges in affordability.

Other challenges persist even with mobile device ownership includes digital skills, literacy, safety and security concerns, accessibility of enablers or services, and the availability of relevant content in local languages. The remaining third of people (950 million) who live in rural locations but have access to services and devices are only using basic services such as voice or SMS.

The GSMA study also found 200 million people began using the internet last year, a dip of 100 million people compared to 2021. Only a quarter of the depopulation in the least developed countries use mobile internet, compared to 52% of lower middle income nations and 85% of high-income countries. The majority of unconnected people live in low middle income countries.

On data speeds, all regions saw average download speeds of at least 10Mbps, and the global average increased from 27Mbps to 34Mbps.

"Mobile is the primary – and, in most cases, only – way that most people in low- and middle-income countries access the internet," said GSMA director general Mats Granryd. "The fact that the growth rate at which people are adopting mobile internet has slowed is worrying. Lack of connectivity will deprive billions of people of access to vital services and revenue-generating opportunities – likely impacting poorer, less educated, rural and female users disproportionately. As the ongoing cost-of-living crisis and rise in climate-related emergencies affects these groups further, there is an urgent need to accelerate digital inclusion and break down the barriers to stop the digital divide from widening further."

KFTL's container terminal deploys first private wireless network

Nokia has been selected to deploy the first private wireless network at Jamaica's Kingston Freeport Terminal Limited (KFTL)'s container terminal. The network was installed and will be deployed by Nokia Channel Partner EGC International.

KFTL is a transhipment port serving Central America and the Caribbean. It also serves major markets on the North and South America east coasts and facilitates post-Panama vessels transiting the Panama Canal.

KFTL has also adopted the Nokia DAC (Digital Automation Cloud), and MXIE, a high performance, end-to-end wireless private network, and industrial digitalisation platform. Both technologies will be deployed at KFTL to deliver industrial-grade connectivity and edge computing capabilities. Nokia's solution will enable KFTL to meet the growing demands of modern logistics, improve safety measures and strengthen overall productivity with top-notch wireless connectivity at docks and port yards.

Use cases include critical communications support for the terminal operation system (TOS) and other operational systems and applications, connectivity for more than 100 VMTs (vehicle mounted terminals), cranes and trucks, as well as the deployment of more than

100 tablets and 260 devices (push-to-talk over LTE) for staff. Soon, up to 1,300 devices will be connected and remote operations and real-time monitoring of terminal equipment will be enabled.

Lithuania police installs in-car video systems with AI

Motorola Solutions will deploy its M500 in-car video system to Lithuania Police, bringing new capabilities to the force's operational vehicles.

Powered by advanced artificial intelligence (AI) and high resolution cameras, the M500 constantly scans the environment from multiple viewpoints to help officers identify threats in real time and provide valuable video evidence. The police force is implementing the in-car video solution to support a variety of its daily operations to help keep the nation's roads safe.

"Police officers need to be prepared for anything when they are out on patrol," said Michael Kaae, corporate vice president at Motorola Solutions. "Even seemingly mundane situations can escalate in seconds. Video security technology can play a critical role in protecting police officers, community members and property and is an integral part of modern policing."

Motorola Solutions will provide the new M500 together with its VideoManager evidence management platform to store and manage video footage from in-car video technology as well as the VB400 body-worn cameras used by Lithuanian Police officers. The company's VideoManager software provides a seamless and intuitive workflow and enables frontline teams to share footage between officers and the control room to collate video evidence for investigations and post event reviews.

PKP Intercity trains gain Orange Polska mobile signal repeaters

Orange Polska has installed mobile signal repeaters (amplifiers) in 300 railway coaches of PKP Intercity in cooperation with Orange Poland,P4, Polkomtel, and T-Mobile Poland.

The cellular network signal amplifiers will facilitate the transmission of radio signals between base stations and consumer devices that utilise the mobile network. This setup and solution are employed to enhance the signal and extend the coverage range.

In the case of trains, special donor antennas are affixed to the roofs of the wagons, receiving signals from the base station. These signals are then transmitted via coaxial cable to the repeater, where they are amplified, and subsequently, the strengthened signal is conveyed through leaky coaxial cables extended along the wagons, ensuring radio signal coverage throughout the length of the train.

In October, PKP Intercity launched amplifiers in 300 train cars, with another 254 planned to be installed by the end of 2023. These amplifiers are also equipped with GPS receivers to ensure they can be remotely monitored and configured based on their location. The GPS facilitates insights into the dynamic nature of traffic and users on a moving train.

The introduction of amplifiers in the wagons follows the installation of WiFi routers, representing another step towards improving the availability of mobile services on trains.

DNB, Telekom Malaysia and ZTE team up on 'world's fastest 5G live trial'

Digital Nasional Berhad (DNB), Telekom Malaysia (TM) and ZTE have joined forces to conduct a trial of millimetre-wave 5G that promises downlink speeds of up to 28Gbps.

The strategic project – 'the world's fastest 5G live trial' – aims to establish Malaysia's first standalone (SA) 5G core, complemented by an adaptable next generation transport network. The mmWave 5G SA trial will leverage DNB's mmWave spectrum, TM's network infrastructure and ZTE's latest mmWave active antenna unit and chipset technology.

DNB, TM and ZTE said that apart from faster data speeds, mmWave 5G SA will deliver better productivity and operational efficiency, which in turn will improve customer satisfaction and generate higher demand for 5G across all sectors. The technology could also beef up fixed wireless access (FWA) connections to better support video streaming, online gaming, and virtual and augmented reality applications.

"The combination of our spectrum with TM's SA core opens up exciting possibilities in the enterprise space, especially in the deployment of 5G private networks," said DNB's CTO Ken Tan Tzi Kieng.

DNB currently uses the 3.5GHz band for 5G services but has also been allocated the 700MHz and 26/28GHz bands for 5G usage. While DNB is on track to achieve its target of 80% 5G coverage in populated areas by the end of this year, Malaysia's 5G adoption rate was just 4.2% in September.

Zain KSA and Huawei aim for green 5G networks with energy-efficient hardware

Zain KSA has signed a memorandum of understanding (MoU) with Huawei Technologies to cooperate on green energy solutions for 5G networks.

Huawei and Zain KSA will work to deploy energy-efficient hardware such as MetaAAUs and ultra-wideband RRUs on a large scale, which should significantly improve network energy efficiency.

Zain KSA will also deploy Huawei's iPowerStar intelligent energy saving solution, which supports differentiated equipment energy efficiency, frequency band coverage, traffic volume, and enables energy saving features. The companies will further explore end-to-end energy saving and reducing carbon emissions generated throughout the equipment lifecycle, including manufacturing, transportation, online operation, and recycling.

The MoU is an extension of existing cooperation between Zain KSA and Huawei in the green energy field for the past three years. Huawei says its solutions helped Zain KSA reduce electricity usage of its mobile networks by 28% last year.

St Paul's Hospital deploys 5G connected ambulances

Chunghwa Telecom, Ericsson, and St Paul's Hospital have collaborated on the development and deployment of 5G-connected ambulances in Taiwan.

The country is facing health challenges due to factors like an ageing population, which creates a demand for advanced technological solutions to improve healthcare services.

The ambulances utilise Ericsson's end-to-end network slicing technology to transmit vital signs and real-time data in high-resolution 4K videos, facilitating remote diagnosis and quicker decision-making, according to the official release.

The field trial took place on Chunghwa's 5G standalone (SA) network, which offers more advanced capabilities compared to non-standalone (NSA) networks in collaboration with Ericsson using Network Slicing. Network slicing is a key feature of 5G standalone architecture, enabling the creation of isolated and dedicated network slices for specific use cases, ensuring high-performance and tailored connectivity services.

"Connected ambulances will play a crucial role in assisting emergency department staff in targeting treatment and prioritising urgent cases. Time is the most critical resource in emergency care and every second counts. In the past, clinical assessment of the patient could only start once they arrived at the hospital, but now 5G makes a difference," said a spokesperson from St Paul's Hospital.

This technology can ensure that patient information is readily available to clinicians through an isolated and high-speed network slice created through Ericsson's Dynamic Radio Resource Partitioning, securing capacity and stable communications that lead to more efficient and effective care.

Keysight and UMA integrating AI into 6G

Keysight and the University of Malaga (UMA) are collaborating to enable the use of artificial intelligence (AI) and machine learning (ML) in advanced wireless communications systems.

The partnership has developed a method to import these algorithms into design and measurement tools to validate their performance and accelerate industry adoption.

"Many network operators and vendors are already using AI and machine learning in their networks. But, so far, there has been no support from wireless standards on how AI and machine learning should be deployed," said Javier Campos, R&D engineer at Keysight. "This situation creates a lot of interoperability problems among equipment vendors and having a standard that isn't optimised for AI / ML technology – this is the challenge we have been working with the university to solve."

One of the major ways to optimise wireless performance is by providing and using accurate channel state information (CSI). CSI is used in real-time throughout a wireless system to adapt transmissions as best as possible to current channel conditions with the goal of maintaining the best performance. This is a crucial component to achieving reliable communications with high data rates and multi-antenna systems. Traditionally, calculating and reporting accurate CSI is computationally and resource intensive making it a good candidate to begin integrating AI and ML into the network.

"While AI has been around for quite a long time, the industry has now been able to identify concrete use cases, like optimising CSI feedback, where AI can deliver huge gains in performance, resource utilisation, and energy efficiency," said Campos.

"What we are doing is reducing the information you have to send over the air to provide accurate CSI from the user equipment to the base station," said Mari Carmen Aguayo, professor, Universidad de Málaga and head of the Institute of Telecommunication Research (TELMA). "We are doing this by using AI algorithms that can squeeze the information into very small quantities, sending the minimum information required to maintain the best performance."

When it came time to validate that their ML model performed better than traditional digital signal processing (DSP) for CSI feedback, they turned to Keysight for a digital twin platform to emulate the performance of their model in real world conditions. Building an interface layer that connected to Keysight's PathWave System Design (SystemVue) modelling tool, UMA researchers were able to evaluate the model under a wide array of fading profiles and other test conditions to prove this method outperforms traditional approaches.

With the new interface, any AI/ML algorithm that adheres to the most common AI/ML APIs and frameworks can now be imported into Keysight's SystemVue and used by the entire industry.

Appalachian Wireless to bring 5G to underserved communities in Kentucky

Ericsson has announced a multi-year partnership with Appalachian Wireless to bring 5G technologies to underserved communities in Appalachia.

The multi-year Radio Access Network (RAN) modernisation project, set to take place over the next three years, will expand 5G capacity and coverage in the region and replace ageing RAN equipment with Ericsson Radio System solutions.

The partnership will improve connectivity and represents a step forward in technological advancement for the mountainous region, where Appalachian Wireless is the sole network provider for many households and businesses.

Ericsson said that the project will offer transformative 5G services to hundreds of communities in eastern Kentucky and bridge the rural digital divide. Ericsson will provide its Ericsson Radio System and energy efficiency software as part of the project. Most modernisation efforts will take place in 2023 and 2024. Ericsson will upgrade cell sites with new radios and RAN equipment, with most of the work completed in 2024.

Appalachian Wireless aims to be the first regional carrier to implement 5G standalone (SA) to bridge the digital divide in rural America. The project is expected to offer transformative 5G services to hundreds of communities in eastern Kentucky.

"For over three decades, we've been committed to bringing connectivity to customers in eastern Kentucky," said Appalachian Wireless. "No other carrier cares for Appalachia as we do, and we look forward to joining forces with Ericsson to meet the region's growing needs as we prepare to deploy 5G."

Turkey gains cellular IoT connectivity via eSIM

floLIVE, Kigen, and Protahub have completed steps to deliver local cellular IoT connectivity in Turkey to its global customers, via a single global SKU.

With its partner, Kigen, floLIVE has spent months building the ecosystem and integrating the necessary systems and platforms to serve its global customers in Turkey; the companies teamed up with Protahub, the only local Turkish entity with the mandate to control local eSIM subscription profiles, to create a complete, end-to-end solution that will allow OEMs, global enterprises and mobile operators alike to obtain local IoT connectivity in Turkey via their existing eUICC compatible SIMs.

This has been a complex endeavor, as Turkey has unique requirements for local cellular connectivity, where permanent roaming is impossible and IP data must be routed locally, in-country.

"Traditionally, anyone who needed connectivity in Turkey had to approach the MNOs in-region directly and purchase SIM cards to install in their devices," said Nir Shalom, CEO. floLIVE. "They needed to engage in a separate contract with the local MNO, use separate APIs for integration, and at the end of the day they ended up with very limited management and control. With floLIVE, our customers benefit from a single SKU that simplifies their logistics and supply chain, and offers a streamlined, unified global experience. During the last few months, we've been approached by numerous customers - from OEMs to tier-1 mobile operators - asking for a local connectivity solution in Turkey as part of their global operations."

The process flow in Turkey is unique. floLIVE provides its customers with a standard eUICC SIM, in all form factors. When a device arrives in Turkey, floLIVE's Connectivity Management Platform (CMP) detects the device's location and initiates a local profile download process, via Kigen's Remote SIM Provisioning (RSP) platform. An SM-SR Swap process takes place between Kigen's SM-SR and Protahub's SM-SR. Protahub initiates a Profile Download to the eSIM and validates with both platforms - Kigen's RSP and floLIVE's CMP.

"floLIVE and Kigen are working closely together on numerous initiatives and projects and are looking to replicate this success in other regions so that global deployments are achievable with a single SKU and a unified experience," said Vincent Korstanje, Kigen's CEO. "With an eSIM, you have a strong foundation for trusted devices across multiple geographies, while complying with the local regulations."

Q&A

Kelvin Chaffer, CEO, Lifecycle Software

Who was your hero when you were growing up?

I am - and have always been - a huge sports fan. Growing up, my hero was Bryan Robson - a phenomenal English football player. Bryan was an absolute powerhouse who embodied leadership and resilience. His will to win, perseverance, and his dedication to his team certainly shaped my approach and commitment to the teams I've had the pleasure to lead over the years.

What was your big career break?

22 years ago, I entered a work placement opportunity with Lifecycle Software as part of my university course - and I have never looked back. As I Initially wanted to be an accountant, I walked the path of a software developer. I fell in love with making the products and that processes to create solutions that made the user's life easier. Following on from this I then joined Lifecycle Software. Starting in 2001 as a software developer, I worked hard and climbed the ranks, embracing various roles within the company including development director, chief operating officer and today, I'm humbled and proud to say that I've become the CEO of this amazing company that has been my professional home for so long.

What did you want to be when you were growing up?

I was extremely sport-focused growing up and at school, and played football and boxing at a high level. I always had an ambition of pursuing boxing and dreamed of being in the Olympics, but due to some injuries and challenges I had to pull back and go focus on my education and look for other career paths. I fostered a love of statistics and R&D and decided to explore this path. Life takes unexpected turns, and I'm grateful for the opportunities and experiences that have brought me to where I am today.

If you could dine with any famous person, past or present, who would you choose?

The decision to dine with any famous person would undoubtedly be difficult as there are so many remarkable individuals to choose from. However, three figures that stand out prominently in my mind are Elon Musk, Nelson Mandela, and Mohammed Ali. Elon Musk, a visionary entrepreneur and innovator, has made groundbreaking contributions to various industries always looking to be on the edge of innovation he inspires me to take this mindset within my own business. Nelson Mandela, a symbol of resilience and peace, played a pivotal role in the fight against apartheid and promoting reconciliation in South Africa. As for Mohammed Ali, I love boxing and his determination inside and outside the ring was inspiring.

> "The joy of creating, the satisfaction derived from bringing something tangible to life, and the sense of accomplishment that comes with it align with my passion for creating things. The satisfaction of creating something is key"

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

Be curious, and don't be afraid to ask questions. I want to learn and enable others to learn. There are no stupid questions, and not being afraid to ask opens up the conversation to both yourself and others in the room. Encouraging open discussions through questioning contributes to a collaborative and supportive environment, where individuals feel empowered to share their knowledge and perspectives. In order to be on the edge of innovation you need to be open minded and explore all ideas no matter how small or how out there they seem at first. All ideas are good ideas as they speak conversion, debate and in the end support innovation.

> "The mobile phone is the greatest technological advancement in my lifetime. Witnessing the evolution from basic cell phones to our powerful smartphones demonstrates how far we've come."

If you had to work in a different industry, which would you choose?

If I were to transition to a different industry, I would probably gravitate towards manufacturing. The joy of creating, the satisfaction derived from bringing something tangible to life, and the sense of accomplishment that comes with it align with my passion for creating things. The satisfaction of creating something is key.

The Rolling Stones or the Beatles?

The Beatles! The Beatles hold a special place in music history. They were pioneers of various musical styles, constantly pushing boundaries and experimenting with new sounds. Their message of love, peace, and social change resonated with millions around the world. Even today, their music is like a time machine that takes us back to the good old days. It's incredible how their songs still resonate with people of all ages.

What would you do with £1 million?

I'd share it with those closest to me, and we'd enjoy it all together! Together, we'd make the most of the unexpected windfall, cherishing the experiences and moments money can never buy. I'd also allocate a portion to support meaningful charitable causes.

What's the greatest technological advancement in your lifetime?

The mobile phone is the greatest technological advancement in my lifetime. Witnessing the evolution from basic cell phones to our powerful smartphones demonstrates how far we've come. The shift from bulky personal computers to handheld devices with more processing power than the technology that once took humans to the moon is a remarkable testament to progress. I think I speak for a lot of people when I say I don't know what I would do without my phone. ■

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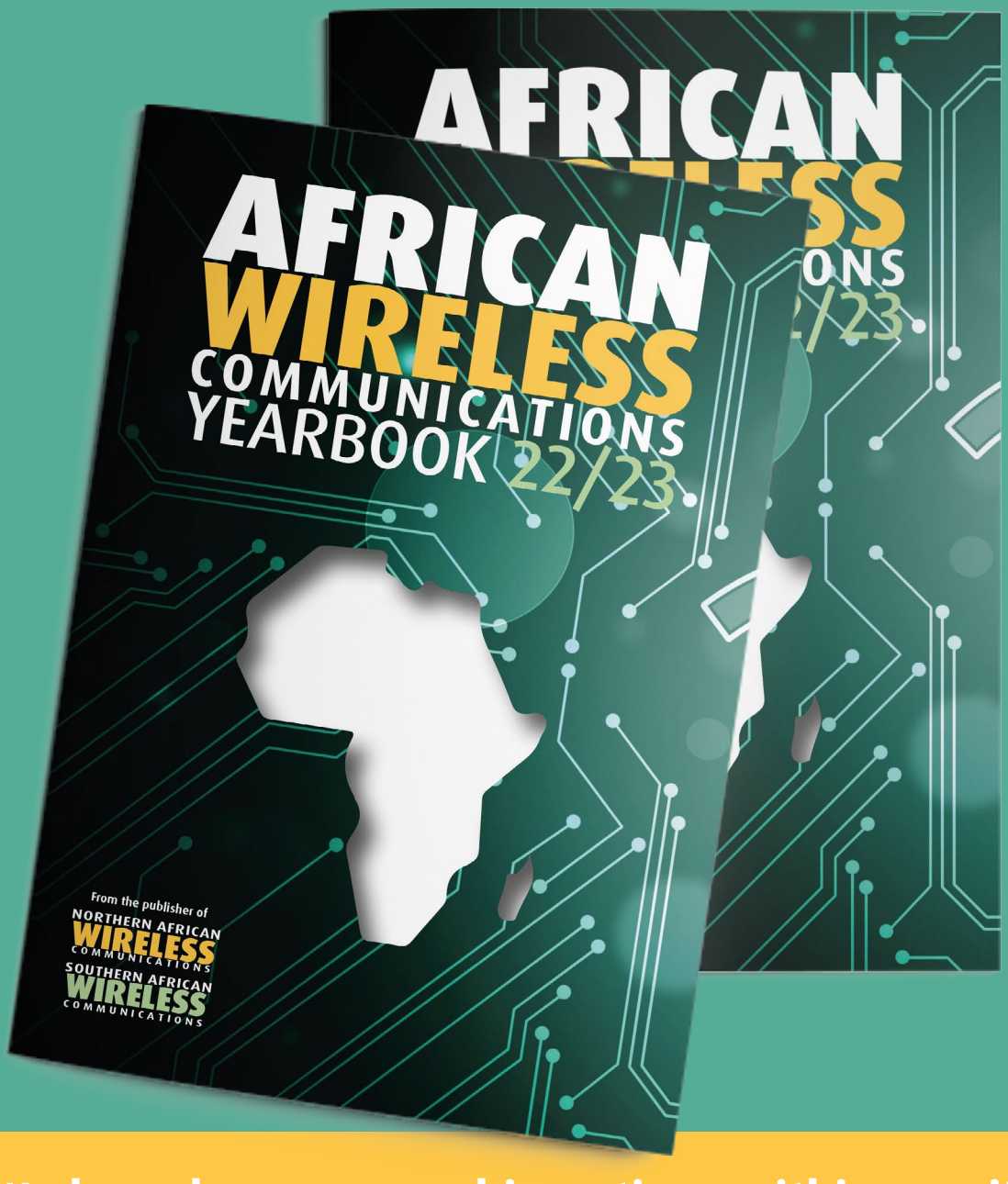

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