

For communications professionals in southern Africa

SOUTHERN AFRICAN WIRELESS

COMMUNICATIONS

NOVEMBER/DECEMBER 2023

Volume 28 Number 3

- Mobile innovation in underdeveloped nations
- AI - what's in it for Africa's MNOs?
- Digging towards a smarter mine



LIQUID
DATAPORT

Africa's digital future

David Eurin, CEO of Liquid Dataport



Wireless Solutions for Exploration, Mining, Fleet Tracking & Surveillance

Mobile Mark is a leading supplier of innovative, high performance antennas to wireless companies across the globe. We've been in the wireless industry for over 30 years and have our roots in the early Cellular trials. Today, we benefit from enhanced design capabilities and expanded production capacity – along with a greater understanding of new and emerging markets such as mining and exploration.

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NOV/DEC 2023
Volume 28
Number 3

About Liquid Dataport

Liquid Dataport is the scalable connectivity platform of Cassava Technologies, within Liquid Intelligent Technologies. The business focuses on international wholesale connectivity, commercialising Liquid's pan-African fibre network, complemented by Dataport's subsea cable network and global satellite connectivity. Liquid Dataport is responsible for the international wholesale business of LIT, its satellite services and is taking the lead to implement Liquid's service platform strategy.

Liquid Dataport website:
www.liquiddataport.com

Turn to **page 11** for David Eurin's vision of a digitally connected Africa leaving no African behind.

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4 NEWS

- Orange Botswana opens tier 3 DC
- CRAN launches 5G awareness campaign
- Tigo Tanzania zones in on mobile banking
- Africa world-leading in cyber-attacks



12 WIRELESS BUSINESS

- Swiftnet up for sale
- Ethiopia abandons third telco licence
- Nigeria's ICT sector falters
- Senegal targets universal digital access

19 FEATURE

Digging toward a smarter future

22 ON THE NETWORK

LEO systems for humanitarian relief

23 FEATURE

AI - what's in it for MNOs?

26 VIEW FROM THE TOP

Mobile innovation in underdeveloped nations



28 WIRELESS USERS

- Safeguarding at ZimParks with hybrid comms
- Africa's largest IoT conservation network



30 WIRELESS SOLUTIONS

- NTN capabilities connect the unconnected
- Sitetracker adds GIS for towerco design
- Try before you buy cloud lab
- Compact wireless private connectivity for SMEs



32 WORLD NEWS

- OneComm launches Bermuda's first 5G
- Marlink brings connectivity to North Pole
- Axiata to exit Nepal
- Algar Telecom to expand 5G to 32 cities

SUBSCRIPTIONS:

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

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Orange Botswana opens tier 3 DC

Orange Botswana has opened a \$5.2 million tier 3 data centre in the Botswana Digital Innovation Hub Science and Technology Park.

Brelotte Ba, deputy CEO of Orange Middle East and Africa, said that the initiative would promote technological advancement and drive digital inclusion.

“This data centre will act as a catalyst for economic growth, providing the technological foundation required for businesses to thrive in the digital age,” said Ba. “It would enable Orange Botswana to provide its consumers with quicker, more secure, and innovative

services, ushering in a wave of good change in the region.”

Orange Group is committed to ensuring that Botswana may continue to benefit from the digital revolution.

“The African continent is an inspiring and successful digital transformation model. The strategic establishment of this data centre demonstrates the Orange Group’s vision for a connected and technologically empowered future,” said Ba.

Nene Maiga, CEO of Orange Botswana, said that the data centre is modern, with advanced security

features, technical systems, and an environmentally sensitive design.

“We are determined to move steadily towards uninterrupted services and look forward to offering Botswana advanced services like cloud solutions and real-time communication as well as constant connectivity through 5G,” said Maiga.

The infrastructure will assist SMMEs and large enterprises in meeting digitalisation plans and providing services such as hosting this Tier III certified centre, which will provide redundancy and resilience.

Proparco to expand tower infrastructure

A consortium of investors, including Amethis, AfricInvest, the International Finance Corporation (IFC) and Proparco, have acquired a majority stake in Netis Group.

Operating in some 15 countries in sub-Saharan and North Africa, Netis Group plans to use the funds provided by these new shareholders to consolidate its operations in countries where it is already present and expand to new African markets.

“Netis has strong ambitions in the years to come in terms of human, technical and commercial development. Our vision of building telecommunications networks for a competitive Africa is perfectly aligned with that of our new Consortium partners,” said Jean Farhat and Jean-Claude Figali, co-founders of Netis Group.

ARTEC issues call for tenders for satcoms licences

The Madagascar Communication Technologies Regulatory Authority (ARTEC) has recently announced that it wants to award licenses for the establishment and operation of public satellite communications networks.

A call for tenders was issued as a result, and any interested telecommunications operators must submit their applications

between 28 December and 28 March 2024.

This initiative is part of the policy of total liberalization of the new information and communication technologies sector implemented by the Malagasy government with the adoption of a decree last April. The initiative aims to remove the barriers and encourage

investments in all segments of the national telecoms market. It also aims to promote better competition and reduce consumer prices.

The country’s allocation of new satellite licenses should make it possible to accelerate the coverage of the Malagasy territory in mobile telephone services and high-speed internet connectivity.

China Unicom enters Tanzania

State-owned China Unicom Global has launched operations in Tanzania to support digital transformation.

This initiative will help strengthen the partnership between Tanzania and China in the digital field. The two countries signed a memorandum

of understanding relating to the promotion of the distribution of information and communication technologies in Tanzania in June 2022. The emphasis was placed on 5G, the deployment of telecoms services in inaccessible areas,

and cybersecurity.

China Unicom Global is also expected to help accelerate the Tanzanian government’s digital transformation vision, which aims to make digital a driver of socio-economic development.

ICASA warns against ‘illegal’ Starlink use

The Independent Communications Authority of South Africa (ICASA) has warned companies that are reportedly importing and selling Starlink satellite internet terminals in South Africa, calling the practice ‘illegal’ and warning that fines could be imposed.

ICASA had noted recent developments on the alleged provision of satellite internet services through Starlink terminals in South Africa, and of some entities distributing Starlink products from within the country and from

neighbouring countries.

“The Authority has indicated previously, through numerous media engagements, that Starlink does not hold any licence issued by the Authority to provide electronic communications, electronic communications network or broadcasting services in South Africa,” said ICASA acting chairperson Yolisa Kedama. “No person may provide a service (i.e. broadcasting, electronic communications and electronic communications network services) without a licence.”

Any person who provides a service without a license ‘is guilty of an offence’ and liable to a fine of up to R5 million or 10% of the person or licensee’s annual turnover for every day or part thereof during which the offence continued.

Because Starlink is not licensed locally, South Africans cannot order kits directly from the company’s website. But some have reportedly found ways to purchase equipment and use the satellite tech via optional regional and international roaming features.



Vodacom customers to gain affordable 4G/LTE smartphones with MediaTek and Digit

MediaTek, Digit and Vodacom have partnered to bring affordable, smart connectivity to tens of millions of Africans.

MediaTek has collaborated with device maker Digit to offer affordable 4G/LTE smartphones to Vodacom customers in South Africa, Egypt, and Tanzania, who are still using 2G devices.

The Digit4G Energy smartphone is powered by the MediaTek MT6739, a feature-rich smartphone system on a chip (SoC). Digit is leveraging the SoC to create a smartphone that delivers the DigitOS

experience, 4G connectivity, front and back cameras, a touchscreen plus keyboard combo, preloaded apps such as WhatsApp, TikTok and Facebook, and an app store.

“Digit4G Energy is a unique combination of touch screen with keyboard, operating on DigitOS that ensures uninterrupted connectivity with advanced features like VoLTE, Wi-Fi, Hotspot and Bluetooth. Together with Vodacom, Digit will work towards making affordable 4G Phones available for all,” said Abdul Rehman Mahmood, CEO of Digit.

According to Vodacom, some

600 million people in sub-Saharan Africa don't have a smartphone –including 90 million Vodacom subscribers. Thus, Vodacom Group is working to create a value chain

to drive migration of 2G and 3G users to 4G devices and ensure unconnected customers can get the opportunity to participate in the digital world.



CRAN launches 5G awareness campaign

The Communications Regulatory Authority of Namibia (CRAN) has launched a campaign to raise awareness among telecom consumers on 5G mobile technology, aiming to educate the public about ultra-broadband and its benefits while dispelling misconceptions and

misinformation circulating about this technology.

“Many reports have indicated that 5G caused COVID-19, but this is not true. 5G is safe and has no link to COVID-19 or human health,” said Emilia Nghikembua, director general of CRAN.

Through this campaign, CRAN

is preparing the ground for the commercial deployment of 5G. Last September, it awarded licenses and 5G spectrum to Telecom Namibia, MTC and Loc8 Mobile, which were immediately authorised to test the latest generation mobile technology until 31 December.

Zambia's first million digital ID cards registered

More than one million Zambians have signed up for digital identity cards as part of the Integrated National Registration Information System (INRIS) project, which will result in the implementation of a digital national registration card.

INRIS is the Department of National Registration, Passports, and Citizenship's legal identification information management system. Over the following decade, the effort hopes to enrol 10 million people.

Zambia has begun the third phase of the project's enrolment, which is taking place in the Central and Luapula provinces, as well as 79 national registration district offices across the country.

Tigo Tanzania zones in on mobile banking

Tigo Tanzania has partnered with DCB Bank to expand financial inclusion for the unbanked through a partnership that will enable

customers to access the bank's services through mobile payment service Tigo Pesa's network of mobile money agents.

DCB will leverage Tigo Pesa mobile money agents to mobilise deposits and offer customers enhanced options for fund withdrawals. The service was initiated in response to the challenges, including high costs and demanding management requirements, encountered by smaller and mid-

tier banks when embracing the agency banking model.

DCB has been managing a robust agent network for more than a decade, creating livelihoods for more than 200,000 agents. Thus, this service aims to help banks improve their market presence seamlessly, without the worries of recruitment, documentation, training, POS device provisioning, and day-to-day management. It will also benefit DCB Bank and offer new opportunities for Tigo Pesa.



Africell expands into three new DRC provinces

Africell has expanded its mobile network coverage to three new provinces in the southeast of the Democratic Republic of Congo (DRC).

Africell is extending services into North Kivu (home to the city of Goma), South Kivu (Bukavu and Uvira), and Tanganyika (Kalemie), making its services accessible to up to four million additional customers.

With this expansion and the launch of services across the southeast of the DRC, Africell's footprint has significantly increased. According to Africell, it took 18 months to establish network coverage in the region, involving the deployment of 100 cell sites and the development of a major data centre in Goma.

Local customers can now take

advantage of its 2G, 3G, and 4G network offerings, corporate services, and Afrimoney, its mobile money platform. The company has committed to a long-term investment plan for the region.

The launch in North and South Kivu and Tanganyika will contribute to broader efforts to increase connectivity across the country.

“Helping the whole country, and not just the capital city, to fulfil its economic and social potential is a key government priority. By expanding Africell's coverage footprint into these new areas, we are contributing to this broader mission by providing valuable mobile access to a significant number of potential customers,” said Africell in a statement.

Airtel Malawi lifts prices amidst tough economic challenges

Airtel Malawi has announced a revision of the prices of some of its voice and data offers, with an average increase of 15% and 20%, respectively. The tariff adjustment was approved by the Malawi Communications Regulatory Authority (MACRA).

According to Airtel Malawi, this tariff revision is a partial cost recovery which was necessitated

by recent developments in the country's macroeconomic factors. These include the cumulative loss in value of the kwacha of 64% since June 2023, the increase in electricity tariffs of 18% in September 2023 and the increase in the price of diesel by 42.4%.

"These costs constitute a significant portion of our daily operational costs and have since

significantly increased the cost of doing business for Airtel Malawi PLC. At this level of cost escalation, it is not viable to continue with current prices. It is important that Airtel continues to be viable so that it can continue to invest in the network and ensure better service delivery to its customers," said Airtel Malawi in a statement.

ITU publishes 6G framework

The International Telecommunications Union (ITU) had published the standards development framework for sixth generation mobile technology (6G/IMT-2030).

The official publication of the framework paves the way for defining the technical requirements, submission process and evaluation criteria for potential 6G radio interface technologies. Proposals are expected in early 2027, with the

aim of approving a final set of 6G technical standards by 2030.

"By agreeing on a path forward for 6G, ITU Member States have taken an important step in ensuring that technical progress means affordability, security and resilience—supporting sustainable development and digital transformation everywhere," said Doreen Bogdan-Martin, ITU secretary-general.

Use cases envisioned for 6G

include immersive interactive video, intelligent industrial applications including telemedicine and energy and power grid management; improving ubiquitous connectivity, particularly in remote and sparsely populated areas; the expansion of Internet of Things (IoT) devices and applications; and support for AI-powered applications and integrated multi-dimensional sensing combined with high-precision positioning.

Botswana connects 609 schools to high speed internet for e-learning

Botswana's Digital Transformation Strategy has connected 609 schools to high-speed internet, giving over 387,000 pupils access to e-learning and other digital resources.

The government has also purchased 46,700 electronic devices under this programme, which will be distributed to

teachers and students across the country in 2024, according to president Mokgweetsi Eric Masisi.

"I wish that we could cement this collaboration with children and start to develop indicators of success so that at the end of four years, we can reflect and see how much we've achieved," said Masisi. "This is not an event,

but a process. We must establish defined roles and duties for both children and leaders."

By digitising all industries, Botswana hopes to create a smart and sustainable society. The approach contributes to the country's goal of transitioning from an upper-middle-income to a high-income position by 2036.

Airtel Zambia tailors mobile money for educational institutions

Airtel Zambia has partnered with Zanaco Bank to provide bill muster services on the Airtel Money platform.

The bill muster service is a collections platform provided to Zambia universities, colleges, and schools with accounts at Zanaco for collections of tuition fees and other fees. The initiative is expected to benefit Zambians who previously had to rely

on cash or in-person transactions to pay their education bills, which they can now pay via mobile money.

"With bill muster on Airtel money, students, parents and guardians can now say goodbye to long queues and the hassle of paying bills in person. The Government of Zambia is always pleased to support initiatives that are aimed at making lives for our

communities easier," said Zambian Ministry of Education permanent secretary for administration Noriana Muneku.

"Now, anyone with an active Airtel Mobile Money wallet can make a payment for fees to their respective institution using Zanaco bill muster," said Airtel mobile commerce country director, Andrew Chuma.

Cloud to increase SA's economy by US\$10.1 billion by 2030

Allowing more South African small, medium, and micro enterprises (SMMEs) to use cloud computing might contribute US\$10.1 billion to the country's economy by 2030.

According to recent research, SMMEs may create 142,000 employment places, reduce carbon emissions by about 4.74 million metric tonnes, and reduce cyber security incidents by 34.2%. Access Partnership was commissioned by Amazon Web Services (AWS) to conduct the study.

"The role of SMMEs is important for economic growth and the development of the South African economy," said Yunus Hoosen, chief executive officer of Invest SA at the Department of Trade and Industry and Competition (DTIC).

The DTIC will continue to collaborate with other government departments and major players, such as AWS, to help small businesses and create jobs in the digital technology, innovation, and digital transformation.

Cloud usage will help SMMEs become more resilient to cyber assaults, said the study. According to the analysis, by switching to the cloud, South African SMMEs might save approximately 88,800 security incidents between 2023 and 2030.

"As well as providing secure, affordable, and reliable IT infrastructure, cloud computing is democratising access to advanced technologies such as artificial intelligence, thereby enabling South Africa's SMMEs to use them to grow their businesses," said Amrote Abdella, general manager, AWS.



Africa gains first 400G optical transponder solution

MTN Group and NEC XON have successfully deployed Africa's first 400G optical transponder solution - Phoenix. This has the potential to revolutionise the way optical networks are built and operated, transforming internet delivery across the continent.

Phoenix is part of the Telecom Infra Project's (TIP) Open Optical and Packet Transport (OOPT) project group, a collaborative effort

involving multiple telecom operators and technology providers. The solution has met TIP's rigorous test requirements, earning it a Controlled Environment Silver Badge, indicative of its readiness for deployment.

"Disaggregation is the future of networking, and we are proud to be at the forefront of this evolution," said Anthony Laing, general manager of networking at NEC XON. "This technology is a game-changer.

It drives down costs, enhances innovation, and allows our customers to make independent hardware and software choices, which is a significant advantage in today's competitive telecom landscape."

"We are thrilled to receive the Silver Badge recognition from TIP, acknowledging our commitment to promoting open and disaggregated solutions with the Phoenix optical transponder," said Sou Satou, senior

director of the network solutions business division at NEC Corporation. "Our dedication to TIP and the development of open products in the optical transport market remains a top priority for NEC."

The deployment of Phoenix is designed to accelerate internet connectivity and optimise network operations, and aims to make affordable internet more widely available.

Kaspersky: Africa world-leading in cyber-attacks

New research from Kaspersky reveals that, as African organisations grow more digitised, phishing, web threats, assaults on industrial control systems, and attacks on the Internet of Things (IoT) have emerged as the continent's major cyber-crimes.

Throughout 2023, Africa remained one of the world regions most targeted by cybercrime. In the third quarter of 2023, attacks were detected on 32% of industrial control systems (ICS) computers in Africa. In South Africa, attacks were detected on 22% of machines. Globally, malicious objects were detected on 25% of ICS machines. In Q3 2023, South Africa accounted for 28% of attacks on IoT devices that were detected by Kaspersky in the African region. Kenya accounts for 12% of attacks on IoT devices, and Nigeria for 6%.

"In forecasting the development of the cyber threat landscape for 2024, we anticipate a dynamic evolution of cyber threats marked by an upsurge in state-sponsored cyber-attacks, and 'hacktivism' will become one of the norms of cyber-warfare," said David Emm, principal cyber security researcher at Kaspersky. "The prevalence of accessible generative AI is set to fuel an expansion of spear-phishing tactics, while the creative exploitation of vulnerabilities in mobile and IoT devices will be on the rise."

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Powertel Communications signs \$100 million modernisation deal for 4G, LTE, 5G, IoT

Powertel Communications has signed a memorandum of understanding worth US\$100 million for the modernization of its telecoms network and the establishment of a rural data transmission program.

Powertel plans to invest \$570 million to improve broadband connectivity coverage across the country. The focus will be on fixed access, mobile access, 4G LTE, 5G, national backbone, and Internet of Things (IoT).

The company plans to improve its efficiency and profits and seeks to support the Zimbabwean

government's digital transformation plans. Part of the mission is to connect more than 8,000 schools, 3,000 clinics, police camps and army barracks.

"We will leverage the infrastructure of the Zimbabwe Electricity Transmission and Distribution Company (ZETDC) to connect marginalized schools and clinics, improve smart agriculture, e-health and e-education, through these collaborations," said Willard Nyagwande, acting managing director of Powertel.



Fast Congo to provide fibre capacity in DRC

Fast Congo has signed a long-term agreement with GVA (Group Vivendi Africa) to provide fibre capacity between Muanda and Kinshasa in the DRC. This will give GVA the capacity, scalability, and flexibility it needs to service more customers with high-speed and secure internet services.

The contract also gives GVA rights to use and access facilities that are operated and maintained by Fast Congo. GVA requires high-speed and high-capacity bandwidth offered by the fibre route that Fast Congo operates and maintains. This means that GVA can offer high-speed and reliable internet services that are both cost-effective and secure.

Fast Congo was awarded the 15-year government tender to activate the 620km fibre optic network link between Muanda, on the West Coast, to the DRC capital, Kinshasa.

"This is a ground-breaking deal and one that will open the way for many more customers of GVA to enjoy high-speed and secure internet connectivity," said managing director of Fast Congo, Francois-Xavier Kabemba. "We are proud to collaborate with one of the DRC's major internet service providers by supplying GVA with the capacity and infrastructure it needs to further expand and grow its business. The agreement also aligns with our overriding strategy to transform

Africa through exceptional digital infrastructure and service. We look forward to a mutually rewarding business relationship."

"Through our partnership with FAST Congo and Paratus Group, we can not only offer more customers more capacity at a lower cost, but we also have the option to extend these services and links across the globe," said CEO of GVA, Moktar Tabouri. "Because we have not had to invest in the fibre infrastructure, our pricing is more competitive, and our offering of internet services is unequalled in the region. These are exciting times not only for our business but also for the telecommunications industry in the DRC."

Botswana prepares to move to IPv6

The government of Botswana is preparing the country's transition from IPv4 (Internet Protocol version 4) to the latest Internet protocol standard, IPv6. The Botswana Communications Regulatory Authority (BOCRA) believes that this development will enable equitable access to services and efficient distribution of mobile network numbering and domain names.

Aaron Nyelesi, BOCRA spokesperson, said that a task force will be established to develop a national plan, while the regulator will oversee the rollout through regulatory frameworks. Internet service providers and telecom operators will have to create a strategy in line with the working group's roadmap, then subject to approval by the regulatory authority.

This government initiative is part of Botswana's digital transformation strategy, which aims to create a smart and sustainable society by digitalizing all sectors of the economy. The executive wants to make digital technology one of the pillars of the socio-economic development of Botswana, which it wants to transform into a high-income country with a knowledge-based economy, in accordance with 'Vision 2036.'

Zambia's first school connects to Starlink

Zambia has connected the country's first school - Kalomo Secondary School in the Southern province - to

Starlink, some four months after it was granted permission to operate. The Zambia Information and

Communications Technology Authority enabled the moment by donating a Starlink kit and 20 laptops to the school. The link at the school with 2,000 students has the capacity to give internet connectivity to 200 devices at a speed of roughly 180Gbps.

"Our children must be empowered with education tools to steer their education path," said Felix Mutati, minister of science and technology. He added that such agreements with the business sector were in accordance with the new government's policies of providing public institutions with accessible and fast internet services.



IoT: energy guzzler or sustainability-multiplier?

By Dr. Philipp Schulte, CEO of G+D Mobile Security

IoT's hunger for energy is a pressing issue in these environmentally conscious times. Data centres are just as much in the spotlight as the booming Internet of Things. Conversely, IoT can also make an important contribution to improving sustainability.

The age of massive IoT has arrived. There are many reasons for this, including the simplified hardware design of IoT devices, global network connectivity, high security standards and centralized, digital management of devices, which eliminates the need for manual onboarding.

The implementation scenarios for IoT solutions are therefore almost unlimited. They range from connected vehicles, smart grids and smart buildings to complex smart city applications. These IoT dynamics have implications for environmental and climate protection. It is clear that the increasing number of IoT devices has a negative impact on CO2 emissions. At the same time, IoT can also have a positive impact on sustainability.

More sustainability thanks to IoT

As public attitudes and policies change, companies have started incorporating ESG (Environment, Social, Governance) and SGD



(Sustainable Development Goals) criteria into their corporate strategies. IoT solutions provide valuable support, for example by monitoring and analyzing the carbon footprint of individual industrial activities. Most importantly, the massive IoT infrastructure itself must become more sustainable. For example, IoT devices such as sensors and tracking systems in logistics or production facilities typically use embedded eSIMs rather than traditional SIM cards to ensure connectivity. They do not use plastic frames and are typically managed centrally. This eliminates packaging waste and transportation costs. A study conducted by Fraunhofer IZM for G+D confirms the environmental friendliness of eSIM solutions (1). The life cycle assessment shows that the eSIM emits 46 percent less CO2 than SIM cards.

The next evolutionary step is the iSIM, or iUICC (integrated universal integrated circuit card). This eliminates the SIM-specific hardware component and runs the SIM operating system

in its own secure environment on the baseband controller. Overall, the iSIM is significantly smaller and more power-efficient than previous SIM generations. It has been commercially available on the market since 2021 and will initially co-exist with eSIM technology: eSIMs for broadband IoT, iSIMs for secure connectivity in narrowband IoT and LTE-M applications. Over time, however, iSIM will become the standard.

Environmental protection, sustainability and resource conservation have become key business objectives. The IoT industry has an important role to play. On the one hand, it must make IoT devices more efficient, with iSIM technology leading the way. On the other hand, the IoT can also drive societal change towards sustainability through digital metering of energy consumption, implementation of disruptive applications such as intelligent traffic management systems, or in the larger dimensions of a smart city. The IoT therefore has a key role to play in shaping a greener and more efficient future. ■



(1) cf.: https://www.izm.fraunhofer.de/de/news_events/tech_news/unabhaengige-studie-bestaetigt-die-esim-als-umweltfreundliche-sim-loesung.html) and copyright.

MTN targets customer experience

MTN is elevating customer experience through a partnership with Accenture and Genesys. This initiative should redefine customer care for MTN's subscribers by leveraging cloud-native solutions and advanced AI capabilities to drive customer-centric innovation and operational excellence.

The Genesys Cloud CX platform is engineered with cutting-edge AI capabilities. It incorporates natural language processing to understand customer queries more intuitively and machine learning algorithms to adapt and improve over time. These advanced technologies work in tandem to provide real-time insights and analytics that are invaluable for decision-making.

For MTN's expansive network of thousands of agents, this means the ability to offer a service that is not just efficient but also highly personalized. The platform's AI-driven analytics allow agents to understand customer behaviour and preferences and tailor interactions to individual needs. This level of customization significantly enhances customer satisfaction and fosters loyalty, setting a new standard for customer engagement in the telecommunications industry.

"As we navigate the complexities of a digital world, this transition to a leading-edge cloud-native Contact Centre as a Service (CCaaS) solution serves as a cornerstone for reimagining customer care," said MTN's group chief information officer, Nikos Angelopoulos. "Our collaboration with Accenture and Genesys produced a scalable and adaptable solution that empowers our agents to better serve customers and positions us for long-term growth and operational efficiency."

Over the past year, MTN Operating Companies in several countries, including South Africa, Nigeria, and Uganda have successfully transitioned to the Genesys Cloud CX platform.

"This initiative is a testament to our resolve to adapt and grow with our customers, proactively meeting their ever-changing needs," said Enzo Scarcella, MTN's group chief consumer officer.

In South Africa alone, the transformation has yielded a 40% year-on-year reduction in call volume, demonstrating the initiative's immediate impact on operational excellence.



Talking critical

TCCA's TETRA Industry Group, chaired by TCCA Board member Francesco Pasquali



TETRA, a resilient force shaping critical communications

The landscape of communication infrastructure is evolving, presenting significant opportunities for many industries to embrace advanced technologies. This is contributing to the growing adoption of TETRA-based (Terrestrial Trunked Radio) critical communication solutions in the region and is a testament to TETRA's continuous commitment to innovation. Seamlessly blending its proven heritage with innovative advancements, TETRA is not only becoming known for its excellence in reliability, interoperability, and security, but also for its ability to cost-effectively meet current demands while anticipating and addressing future challenges.

But why TETRA?

Reliability amidst connectivity challenges
TETRA's robust infrastructure guarantees reliable communication, even in the face of network congestion or interference. This resilience is not just a technological feat; it is a validation of TETRA's unwavering strength in maintaining communication channels during critical situations, which is vital for worker safety and emergency response.

Interoperability for collaboration

When interoperability is non-negotiable, TETRA's open standard architecture ensures seamless integration with existing communication systems. This interoperability is a game-changer, enabling efficient communication between different entities.

Security in the face of threats

The increasing digitisation of operations across diverse industries in the region has amplified the concerns around protection against potential breaches in industries where confidentiality is paramount. TETRA's ongoing commitment to offer the highest level of embedded encryption means it is uniquely positioned to support and mitigate these security concerns. Whether in the realm of public safety, utilities, or government services, TETRA protects sensitive information and safeguards against unauthorised access.

Scalability for the future

The continent's rapid technological advancement demands solutions that can scale with evolving needs. TETRA's inherent

scalability makes it a future-ready choice for communication requirements across industries. Whether it is the expansion of essential utilities or the integration of smart technologies, TETRA's flexibility ensures that it can grow alongside the dynamic landscape of the African market.

User-friendly

Whether in densely populated urban areas or remote and challenging terrains, TETRA's intuitive design facilitates seamless operation even in high-stress situations or where effective communication is integral to operational efficiency. Allowing industry professionals and end-users alike to easily navigate and operate the communication system and harness its full potential.

TETRA's impact on key industries in Africa

TETRA's pedigree and innovative edge cement its leadership in dynamic African markets, making a continuous commitment to cutting-edge critical communication solutions. The cost-effectiveness of infrastructure and services further enhances its appeal.

This commitment to providing efficient and budget-friendly solutions underscores TETRA's understanding of the economic considerations inherent in Africa's diverse markets, positioning it as a comprehensive and value-driven choice for industries seeking innovative critical communication solutions.

Revolutionising renewable

As Africa strives to meet its escalating energy needs, the spotlight shifts to renewable sources, with solar and wind power taking centre stage. With seamless coordination, remote monitoring, and robust security features, TETRA solutions play a pivotal role in enhancing operational efficiency, safety, and overall effectiveness ensuring swift emergency response, interconnectivity across facilities, and integration with smart technologies. Its scalability aligns with the sector's growth, making TETRA a crucial component in advancing the renewable energy market across the continent.

Modernising mining

As part of a broader effort to modernise and optimise mining operations, the African mining industry is increasingly adopting critical communication solutions to enhance safety, operational efficiency, and coordination

in often remote and challenging environments. TETRA's real-time communication, interoperability, and efficient emergency response, significantly contribute to improved overall operational resilience.

Uplifting utilities

For utility companies delivering essential services, TETRA plays a crucial role in providing secure and interoperable communication even within diverse terrains. Its resilience ensures seamless communication, enhancing the reliability of critical infrastructure. This improved communication technology boosts operational efficiency for utility companies and ensures consistent delivery of essential services like electricity and water, meeting the growing demand in Africa.

Industrial symbiosis

TETRA's influence reaches into heavy industries like manufacturing and construction, where it seamlessly integrates with existing communication systems, streamlining operations and enhancing safety. Beyond communication facilitation, TETRA is becoming essential for intricate industrial processes. In environments emphasizing precision and coordination, TETRA's impact is evident in improved communication, streamlined operations, and enhanced safety protocols, contributing significantly to the overall efficiency of heavy industries.

Ensuring public safety

For government agencies and public services in Africa managing urban infrastructure, as well as disaster response agencies coordinating relief efforts, TETRA's adaptability and interoperability are indispensable. The technology ensures that critical information flows seamlessly across different departments, facilitating swift and coordinated responses to emergencies and public service needs, and ensuring the welfare and safety of the public in densely populated areas or remote, challenging landscapes.

Conclusion

In an era where technology is the driving force behind progress, TETRA's ability to adapt and innovate ensures it remains at the forefront of critical communication solutions, adding a layer of dynamism to its increasing importance in the African market.

Leaving no African behind

For the past 20 years, it's been our mission and our vision to expand internet access across the continent. Our vision is a digitally connected Africa leaving no African behind.

Access to high-speed connectivity is critical to digital transformation, as the entire African continent evolves into a digital economy. Cellular networks have enabled hundreds of millions to have access to the Internet, but they are neither as ubiquitous nor as affordable as people were hoping for. Meanwhile fixed networks, in particular fibre, have brought immense capacity to dense, urban areas, but remain unaffordable in remote regions. The impact of intermittent availability of grid electricity in recent years is an additional hurdle, even with generators and solar energy providing alternative sources.

Satellite connectivity has never been the cheapest connectivity option and has therefore been mostly used at high-value sites in remote areas. Until recently, we have relied on geostationary

satellites, which use large dishes and have high latency. According to reports, the satellite service industry in the Middle East Satellite Communications Market size is estimated at USD 3.12 billion in 2023 and is expected to reach USD 4.46 billion by 2028.

However, today there are thousands of Low Earth Orbit (LEO) satellites circling the globe, in a much lower altitude than their geostationary counterparts. These are multi-billion-dollar investments, maybe \$5-6 billion for launch and management, and their proximity to the surface of the Earth means that latency is vastly reduced, from maybe half a second to a few tenths – this is enabling satellite connectivity to be used for applications that before were previously unfeasible.

The new satellite operators coming into the market have introduced a very low price point to access capacity across Africa.

Instead of paying up to \$500 per Mbps (dedicated) per month for connectivity, these LEO constellations can connect people for \$30 per month for 100 Mbps (for an unlimited home service in Zambia for example). It's a massive difference, which means that the number of people who can use those services is vastly increased.

It is a very significant disruptor in the satellite industry, and more widely in the broadband industry. There are many challenging terrains in Africa where laying fibre is cost-intensive and difficult to maintain, in such cases, we can now effectively

use satellite connectivity to provide seamless high-speed internet to every village. It's a massive change, but a good one. At Liquid Dataport, we plan to use these technologies to increase our reach, increase the number of people who can benefit from broadband, and bring a whole gamut of services around it to develop the activities that people and businesses needs.

We've also recently announced our collaboration with Intelsat, increasing the availability of fast and reliable connectivity in Africa during power disruptions. One key aspect of our partnership is our 'Service Continuity,' which enables organisations to maintain business-critical applications during power cuts with our low-power satellite equipment, which runs off solar panels or small generators. These services are already being provided in South Africa, with an emphasis on mitigating load-shedding challenges.

Load-shedding distributes demand for electrical power across multiple power sources and is used to relieve stress on an energy source when the demand for electricity is greater than the supply. This project will prove to be a key asset to bridge the digital divide as businesses will no longer be impacted by connectivity downtime.

Working towards operating in more countries in the future, we need a stable environment to invest and run our business. The laws, regulatory framework, investment climate, business context, licences, duties, etc., all have a significant impact on what we do as a company and what our investors are interested in and support. We've been present on the continent for over 20 years, in very

close partnership with government regulatory and local agencies, to ensure that the infrastructure and services we provide are as affordable and extensive as possible. We believe we have a unique experience on the Continent to be able to safely operate in so many countries.

In some countries demand is low, and we suggest that it is sometimes the government's role to create that baseline IT service demand by driving their digital agenda, to bring more services online. With initial demand created, business risk can be reduced, and, eventually, the entire economy can benefit. For telecommunication networks in particular, the ability to cross those borders and to link countries together has a massive impact on our ability to communicate, trade, exchange goods, etc.

In the last five years, fixed internet access has rapidly progressed, but there's still a long way to go. Infrastructure remains limited, and generally high-street costs are still too high. We are operating 110,000km of fibre, but that remains vastly insufficient to provide the internet to most African people. We're working towards bridging the gap with mobile and satellite operators, ISPs, and hyperscalers (i.e., global software businesses) to make sure that we reach the regions that do not have sufficient and affordable connectivity. And that – importantly – we leave no African behind the digital revolution on the Continent. ■



David Eurin, CEO, Liquid Dataport

Communications Authority of Kenya cuts MTRs and FTRs for local voice traffic

From March 2024, Kenyan consumers will enjoy lower calling rates after the Communication Authority (CA) slashed the country's Mobile Termination Rates (MTRs) and Fixed Termination Rates (FTRs). The authority declared a 30% reduction in MTRs from 0.59 per minute to 0.41 per minute.

The MTRs and FTRs are the costs that operators charge each other to allow customers to communicate across networks. Currently, all the telecommunications service providers have been implementing an MTR and FTR of KES 0.58 per minute.

"The new rate is informed by the prevailing economic environment, ICT market dynamics and the need to strike a balance between the promotion of investment and the protection of

consumers. Lower MTRs and FTRs mean lower calling rates for consumers," said the CA.

The new MTRs and FTRs will apply to only local voice traffic, which means calls originating and terminating within Kenya are the only ones affected by the price reduction. The authority has also urged all operators to vary their Interconnection Agreements in line with the Determination and file their Deeds of Variation with the Authority latest 1st February 2024.

"Consumers will now enjoy access to a variety of affordable services across networks while operators will have more price flexibility in developing more affordable products," said the CA.

Swiftnet up for sale

Swiftnet, Telkom SA's tower unit, is in talks for sale to an unknown party.

Reuters reported that the preferred bidder is a consortium of equity investors including a Black Economic Empowerment partner, managed by a reputable private equity firm.

Telkom, a state majority-owned operator, had been seeking to sell its units and reorganise into a digital infrastructure company, stating this aligns with current sector trends.

"Our strategy and performance continue to deliver industry-leading connectivity rates, enabling more South Africans access to affordable, high-speed internet," said Telkom Group CEO, Serame Taukobong. "We are encouraged by the progress made in the Swiftnet transaction which, when concluded, will enable us to strengthen our balance sheet and continue to execute our strategic goals. Our performance shows we are focused on the right areas. Telkom continues to connect South Africans to a better life through our robust networks and advanced technologies," added Taukobong.

DPI and Verod Capital invest in Pan African Towers

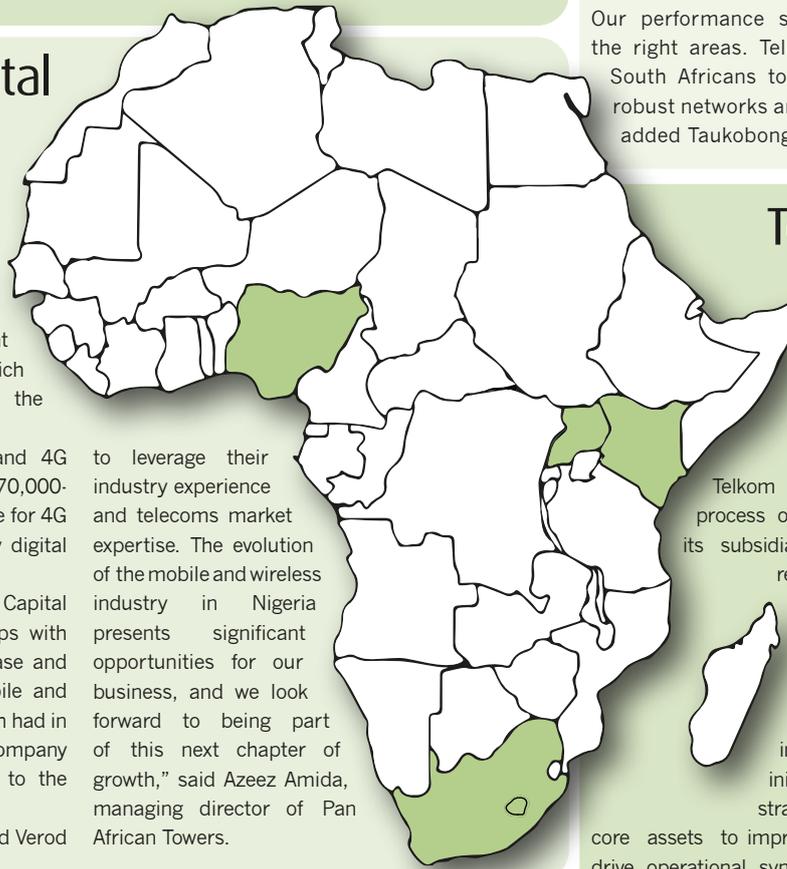
Development Partners International (DPI) and Verod Capital have jointly invested in Nigerian telecom tower management company Pan African Towers (PAT), which plans to strengthen its operations in the Nigerian market.

With 41,120 towers supporting 3G and 4G technology, Nigeria requires an additional 70,000-80,000 towers to ensure adequate coverage for 4G and 5G technologies, as well as a quality digital infrastructure.

Financial support from DPI and Verod Capital will enable PAT to deepen its relationships with existing partners, expand its customer base and reach new regions in Nigeria where mobile and wireless penetration remains low. DPI, which had in the past invested in an African telecoms company (Eaton Towers), will put this experience to the benefit of PAT.

"We are delighted to partner with DPI and Verod

to leverage their industry experience and telecoms market expertise. The evolution of the mobile and wireless industry in Nigeria presents significant opportunities for our business, and we look forward to being part of this next chapter of growth," said Azeez Amida, managing director of Pan African Towers.



Telkom to accelerate Openserve & BCX sales

Telkom plans to accelerate the process of selling minority stakes in its subsidiaries Openserve and BCX, respectively specializing in fibre optics and IT systems integration.

Telkom is working to transform and reorganize to become a fully-fledged infrastructure company. The initiative aims to promote strategic growth by consolidating core assets to improve capital efficiency and drive operational synergies to offset the impact of migrations to next-generation technologies. The transition is expected to be completed by December 2025.

Telkom is also pursuing a 'value unlocking program' and began negotiations earlier this year for the sale of its Swiftnet telecoms towers unit, which it considers undervalued because it is trapped within the group structure.

For the six months that ended on 30 September, Telkom posted revenue of R21.77 billion, supported by growth in mobile traffic, monetization of fibre optic infrastructure and the growth of IT activities. BCX, Openserve and Swiftnet generated R7.04 billion, R4.62 billion and R652 million respectively.

Uganda Communications Commission names new executive director

Nyombi Thembo has been appointed executive director of the Uganda Communications Commission (UCC). His mandate took effect from 1 December and will last five years.

Thembo's primary duties will be to lead the organization in the creation and execution of a strategic plan, formulation of policies and programs as outlined by the Uganda

Communications Act.

Since 2017, Thembo has served as director of the Rural Communications Development Fund (RCDF), a universal service fund (USF) for communications in Uganda. Before that, he held several senior positions in the administration, including that of Minister of Information and Communication Technologies (ICT) from 2011 to 2015.

Nigeria's ICT sector records slowest growth in five years

Nigeria's Information and Communication Technology (ICT) Sector is beginning to decline. According to Cardinal Stone Research experts, the slowdown is due to decreasing capital expenditure or capital expense intensity among key telecommunications operators.

The industry recorded its lowest real-term growth in five years in the third quarter (Q3) of 2023, growing by 6.69% year on year.

Mustapha Umaru, Equity Research Analyst (Telecoms), CSL Stockbrokers Limited, attributed the ICT sector's loss to a significant decrease in month-on-month telecom industry data, mostly owing to subscriber purchasing power limits and economic concerns.

"A vital component of Nigeria's ICT landscape, the telecommunications sub-sector has faced challenges in meeting the growing demands of an increasingly

connected population. The sector's ability to provide reliable and high-speed internet connectivity has been hampered by issues such as network congestion, frequent service disruptions, and a lack of adequate broadband infrastructure," said Umaru.

In addition to the fall in subscribers caused by a decrease in consumer purchasing power, the removal of fuel subsidies, increasing inflation, and naira devaluation all had an influence on Nigerians' ability to subsist. Furthermore, rising inflation, which is currently at an 18-year high, has restricted consumer spending capacity and may have hampered commerce sector progress.

Nigeria's inflation rate increased to 27.33% month on month in October 2023, up from 26.72% in September 2023, leading food costs to rise and less money spent on data.

According to the latest National Bureau of Statistics GDP report, despite contributing 15.97% to GDP in Q3, up from 15.35% in the same period in 2022, the data shows that the ICT industry will struggle to maintain its prior development speed.

According to Adeolu Ogunbanjo, President of the National Association of Telecoms Subscribers, it is a clear indication that Nigerians are suffering economically, especially considering how the elimination of subsidies and the unification of the Naira is eroding their disposable income and rising inflation.

"As part of the government's endeavour to solve the difficulties confronting the ICT sector. Plans for a full assessment of existing policies, incentives for private sector engagement, and growth in the ICT industry will be implemented in the coming years," said Ogunbanjo.

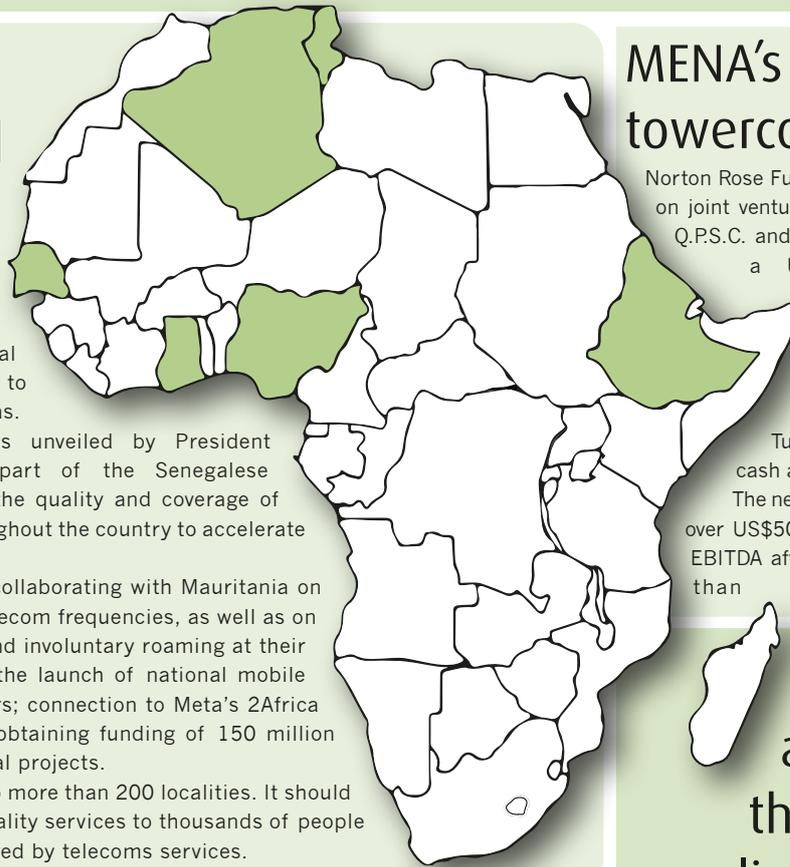
Senegal targets universal digital access plan

The Senegalese government is working with partners to implement a 'Universal Digital Access' program which aims to improve connectivity in border areas.

The \$100 million project was unveiled by President Macky Sall. This program is part of the Senegalese government's actions to improve the quality and coverage of telecommunications services throughout the country to accelerate digital transformation.

Senegal recently committed to collaborating with Mauritania on the coordination and sharing of telecom frequencies, as well as on the management of interference and involuntary roaming at their borders. Other initiatives include the launch of national mobile roaming between telecom operators; connection to Meta's 2Africa submarine fibre optic cable; and obtaining funding of 150 million USD from the World Bank for digital projects.

The program will provide relief to more than 200 localities. It should also make it possible to provide quality services to thousands of people previously excluded or poorly covered by telecoms services.



MENA's largest towerco created

Norton Rose Fulbright has advised Zain Group on joint venture arrangements with Ooredoo Q.P.S.C. and TASC Towers Holding to form a US\$2.2 billion independent tower company.

The companies will combine their circa 30,000 telecommunication tower assets in Qatar, Kuwait, Algeria, Tunisia, Iraq, and Jordan in a cash and share deal.

The new company is estimated to turn over US\$500 million a year and generate EBITDA after leases (EBITDAaL) of more than US\$200 million.

Ethiopia abandons third telecoms licence

The Ethiopian government has cancelled the process of issuing a third telecoms licence pointing to a lack of interest, as interested parties have been put off by political instability.

"The licence process has been terminated. We had not launched a request for bids yet, because we wanted to assess market potential and readiness," Hinjat Shamil, the senior adviser at the ministry overseeing the bidding process, told Reuters. "The market interest didn't match ours for now to launch the RFP (Request for Proposals)."

GCT calls on tax review for telcos

The Ghana Chamber of Telecommunications (GCT) has called on the government to review taxes imposed on telecommunications companies.

The initiative is expected to ease the financial burden on these companies and enable them to invest substantially to improve the quality and coverage of their services in the country.

GCT's plea for help comes days after the Commercial Division of the Accra High Court

confirmed that MTN Ghana must pay 19 million cedis in tax arrears for 2014-2017.

The 2022 edition of the 'Mobile Industry Transparency Initiative Report' states that telecom operators paid 6.07 billion cedis in taxes and other payments to the government in 2022, representing approximately 7.28% of revenue taxes of the Ghana Revenue Authority (GRA) during the financial year.

NuRAN Wireless applies for DRC licence

NuRAN Wireless has filed an application for a network infrastructure licence in the Democratic Republic of the Congo to add more services to its portfolio.

NuRAN's wholly owned subsidiary, NuRAN Wireless DRC SARLU, currently offers Network as a Service (NaaS) under which mobile network operators lease individual sites. The new infrastructure licence would allow NuRAN to expand its business model in DRC to include VSAT services.

The company filed its application with regulator Agence de Regulation des Postes

et Télécommunications Congolaise (ARPTC) following a new Ministerial Decree which simplifies the obligations of licence holders, specifically related to ownership requirements. The new DRC licence would also satisfy the expectations of European Investment Bank (EIB), one of NuRAN's creditors, even if the service isn't considered essential to run its business.

NuRAN plans to build and operate 10,000 telecom sites across Africa. It currently has more than 4,600 contracted telecom sites across seven countries in Africa, including the DRC, Madagascar, Cote d'Ivoire, Sudan, South Sudan,

Namibia, and Cameroon.

NuRAN has secured term sheets from three different groups for additional financing for its Africa project. These include a CA\$40 million share subscription facility in company equity that would provide funds for general corporate and working capital purposes; a US\$10 million structured debt instrument to support growth at the NuRAN Wireless (Africa) Holding level in Mauritius that includes funding for countries other than Cameroon and DRC; and a US\$800,000 credit facility from a local Cameroon commercial bank to support accelerated rollout in that country.

Onix Data Centre joins Angola Cables Data Centre Interconnect

The Angola Cables Global Data Centre Interconnect now includes the carrier-neutral, colocation Tier IV Onix Data Centre in Accra, Ghana, which will improve international connectivity in Ghana and Senegal by providing access to 66 new data centres, eight OTTs/CDNs (Content Delivery Networks), and 21 IXPs (Internet exchange point).

"The 2,000m2 data centre has been designed to cater to the growing demands of business in Ghana and the region," said Onix in a statement. "The facility already serves primary banking and financial clients, and it was specifically designed to provide flexible services to the business and corporate sectors. Guaranteeing maximum uptime and reliability, the facility currently has 170, 3kW and 5kW racks and a pod of 50 racks available for individual clients wanting to share infrastructure and reduce costs."

The partnership is a critical component in providing interconnected carrier and cloud-neutral services to a wide range of customers seeking to store and manage their digital assets and business-critical data.

"Our intent has been to develop a reliable facility that can accommodate and deliver

secure services to hyperscalers and carriers supporting terrestrial networks as well as existing and new subsea cables planned for the region," said Michael Nahon, CEO, Onix. "Currently, solar powered technology generates 67% of our energy requirements. We also have the capacity to increase this in the future as we grow."

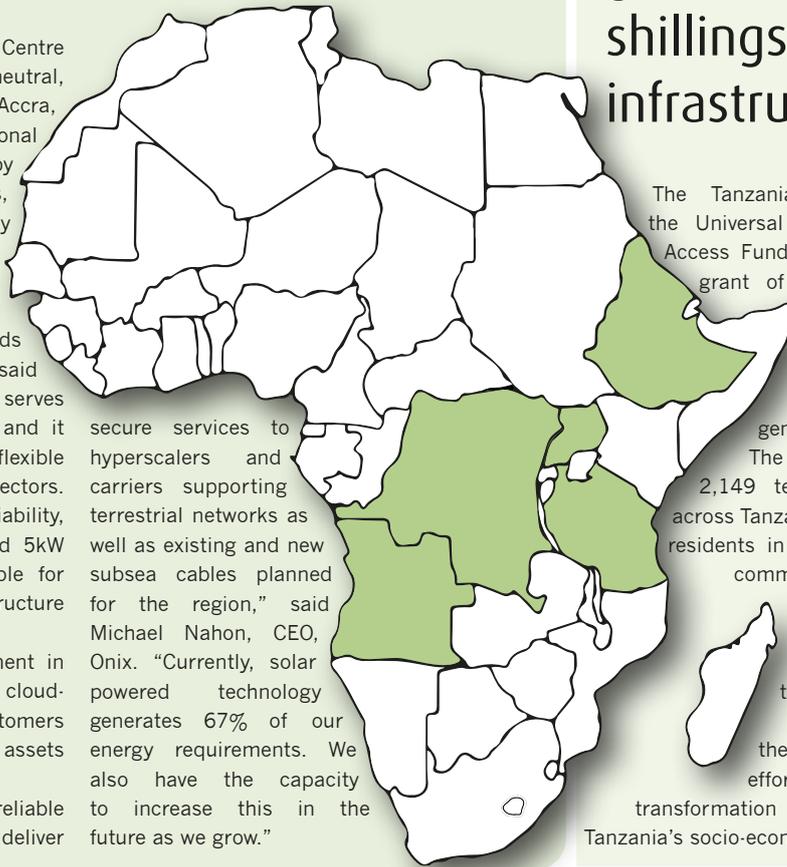
Tanzania's MNOs gain 326 billion shillings grant for infrastructure

The Tanzanian government, through the Universal Communications Service Access Fund (UCSAF), has provided a grant of 326 billion shillings to telecom operators to improve service coverage in the country, reports Justina Mashiba, director general of UCSAF.

The program aims to deploy 2,149 telecommunications towers across Tanzania to connect 23.8 million residents in 5,111 villages to reliable communications services.

Currently, 1,321 telecom towers have already been built, connecting more than 14.8 million people.

This initiative is part of the Tanzanian government's efforts to accelerate digital transformation and make it a driver of Tanzania's socio-economic development.



Raxio inaugurates first data centre in Addis Ababa

Raxio Data Centres has inaugurated its first data centre in Addis Ababa, Ethiopia. It is a Tier 3 certified facility that can accommodate up to 800 racks and provide up to 3 MW of computing power.

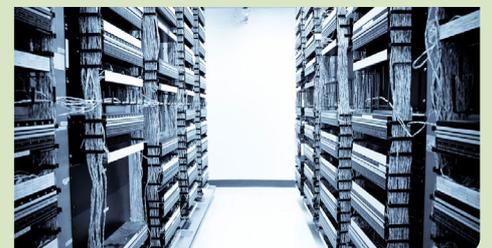
"We anticipate that this facility will be a catalyst for increased economic development in Ethiopia, supporting local businesses and government agencies, as well as attracting regional and international service and content providers to Ethiopia," said Bewket Taffere, managing director

of Raxio Data Centres Ethiopia.

It was in March 2021 that Raxio launched construction work on its data centre in Ethiopia as part of its commitment in 2019 to build 10-12 data centres across the continent to meet the growing demand for connectivity, data storage and processing.

For the implementation of these various projects, Raxio raised, last October, \$46 million in equity capital from its shareholders Roha and Meridiam. In January, it obtained \$170 million in

financing from the EmergingAfrica Infrastructure Fund (EAIF) and Proparco.



UCC looks to deliver internet to 50 schools

The Uganda Communications Commission (UCC) has floated a tender for the provision of internet connectivity to 50 schools across the country and expects offers from interested companies no later than 8 January 2024.

The award and signing of contracts is scheduled for February 29.

This initiative is part of the 'Internet Connectivity Program' implemented by UCC and funded through the Uganda Universal Communications Service Access Fund (UCUSAF). In total, some 180 schools are planned to be connected to the Internet. Libraries are also targeted.

This initiative is expected to promote inquiry-based learning, provide timely access to diverse information and knowledge, and enhance interactive teaching and learning experiences.

Uganda disconnects 1.4 million SIMs

The Uganda Communications Commission (UCC) has disconnected 1.4 million irregularly registered SIM cards, according to Rebecca Mukite, head of public and international relations at the regulator.

Subscribers whose SIM cards have been disconnected have 90 days to regularize their registration or renounce it. "At the end of the 90 days, the SIM cards will be sent to the pool to be allocated to other users. However, this process does not affect mobile money on these lines. It is still possible to withdraw money, pay a bill and make transactions, but it is not possible to add money to the line," said Mukite.

This measure came after the expiration of the ultimatum given by the regulator to Ugandans to comply with the new regulations on SIM card registration published on 12 May 2023. It aims to streamline registration procedures by requiring those who had registered their SIM cards only with National Identification Numbers (NIN) to add biometric measurements.



Talking satellite

Daniel Batty, space and spectrum policy analyst, Access Partnership



Mega-constellations – impact on Africa

Innovation in satellite construction, component design, inter-satellite links, and launch technology has given rise to a new methodology of constellation design: the mega-constellation.

A mega-constellation is comprised of hundreds (if not thousands) of individual satellites that work in unison to provide services globally. The first mega-constellation was developed in 2019 and operated by Starlink. It comprised a conservative 60-satellite system that sought to provide broadband internet globally. As of 2023, mega-constellations have expanded to include operators such as OneWeb, with Kuiper and China's Guowang soon to follow.

The scale of mega-constellations represents opportunities for consumers and countries but also risks regarding sustainable access and use of space. Mega-constellations operate almost exclusively in low Earth orbit (LEO), less than 2,000km from the Earth's surface. This also means that mega-constellations not only operate in the most crowded set of orbits but also the smallest, with the least available space. Operating in LEO presents significant service advantages. The lower altitude means the satellites can provide high-speed broadband Internet at speeds comparable to terrestrial ADSL or low-speed consumer fibre internet. This is the service that all mega-constellations, as well as Kuiper, seek to provide.

Satellite internet and connectivity in Africa

Mega-constellations represent a significant communications advantage in addressing both the digital divide and the usage gap in the most remote and underserved areas of the continent. Expanding terrestrial infrastructure to underserved or unserved communities can either be prohibitively costly or geographically impossible, leaving these communities isolated. Satellite broadband internet can connect these communities by establishing WiFi hotspots in vital community centres like schools and clinics. While satellite broadband

Internet is still prohibitively costly for the average rural citizen to purchase, the setup process and its continued operation are considerably less costly for the government than deploying terrestrial infrastructure.

Expanding connectivity has a well-understood impact on economic and social development. This is made clear by its allocation as a sustainable development goal. These impacts include encouraging and facilitating new economic activity, digitising government services, and improving access to information. Expanded connectivity also has other ancillary benefits, such as enabling access to eHealth and online learning material, both of which are vital for upskilling rural citizens.

These services can be built on the backbone of the satellite internet made possible by mega-constellations.

Risks

Despite the clear and significant benefits that the services mentioned above represent, like anything, there is a trade-off between these potential benefits and the harms that mega-constellations could create. Navigating this issue requires a delicate balancing act.

Space debris

The most obvious potential harm is the impact of collisions in a crowded orbit. Advances in space traffic management, together with space situational awareness and active debris removal, are helping to tackle this problem.

However, with the number of satellites set to increase well beyond current levels, the risks of collisions will only increase in the coming years. A cascading debris cloud, as predicted in the Kessler syndrome, could snuff the emerging African space economy entirely. As well as preventing further equitable access to space, such a scenario presents a significant threat to the vital services that are already being provided on the African continent, including navigation and Earth observation.

Radio astronomy

Africa is home to some of the world's most important radio astronomy telescopes, including the South Africa

Large Telescope and the proposed square kilometre array. These projects assist in global research, grant funding, and education.

Consequently, the potential impact of mega-constellations on radio astronomy requires careful study. Not only are these installations valuable additions to a nation's scientific advancement but they are also expensive and cannot be moved once in place. The radio noise created from thousands of satellites in LEO could potentially hinder the operations of radio astronomy telescopes, rendering the latter ineffective. Satellite operators have proposed solutions to this problem. However, once again, in noting the proposed scale of these mega-constellations, there is concern regarding the effectiveness of these measures.

Conclusion

In the coming years, Africa stands to benefit from the services provided by mega-constellations, which can help to achieve sustainable development goals, improve last-mile connectivity, and realise the benefits that stem from this, including increasing access to education and health.

However, to ensure these deployments do not stifle Africa's access to space or hinder the growing African space economy, it is important for African administrations to actively engage in the international regulatory landscape. To assist in, and facilitate studies on, the impact of mega-constellations, it will be important to present a united voice on the global stage regarding African priorities. Expanding connectivity and access to communications are universal goals, but not at the cost of Africa's own space ambitions.



Towercos: seizing opportunities to stay ahead

Sumedha Tatke, director – marketing and product management, Tarantula



The business environment has been challenging for the past two years, with inflation affecting economies globally. Towercos have faced issues like price increases, weak consumer demand, declining margins, and supply chain disruptions. To adapt, towercos have focused on optimizing operations and reducing costs.

However, cost-cutting measures alone are not enough. Towercos must embrace opportunities like 5G, prepare for 6G networks, utilize digital twins, and explore new revenue streams and business models in the evolving digital landscape. Digitalization is becoming a strategic approach for towercos due to market, internal, and technological pressures.

Digitalization drivers

Towercos are no longer asking why they should embrace digitalization but rather when. Digitalization is revolutionizing the industry, prompting towercos to seek innovative ways to enhance efficiency and reduce costs. Identifying and acknowledging the driving forces behind this transformation is relatively straightforward.

The market imperative

The EY report, 'Digital InfraCo – unlocking the tower power,' highlights market opportunities towercos should pursue. Towercos will be compelled to explore these opportunities soon. The report presents the following key areas:

- **Strengthening the core:** Towercos should focus on meeting the increasing demand for high-speed, high-bandwidth traffic. The rollout of 5G calls for network densification through small

cells and a robust fibre backhaul network, which towercos are well positioned to address.

- **Adjacencies:** Leveraging their infrastructure strength, including a widespread tower network, real estate expertise, and power management capabilities, towercos can generate additional revenue through adjacent services like EV charging, warehousing, and advertising. Adopting a digital-first approach can enhance efficiency in managing these services.
- **The Digital InfraCo:** This opportunity represents a bold transformation for towercos. By becoming a Digital InfraCo, towercos evolve from providing tower infrastructure to becoming network providers. This shift allows for avoiding duplication and achieving better economies of scale. Successful transformation into a digital infraco depends on the digital maturity of existing incumbents.

In summary, the EY report outlines the market opportunities for towercos and emphasizes the importance of embracing digitalization and expanding their service offerings.

Internal impetus

Several internal factors drive digitalization within towercos. Firstly, the initiation of digital transformation by some companies prompts others to follow suit. The competitive landscape among towercos further fuels the adoption of digitalization as organizations strive to keep up with one another. Consolidation in the towerco industry through mergers and acquisitions also acts as a significant driver, with digital maturity in operations facilitating smoother due diligence and expediting proceedings.

Changes within the telecom sector impact Towercos' approach to digitalization as well. Consolidation has resulted in fewer competitors, necessitating strategic adaptations. Telecom companies prioritizing a 'digital first' approach with technologies like data-driven business intelligence, AI, machine learning, and generative AI create a bandwagon effect, compelling Towercos to take digitalization seriously and integrate it into their operations.

Technology suppliers

Tech suppliers play a significant role in the towerco industry, offering cloud computing, big data analytics, AI, machine learning, automation, and IoT solutions. They contribute to the growth strategy of towercos, providing digital solutions to maintain competitiveness. Alongside co-creating tech

solutions, tech suppliers also offer go-to-market (GTM) strategies, allowing towercos to stand out from the competition.

This collaboration creates a win-win situation for both parties.

Digitalization - various journeys

Towercos are increasingly adopting digitalization to enhance efficiency and profitability. This initiative is driven by factors like improved customer service, operational efficiencies, market responsiveness, competition, and better data management. Digitalization allows towercos to optimize asset utilization, streamline operations, and reduce maintenance costs using technologies like predictive analytics and AI. It also enables them to offer robust services by leveraging trends such as 5G networks and IoT solutions.

Towercos have multiple paths to embark on the digitalization journey. However, it's important to understand the distinction between digitization and digitalization. Digitization involves converting analogue information into digital formats, making it easily accessible and shareable. Digitalization, on the other hand, uses digital technologies to transform business processes, leveraging data for automation and improved performance. Both concepts are crucial for maximizing operations in the digital era, with digitization being a part of the broader digitalization process.

Path 1 - big bang digital transformation

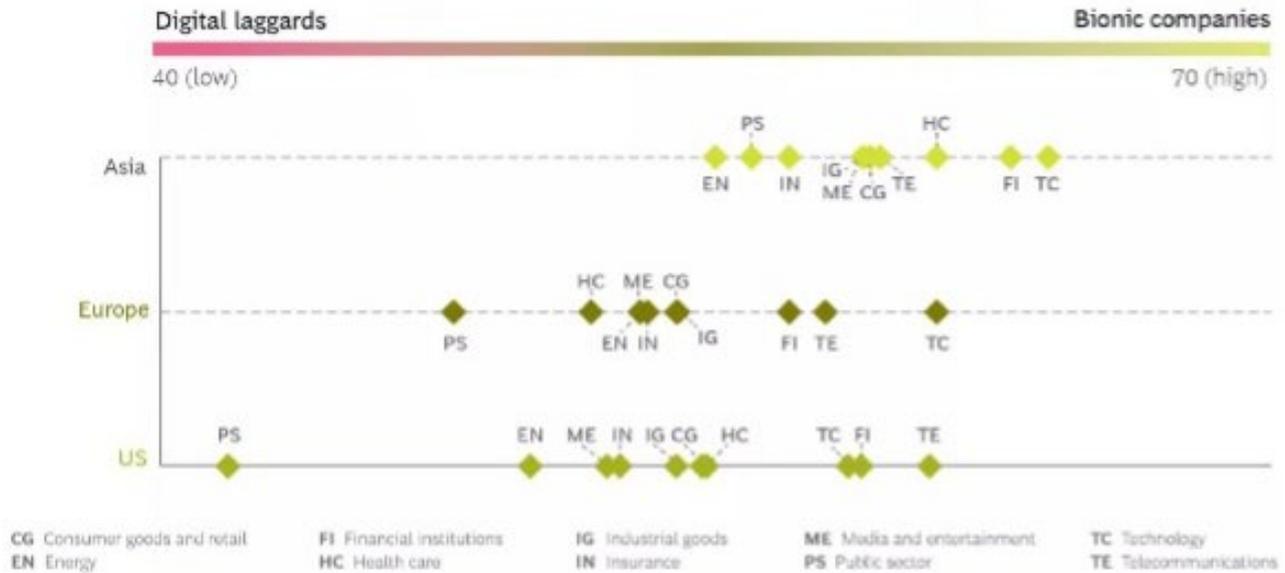
The path towards digitalization is demanding for towercos. It involves technology-enablement not only for tower infrastructure and operations but also for all business and support functions, including administration. It's a comprehensive approach where towercos go 'all-in' with their digital transformation efforts.

Path 2 - digitalization > point solution or platform

There are two sub-paths in the digitalization journey:

Point solution approach: This involves using specific software solutions to address individual problems. Point solutions focus on solving specific issues and can be integrated with other systems or platforms for a more comprehensive solution.

Platform approach: A platform is a set of tools and services that enable the development, management, and delivery of point solutions. It



provides the infrastructure for point solutions to run and integrates various functions, creating a unified user experience. In the context of telecom site management software, a platform approach would encompass centralized site lifecycle management, incorporating lease management, field service management, analytics, and more.

The platform approach allows for the deployment of multiple point solutions, such as location, site inventory, tower acquisition, O&M, and billing. This integrated approach improves executive decision-making by providing smarter data and faster analysis.

Path 3 - digitization

Towercos, along with companies in other industries facing technological disruption, often confuse digitization with digitalization. As previously mentioned, the distinction between the two has been highlighted. However, for towercos, digitization serves as a crucial initial step, building confidence to invest in future digitalization initiatives and embrace digital transformation.

Risk vs return

The 'all-in' Path 1 approach carries high risk as it requires significant resources in terms of time and money. Path 2 takes an evidence-based agile approach, addressing point problems incrementally, resulting in lower risk since only a portion of the business undergoes the change.

Assess digital maturity with DAI

BCG conducts an annual Digital Acceleration Index (DAI) study, a global survey of thousands of companies across various industries.

Referencing their 2021 study can provide towercos with ideas (note: this is not a recommendation, but a line of thought for towercos to consider). The survey covered 2,300 companies in 27 countries and 10 industries, assessing their digital maturity in 36 categories on a scale of 1 to 4. The scores were then normalized on a scale of 0-100 to determine their placement on the BCG Digital Acceleration Index (DAI).

The DAI categorizes companies into three groups based on their digital maturity:

Bionic companies (score: 67-100): These companies exhibit the highest level of digital maturity, excelling in technology, customer experiences, and innovation.

Digitally proficient companies (score: 44-66): These companies are making progress and investing in digital capabilities with the aim of continuous improvement.

Digital laggards (score: 0-43): These companies have limited digital maturity and face challenges in leveraging technology for desired outcomes.

Although the survey doesn't explicitly mention tower companies, it does include telecom companies, which were identified as bionic companies with high digital maturity. Telecom companies are strategic customers of tower companies, and the bandwagon effect is evident.

To assess their own digital maturity, towercos can refer to the self-assessment points below. Scoring themselves will provide insights into their current digital maturity, helping them identify strengths, areas for improvement, and prioritize digital transformation initiatives. The assessment presents representative criteria and corresponding questions, and towercos should consider which criteria are most relevant to their business situation. Assigning appropriate weights (in %) to the criteria will help calculate overall scores and guide progress in the digital transformation journey.

Press the four accelerators

The BCG study identifies four accelerators for enhancing digital maturity and driving value creation in tower companies:

Technology, data, and human capabilities:

- Analyze self-assessment results to identify strengths and areas for improvement.
- Create a roadmap for investing in technology, improving data quality, and upskilling employees.
- Promote unified data models and API integration for efficiency.

AI integration:

- Assess current AI investment and focus based on self-assessment results.
- Highlight benefits of AI integration and training employees in AI.
- Encourage prioritization and resource allocation for AI initiatives.

Governance and platform operating model:

- Evaluate governance structure and assign ownership for digital initiatives.
- Explain benefits of a platform operating model for collaboration and autonomy.
- Strengthen collaboration between business units and technology functions.

Technology and human capabilities connection:

- Assess culture and integration of technology and data into operations.
- Promote a culture of continuous improvement and human-tech augmentation (HTA).
- Leverage technology to automate processes, foster innovation, and design.

Regularly monitoring progress, reassessing digital capabilities, and adjusting strategies are crucial for staying competitive in the evolving digital landscape.

Shifting gears in telecommunication

In the telecommunications industry, the story unfolds with telcos building and managing their own network infrastructure.

Towercos emerged, specializing in managing and leasing tower infrastructure, allowing telcos to focus on core services. Infracos, the latest stars, take towercos to new heights by becoming network providers themselves through digitalization. However, the circle of life reminds us that things can change. Infracos may blend back into telcos or evolve into technology giants, driven by regulation, market dynamics, and technology. Only the digitally forward will survive, adapting to constant transformation.

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Going further in critical communications



Digging toward a smarter future

Mining – one of the darkest and most dangerous places of employment in the world – is facing a renaissance in connectivity, adopting new technologies to enhance safety and efficiency...

Mining has been a mainstay of Africa's economy for eons thanks to the continent's plentiful mineral resources and their significant contribution to exports, revenue, and gross domestic product (GDP). Before the COVID-19 pandemic, minerals and fossil fuels accounted for more than 33% of exports from nearly 66% of African nations.

Overcoming challenges

Mines are notoriously dangerous and dirty environments in which to work, requiring more ruggedised communications networks than most urban or consumer environments.

"As consumers, we accept dialling back if we lose a mobile connection. However, that cannot happen in a mine if the end device is on a person needing help or autonomous equipment, reporting a dangerous malfunction," highlights Louis Lambert, chief revenue officer, 6harmonics. "Mining IoT, IIoT, and HSE depend on guaranteed service at all times and everywhere."

Delivering reliable communications to remote African mines is challenging amidst limited infrastructure, scarce and unstable power, geographical barriers, access to spectrum, extreme weather, and security issues.

"Harsh, hostile environments like mining, whether it is deep mine or open cast, requires good quality,

high performance communications equipment for longevity and on-site safety," says Linda Clark, managing director, Mobile Mark Europe.

"Transport infrastructure can be inconsistent, with poor travelling conditions making logistics arduous and complicated," notes Nimrod Kapon, CEO, OASIS Networks. "Political instability can also hamper the ease in which ground segments are setup. Shipping equipment can be challenging and there are many anecdotes of deliveries being held up at the border."

Additionally, there's a lack of technical expertise, high costs, complex regulations, and the need to address vast distances in some of the harshest conditions in the most economical manner, reports Burchell Trevor, head of the Intracom Telecom RSA office: "addressing the challenges in open mines demands innovative solutions specifically engineered for the extreme conditions encountered in these environments."

Despite the challenges, mining operators stand to gain from a suite of communication applications tailored to their precise needs.

"Voice communication ensures coordination and safety, while data transmission enables real-time equipment monitoring. Fleet management applications optimize routes and maintenance, enhancing efficiency," says Trevor.

Lambert reports that fleet management is a significant contributor to the data payload

on today's mining network. "It is among the highest-priority traffic due to its high importance in operational safety and efficiency," he adds. "Fleet management also incorporates multiple video sensors and streaming video, fed to AI to manage safety, equipment functions, maintenance, and location."

"The modern mine has come to rely heavily on automation, from self-driving loaders and trucks to automated drills and AI-driven video surveillance," says Robert Bell, executive director, World Teleport Association. "Those systems, in turn, rely on connectivity across the mining operation, to regional offices, headquarters locations and the worldwide web. The good news for mining companies and their investments is that connectivity has become less expensive, more powerful, and more flexible over the past few years than anyone could have anticipated."

Terrestrial vs orbital

Since most mines are beyond the reach of fibre, terrestrial wireless has been the solution of choice for decades.

"Terrestrial wireless is, in most cases, the best choice as it is less expensive and usually more straightforward to implement. However, it still requires a tower and, in some instances, repeater towers that must be erected and

powered,” says Lambert.

While WiFi has been the staple of onsite connectivity for years, private LTE is rapidly emerging as a preferred technology.

“Mines are using private LTE for group communications, push-to-talk radios, and push-to-video, which can speed collaboration and problem solving. More sophisticated applications include high-accuracy positioning of their automated vehicles to prevent accidents, control of drone networks and video analytics,” says Bell.

“LTE is the new darling in mining, more so than WiFi and even 5G,” asserts Lambert. “LTE delivers mobility, nomadicity, traffic prioritization, and a massive ecosystem. The challenge is with access to spectrum on the surface. For underground deployments, spectrum is not an issue as it is unregulated in a private underground environment. LTE offers reliable and predictable connectivity to fixed and mobile assets, and, with the evolution of autonomous use cases, becomes the best choice for the distribution network as it can also deliver access layer connectivity.”

While fibre may offer higher performance than WiFi and LTE, and is expanding significantly across the continent, satellite remains the core option for connectivity from the mine to the world, because most mining operations are located far from urban areas.

“GEO satellites are powerful and offer highly reliable service, but the distance from satellites to the ground introduces latency. For most applications, this is not a problem – but enterprise resource planning systems and cloud services from Microsoft Office to mining applications such as EarthCache and Lightship are highly interactive and operate poorly over high latency connections,” says Bell. “Massive investment over a decade has created satellite constellations operating in medium Earth orbit (MEO) and low Earth orbit (LEO). At these lower altitudes, latency ceases to be a barrier, and the new generations of spacecraft being launched are making available massive amounts of new bandwidth at much lower prices.”

Lambert agrees that satellite is becoming essential in areas where fibre or terrestrial wireless are not achievable at reasonable prices: “LEO pricing and coverage are becoming more attractive, but with that comes volume and over-subscription. The solution is so prevalent in some areas that performance is starting to degrade.”

Whatever the solution, Kapon believes that it’s important to pick a solution with hot-backup options.

“If budget will not allow this, at least to provide spares on site,” says Kapon. “In some countries, such as Ethiopia and Eritrea, it is impossible to source equipment locally for regulatory reasons and Return Merchandise Authorisation process can take a long time. It is much more efficient to plan a solution with spares from day one!”

Safety first

As with all heavy industries, connectivity has

Saving lives with tyre monitoring

Studies have shown that autonomous trucks achieve significantly higher utilization, higher annual engine hours and more tons of material moved per day. Tyre life is also significantly longer because trucks operate only on a programmed basis and avoid vehicle collisions and sidewall punctures.

Tyre maintenance is significant as, according to Clark, “if the tyre pressure rises beyond a certain level, it can make the tyre explode and could kill anyone within the vicinity of the explosion.”

Clark points to a case study wherein Michelin uses the MEMS Tyre Pressure Monitors alongside Mobile Mark’s SMWG-311 antenna to monitor tyre pressure in open cast mines. This technology is used to keep the driver and people in the surrounding area safe, with messages sent to a control room and to the driver’s cab warning of any pressure increases.

The previous tyre monitoring system needed to be consolidated and updated to cover new frequency bands, while data needed to be reliably transmitted both in-close to vehicle and from all corners of the mining field, and in a harsh, high vibration environment.

Mobile Mark’s solution combined the previous multiple antennas into a single package covering the additional frequencies used by the upgraded systems (4G LTE cellular, WiFi, GNSS). The interior of the antenna housing was filled with an RF compatible foam using a proprietary foaming system to ensure both vibration protection and wireless performance.



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become crucial to the safe, secure, and efficient operation of the modern mine.

“Mining has long been one of the most dangerous jobs in the world,” says Bell. “With competition for qualified talent at an all-time high, automating work site surveillance with video analytics can produce sizable improvements in worker safety.”

Indeed, safety and security are paramount and a fast-growing segment of the total communication payload. “Air, water, temperature, toxic gas, and other mission-critical monitoring are no longer just small amounts of data moving in the network, but also include live video streams analysed by AI at the area level or the mine level,” explains Lambert. “The AI results are correlated at the mine and corporate levels to compare operations across multiple assets.”

Keeping employees safe is paramount to successful mining operations, helping to retain the best staff and reduce the increased costs related with staff churn.

“Unlike supervisors, cameras and data processing systems never sleep or get distracted, and they can play a key role in making sure employees comply with rules designed to protect them. The health of people living near the mine is equally important to progressive operators. The same surveillance and analytic capabilities enable mines to monitor their environmental impact and take pre-emptive action to prevent harm,” explains Bell.

Mining ‘costs a fortune every minute’

Modern communications in mining can help improve profitability as well as safety and efficiency.

Kapon describes his experience of a communications failure: “I’ve visited a mine myself that had to stop its production for almost one full week because they could not communicate

and plan the production, schedule the loading at the port and movement of trucks. As the sites are usually remote, dispatching someone might take several, expensive days.”

“Communications have one of the highest impacts on the mining sector’s profitability, efficiency, and safety,” asserts Lambert. “Mining costs a fortune every minute. Any lost minute cost a fortune, so having access to information in real-time from all connected people and things allow humans and machines to make faster decisions and save lost production minutes, hours, shifts, and possibly even lost lives.”

“Effective communication significantly boosts mining sector profitability and efficiency by enabling real-time coordination, improving safety, optimizing resource use, reducing downtime, streamlining supply chains, ensuring compliance, and fostering innovation,” agrees Trevor.

The mine is a constantly changing environment, which can be challenging to operate in. Reliable, assured real-time communications enable increased efficiency, instant learning, decisions for situations, and accident avoidance.

“As sensors on mining equipment and systems collect massive amounts of data, it creates an opportunity for sophisticated analysis that reveals bottlenecks and cost-inefficiencies in operations,” says Bell. “Analytics can also generate predictive maintenance schedules based on operating data, so that equipment can be quickly taken offline and serviced before a major breakdown can bring operations to a halt.”

“To many mining executives, communication infrastructure pays for itself immediately the first few times they avoid shutting down or slowing down production,” adds Lambert.

Connecting the future

As the mining sector in Africa continues to modernise, digitalise, and take advantage

of all high-speed connectivity has to offer, communications service providers (CSPs) have a crucial role to play.

“These wireless networks enable real-time data collection, IoT device integration, and predictive maintenance, enhancing safety and operational efficiency,” says Trevor.

“The future has started, and it is not only about autonomous operations, but also about electrification and a swarm of lighter vehicles,” adds Lambert. “More process automation and functions help keep miners away from hazardous areas. For a crucial role, SME miners will be able to oversee multiple operations simultaneously.”

After decades of slow progress, recent years have seen significant advancements in the uptake of Mining 4.0 technologies, and it’s important that the entire ecosystem comes on board to support these developments; from governments to authorities, from CSPs to vendors.

“For Africa to benefit fully from its mineral abundance, policy leaders need to understand the requirements of modern mining companies for productivity, connectivity, and process automation,” says Bell.

“At first, MNOs did not fully grasp the mission-critical nature of mining and brought forward consumer-grade 4G solutions - but they are learning and investing. 5G SA is a better platform for the CSP to build mining offerings; however, MNOs and smaller CSPs will have to work harder at simplifying the 5G SA solution for the mining operators,” says Lambert. “For our part, we are developing an edge computing technology and orchestration control system to simplify the deployment of rugged IP67 edge computer and communication devices that integrate 4G, 5G, WiFi, LoRA, GNSS, Bluetooth Beacon, and accelerometers to truly simplify the simple deployment of complex technology enabling reliable mixed communications and computing where it matters – at the edge of the network.” ■



Linda Clark



Louis Lambert



Nimrod Kapon

The impact of new LEO systems on humanitarian relief operations in Africa



Declan Ganley, CEO, Rivada Space Networks; and Erwan Emilian, CEO and partner, IEC Telecom

The global digital transformation market size has been estimated to a value of \$590 million in 2021 and is projected to grow at a compound annual growth rate (CAGR) of 15.6% from 2021 to 2030. With 45% of Africa's population living more than 10km away from any fibre-optic network infrastructure, satellite communications offer reliable and secure coverage to take advantage of opportunities for digitalisation. In fact, according to the African Space Industry Annual Report 2019, satellite communications generate approximately \$6.5 billion in Africa annually.

In the humanitarian sector, satellite communications contribute considerably to relief efforts in areas without reliable cellular service – from portable connectivity kits for first responders and drone surveillance to coordination of food distribution and e-learning programmes. Digital technologies are facilitating aid operations like never before.

The advent of LEO connectivity solutions enables improved access to aid services even in the most remote parts of Africa, offering the potential to revolutionise humanitarian relief efforts by providing advanced connectivity for real-time data collection, remote sensing capabilities, digital healthcare support, enhanced coordination, and improved logistics. Such advancements can help address the challenges faced during relief operations and ultimately save more lives in times of crisis.

Modern digital applications are being constantly developed to serve humanitarian operations

and require low latency – greatly enhanced by LEO connectivity. On average, LEO networks exhibit a 40ms delay as opposed to 180ms on MEO and 600ms on GEO networks. This technology is fast evolving – the new generation of LEO constellations, will be independent of terrestrial infrastructure. Not only will this further increase the quality of service, but also allow ultra-secure connectivity for critical missions. By routing traffic over inter-satellite laser links, new LEO technology will provide an extra layer of defence for sensitive data.

Cyber security is one of the key requirements for humanitarian communications. The architecture of future LEO constellations eliminates high-level interference risks, yet certain threats must be treated on the ground. Humanitarian organisations need to stay in control of traffic consumption; the majority of cyber risks originate from the unintended misuse of infected devices. Considering the complexity of humanitarian operations, the role of network management increases exponentially.

Today, LEO technologies enable

humanitarian staff members to browse a satcom network akin to GSM. This is, of course, a major development. Internet access is an important factor in securing healthy working conditions for humanitarian staff engaged in long-term projects. Connectivity in the field is the gateway to socialisation, enabling humanitarian operatives to stay in touch with loved ones, keep abreast of international news, access e-learning programs, and more.

However, for operational centres, the growing number of personal connections means increased vulnerability to cyber threats. Modern network management systems offer a dependable solution. The corporate environment, used for mission-critical operations, can now be isolated from staff and third-party browsing, eliminating the risks of cross-contamination. ICT terminals get more compact year upon year. In the past, network segregation was only possible as an element of long-term camp infrastructure. Today, the exact same functionality is offered via portable devices, which can be used for first-response operations and

vehicular missions.

Moreover, today LEO connectivity enables field missions in Africa to operate like remote offices. And the impact goes far beyond increased operational efficiency. Humanitarian stations can become 'connectivity hubs' that extend the benefits of digitalisation to remote areas. From mobile clinics to e-school services and legal consultation centres to remote expert guidance opportunities, enabled by connectivity, the spectrum of accessible aid operations can increase exponentially.

By enabling new social services for underserved communities in Africa, NGOs and IGOs help remote communities to access resources previously reserved for urban citizens, spreading equality, and boosting economic development. According to the African Development Bank, every 10% increase in broadband penetration is expected to increase the GDP by 2–3%. LEO-based solutions are well-positioned to bridge this digital divide and unlock the growth and development opportunities in African communities. ■





AI – what’s in it for the continent’s mobile operators?

AI is taking the world by storm – but what are the implications for Africa’s mobile operators?

Artificial Intelligence (AI) is, without a doubt, the technology story of the year for 2023 following the historic launch of ChatGPT in November 2022. Across the globe, AI is expected to deliver numerous benefits to mobile network operators (MNOs), addressing challenges and offering new opportunities for enhancing growth and efficiency. While investments to date have been focused on the western world, Africa stands to leapfrog other regions and dive straight into AI/ML for mobile.

“AI is gaining huge traction amongst the 200+ global membership of the Mobile Ecosystem Forum, irrespective the area(s) of mobile they

are active in,” says James Williams, director of programmes, Mobile Ecosystem Forum (MEF). “It’s a topic on everybody’s lips, but from what I have seen this year, MNOs are in pole position to benefit more than most from what is undoubtedly disruptive technology.”

Maintaining the network

AI is already making a significant impact on mobile networks across the continent. MTN plans to migrate to Microsoft’s Azure’s cloud computing platform to tap into ML and AI to deliver operational efficiency across its footprint;

while MTN Benin and Ericsson have entered a partnership to deploy AI and ML solutions to address throughput degradation and provide improved customer satisfaction.

AI algorithms can analyse network performance data to optimise coverage, capacity, and reliability, and can predict and prevent network equipment failures by analysing historical data and identifying patterns that may indicate potential issues. It can automate routine tasks, such as network maintenance and troubleshooting, leading to operational cost savings. Additionally, predictive analytics can help operators to allocate resources more efficiently, optimising capital and

operational expenditures.

“Alongside new network deployments, AI drives automation behind dynamic real-time network optimisation. This includes optimising coverage, managing capacity, and ensuring the efficient and most effective use of scarce spectrum resources,” agrees Daniel Batty, space and spectrum policy analyst, Access Partnership.

“The primary benefit I see is the real ability at long last to make sense of the huge amount of ‘dark data’ MNOs generate,” says Williams. “Getting a superb handle on behavioural patterns, and really getting clear insights within their networks by tasking AI to do so, will bring MNOs much closer to what their customers REALLY need. At the end of the day, it means being able to increase revenue and margin, all whilst providing a neat competitive edge.”

“AI may also enhance physical infrastructure itself when paired with IoT sensors enhancing predictive maintenance through forecasting and predictive analytics,” adds Batty. “This allows the detection of fault vectors before they materialise, allowing them to be assessed and repaired, thereby increasing the longevity of the network infrastructure.”

With cybersecurity an increasing threat in Africa amidst rampant digitalisation – and on a continent where just 10% of businesses utilise cybersecurity tools – AI stands to benefit MNOs by identifying and mitigating potential security threats in real-time, protecting both the network and customer data, and in turn cutting customer churn. Moreover, AI algorithms can detect unusual patterns in user behaviour, helping operators identify and prevent fraudulent activities such as SIM card cloning, subscription fraud, and unauthorised network access.

AI can also be used to tackle the digital divide; smart network planning, for example, and the use of low-cost, energy-efficient technologies, can help extend connectivity to rural and underserved areas.

“AI models may play a significant role in developing network deployment strategies to bridge the digital divide and plan network expansion in the most efficient and cost-effective

South Africa – developing skills in AI

A collaboration between Microsoft South Africa and the Youth Employment Service (YES) is bringing an innovative AI training initiative that will empower 300,000 young South Africans with digital skills, fostering a future of innovation, employability, and economic growth.

YES, and Microsoft have jointly curated and developed customized training materials, offering a training path that caters to various levels of AI exposure and computer science knowledge. The platform educates all youths, fostering AI skills development from novice to expert levels and increasing awareness. An introductory AI learning module was designed to offer young people a foundational understanding of AI, emphasizing its practical purpose and value.

YES CEO Ravi Naidoo emphasized the partnership’s commitment to equipping young people with digital skills for future-focused sectors and careers, with the significant number of beneficiaries highlighting the scale of impact they aim to achieve.

“Practically, this partnership aims to boost job creation and enhance employability, contributing to the establishment of a digitally inclusive economy in the country,” said Naidoo.

Microsoft Africa president Lillian Barnard said that the collaboration with YES not only addresses youth unemployment, but also fosters a culture of innovation and employability through digital skill development: “in line with Microsoft’s AI strategy, emphasizing innovation, empowerment, and responsibility, it forges a global talent pool for digital enterprises. Youth completing YES training gain AI awareness and career potential, enhancing their work opportunities.”

way,” agrees Batty. “At the network level, AI enhances the design of complex networks allowing for innovative deployment models such as picocells. These low-powered networks allow for strong coverage in densely populated areas, such as Lagos or Johannesburg.”

Outside of network management, and perhaps one of the hottest topics in AI today, is its application on the consumer end, streamlining customer service in finance, transportation, manufacturing, and retail, among other markets. MNOs stand to gain hugely through the deployment of AI for front-facing applications, cutting operating costs and augmenting valuable insights.

“AI enhances customer services through virtual assistants and chatbots to assist with loading data, changing SIMs and any other variety of customer query. This frees up human resources within the MNO to be tasked with more difficult queries,” says Batty.

“AI can help boost effectiveness of technology, decrease power consumption, more rapidly identify network elements that are on course to fail well before they actually do, etc.,” adds

Williams. “For me though, it’s really that ability to get to know your customers so much better and at a pace and scale that only recently would have been inconceivable.”

Capitalising on VAS

Stalling core service revenues amidst increased commoditisation prices of mobile and data and competing technologies like fibre and satellite becoming increasingly accessible and affordable, are leaving Africa’s MNOs in a tricky spot with declining profitability. Accordingly, many are incorporating VAS – be it mobile money, gaming, OTT, etc. – into their ecosystem.

AI stands to play a key role here for operators refining their VAS offerings, helping drive monetisation further. AI-powered analytics can provide insights into customer behaviour, preferences, and usage patterns, enabling MNOs to enhance customer experience, personalise services, and offer targeted promotions.

“Deepening those insights into what clients really want and understanding how to effectively bundle and price offerings across what are constantly evolving markets provides any CSP with great foresight,” explains Williams. “This does not mean AI alone is the ‘silver bullet’ solution to what is such a complicated area, but it moves the game along more than anything else in practically decades.”

These AI-driven insights can help identify new revenue streams by offering personalised and innovative services.

“AI can assist in developing many VAS which may in turn be monetised or provided as a free service, depending on the model adopted by the CSP,” concurs Batty. “AI can help personalise the user experience for CSP client by developing an understanding of the client and their interests, needs and uses of the CSPs services. This is done through behavioural analysis to understand patterns and trends from the clients’ use of the service.”



Daniel Batty



James Williams

Moreover, with some operators straying into the VAS sphere for the very first time amidst challenging market conditions, “the modelling capabilities AI provides should mean fewer mistakes need to be made in the real world before coming up with the optimal VAS monetisation strategy. It’s an exciting time for CSPs of all sizes. Remember, AI is not just something reserved for big organisations with deep pockets. AI levels the playing field a lot and has practically done so to a large extent overnight,” shares Williams.

The human element

It is too early yet to predict the impact AI will have on Africa’s operators.

“However, the potential for vastly improved personalisation, customer support and network optimisation are there,” says Batty. “AI can empower large operators to provide a suite of services tailored to African markets and entrepreneurs. This may include low bandwidth services targeted at the informal sector, integrations of mobile money, and innovative buy-now-pay-later schemes to accommodate an unbanked population.”

“Getting a superb handle on behavioural patterns, and really getting clear insights within their networks by tasking AI to do so, will bring MNOs much closer to what their customers REALLY need.”

“The possible impact includes a vastly increased service base making it easier to provide personalised services to the informal sector increasing the flow of trade. This in turn contributes to uplifting communities,” adds Batty.

Sub-Saharan Africa’s MNOs have recently begun to employ AI at different levels, from improving network operations and customer services to achieving efficiencies and cost savings. As a result, vendors like Monty Mobile are creating new AI-enabled products to make the technology more accessible and to drive larger-scale deployments.

Google also recently announced six AI projects on the continent out of the Google Labs in Accra, Ghana, which include mapping buildings for governments and organisations; forecasting floods in 23 African nations; predicting locusts for crop safeguarding with InstaDeep and the Food and Agriculture Organization of the UN; improving maternal health outcomes with AI-aided ultrasound; helping people with non-standard speech make their voices heard through transcription tools; and increasing childhood literacy with an AI-based reading tutor app and website.

Thus, AI adoption across the continent is indisputably on the rise. However, miraculous though it may seemingly be, AI cannot solve all pain points, and doesn’t mean that fewer human resources will be required - in many cases, perhaps the opposite.

“The skillset of team needs to move with the times and education on all things AI is something that needs to accelerate across practically all type of stakeholder, across mobile,” explains Williams. “People will have to adapt.”

Additionally, MNOs must note the inherent risks associated with the use of AI, namely ensuring data privacy and security. Further, Batty highlights that, as MNOs begin implementing AI to make decisions on consumer contracts or interact with consumers through customer support, it is important that the AI is used ethically: “this requires MNOs to implement internal guidelines and policies on the use of

AI ensuring that accountability is established and fairness and transparency in the decision-making process. This also requires the consistent monitoring of the algorithm to track biases and possible discriminatory decisions.”

All things considered, Williams believes that AI’s impact will be profound - and that change will come a lot faster than expected.

“Africa is a continent with 1.5 billion people, but it is not one country. Indeed, 54 countries make up the continent and with over 75 languages with more than one million speakers (never mind the estimated 1,000+ others!), AI provides a great opportunity to cut through so much complexity these dynamics alone create, to help deliver clearer strategies and offerings at a rate never before seen in human history,” says Williams. “But don’t forget the human element. Humans will absolutely be needed to ensure the benefits of AI can truly be realised.” ■

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Mobile innovation in underdeveloped nations

Yisrael Nov, EVP sales, Parallel Wireless

Mobile networks have come on in leaps and bounds in recent years with the shift from 3G, to 4G, and now, in some regions, 5G. Leapfrogging earlier technologies has meant that Africa's operators have benefited from the trial and error experiments performed in other world regions, giving them a major step up...



emerging markets as perpetual followers and put them at a permanent technological disadvantage by forcing them to always play 'catch up.'

Leapfrogging

Underdeveloped nations are characterized by having unique cultural, environmental, political, and commercial landscapes. Due to the generally low ARPU, in comparison with other markets, telecom operators in those regions have limited resources to invest in infrastructure, whether for maintenance or for upgrades.

The geography and terrain that characterize the rural areas in those regions can result in the absence of crucial physical infrastructure. The lack of access roads, for example, makes onsite installations trickier, while a weaker utility infrastructure results in an inconsistent, yet relatively expensive, power supply. This is one of the factors that can delay technological development, unless an innovative approach is taken to ensure smooth, continuous operation. Even in denser areas where the demand might be higher and the users more advanced, the power grid can be spotty and unreliable.

When mobile communications appeared, they completely disrupted the 'catch up' model, as underdeveloped countries realized that they had an opportunity to 'leapfrog' straight to mobile to provide digital services sooner and thus narrow the technological gap that favours developed nations. 'Leapfrogging' is the term applied when traditional stages of development are skipped over in favor of a quicker shift to newer technologies or new opportunities for economic growth. In this case, instead of rolling out landlines for telecommunication and broadband internet, which would have taken decades at huge cost, it became easier, faster, and more

reliable to prioritize the installation of cell sites and mobile devices. In the context of the digital revolution, leapfrogging has allowed societies and nations to rapidly incorporate digital, knowledge-based services and high value-add production into their economy.

Pursuing their own path

Parallel Wireless' presence in underdeveloped regions started with helping to connect the unconnected by delivering the most cost-effective, efficient solution for rural coverage (defined as areas in which one site provided coverage for up to 1,000 inhabitants). For example, in the last few years we have established a footprint in Africa with a solution that meets the special requirements of rural regions such as support for transmission over satellite and equipment powered by standalone power sources (e.g. solar). Later, this footprint was expanded, with solutions that include 2G, 4G and now 5G, reflecting the diversity of the network.

Operators in these regions have fewer in-house resources available for developing and upgrading the network, so 5G adoption is still sparse and even 4G is limited to densely populated areas. On the other hand, there is a growing realization that connectivity and broadband are not a luxury, but a necessity for the population to enjoy the fruits of a global economy. The cost of satellite communication (multi-beam and LEO satellites) is decreasing, and it is therefore more accessible, improving the business case for connecting additional sites to a satellite backhaul. We have also noticed more interest in the power of AI to impact the industry by making networks smarter, more reactive, and more efficient.

Operators in underdeveloped nations need to be able to innovate faster to capitalize on

For many years, worldwide adoption of innovative technology followed a predictable path.

It started with early-adopter countries, who have the infrastructure and consumer culture for evaluating, testing, and phasing in 'the new' while relying on the old. Next in line were the developed, wealthy markets that had the technical skills and the financial muscle to bear the risks of new technology as well as the competitive environment that drove them to do so. And finally came the emerging markets, underdeveloped nations who could simply follow the adoption models that were established in other countries, allowing them to enjoy proven solutions and practices at economy-of-scale prices.

This logical progression, a trickle-down approach to technology, made sense when the duration of a typical adoption cycle was measured in decades. While this was a good way to ensure worldwide adoption, it cemented the position of

the latest improvements in cost-reduction and efficiency. They may need to leapfrog again and learn from the trials and tribulations that

opportunities to upgrade their networks without being locked-in to the roadmap and feature velocity of a single vendor.

for manual intervention. By deploying solutions that provide enhanced logging and tracing capabilities, they can improve the deployment and network maintenance efficiency.

“When mobile communications appeared, they completely disrupted the ‘catch up’ model, as underdeveloped countries realized that they had an opportunity to ‘leapfrog’ straight to mobile to provide digital services sooner and thus narrow the technological gap that favours developed nations.”

carriers in more advanced countries have gone through, instead of repeating them. The fact that their networks are still relatively small and new already puts them in a better position to embrace smarter network components faster.

Where will they leap to?

While the drivers of innovation may be different than in mature markets, innovation is still crucial for carriers in underdeveloped nations as they must find new ways to offer advanced digital services to low-income customers. This has led to interest in ORAN, as more and more MNOs realize that the best way for them to speed up innovation and optimize their investments is to break their reliance on proprietary hardware and gain the flexibility to innovate the way they need to. The ORAN ecosystem has grown and is now fully capable of providing MNOs with a range of

Another direction that carriers in underdeveloped nations need to leap towards is power savings. Given the price-sensitivity of their markets and their power-hungry networks spread over large distances, carriers need such solutions sooner rather than later. Rising energy costs severely threaten the viability of advanced services in their market. Parallel Wireless, whose strength is mobile network energy conservation, has started to see new opportunities due to the rises in energy unit costs and cell-site power consumption. From a network management standpoint, our All-G solution is attractive for many companies who seek efficient, high-performance solutions that can manage a complex, heterogeneous network from a single system.

The focus of MNOs in these regions is to aspire to self-managing networks, with automation and zero-touch solutions that minimize the need

The challenges of operators in emerging, underdeveloped markets include maintaining the flexibility to react in a very dynamic market. As the market expands and matures, competitive pressures from new entrants, evolving regulatory policies and fluctuations in demand for capacity all require operators to maintain network agility. This means that carriers cannot afford to ‘blindly’ deploy new cell sites, they need a smarter, more centralized approach towards network resource management.

Eliminating gaps, creating opportunities

As mobile communications have become an essential component of the global economy, countries that traditionally have been slow to adopt new technology have realized that they have an opportunity to significantly close the gap between them and more developed countries with fully-digital economies. The economical upside of taking a bold approach to the adoption of technology, of leapfrogging over earlier generations of mobile communications to newer paradigms, will be very significant for governments, citizens and the mobile network operators who serve them. ■



Safeguarding staff and wildlife at ZimParks with hybrid communications

Zimbabwe Parks and Wildlife Management Authority (ZimParks) is the main Government agency for wildlife conservation, managing approximately five million hectares of land. From 2020-2021, widespread poaching was seen in the parks because of a pandemic-impaired local economy and an absence of tourists in the parks.

Wildlife-human conflicts were on the increase. In 2020, there were more than 50 injuries and 60 deaths. ZimParks was in dire need of a way to improve the safety of park rangers and reduce wildlife poaching activities.

Cross park communications

To better equip its staff - especially its 'boots on the ground' rangers - with the essential tools they need to cope with potentially dangerous situations, ZimParks teamed up with Hytera to build a communication and dispatch system that allows the staff to be mobilised effectively and efficiently across the massive parks. Hytera also provided digital two-way radios to the rangers for park-wide radio communication.

"We have rangers who are doing their jobs very effectively on the ground," said Fulton Mangwanya, director general of ZimParks. "They are our boots on the ground. But they are facing a lot of challenges as they do their work; poachers want to injure and kill them as do the animals they are protecting. So, the best way for us to actually help the first line of defense effectively is to provide effective communications. As GSM coverage is not available in all the parks, radio communication is essential in helping protect wildlife and tackle law enforcement issues."

Hytera delivered ZimParks a convergent communication solution that integrates both broadband and narrowband technology. A large number of Hytera DMR digital handheld radios, mobile radios, DMR repeaters, dual-mode advanced



radios, manpack repeaters, and a SmartDispatch system were supplied.

The entire Hytera radio network covers all the parks managed by ZimParks except NW Matebeleland Region; the goal is to cover all the parks in the near future.

The Hytera PD48X and PD78XG portable radios - known for their robust and rugged design - feature GPS positioning functions and were offered to the rangers. In digital mode, the PD48X can support continuous operation for around 16 hours. Rangers can text each other if they do not want to make a sound to disturb the animals. These two models also support both analogue and digital channels to ease the financial pressure brought by digital migration.

The Hytera PDC760 dual-mode radio, a DMR LTE hybrid device that offers the ideal platform for critical voice and broadband data services, is enabling the rangers to make calls over DMR or public cellular network and enjoy multimedia services such as video recording/streaming, photo taking and other services that a smartphone provides.

Meanwhile, the Hytera manpack repeater, a digital/analogue portable repeater that is compatible with the DMR standard that is compact for easy transport, can be carried by the rangers conveniently. It supports a range of power supply options to guarantee uninterrupted communications when the rangers are on an extended patrol.

Emergency situations are not unusual at ZimParks. Hytera's SmartDispatch system supports multiple data services, GPS positioning

services, and safety features, which together with PDC760, which can access both narrowband and broadband networks and with front/rear cameras, enable instantly visualized dispatching.

"We are committed to supporting ZimParks' efforts to tackle poaching and enhance the safety of rangers," said Mark Zheng, director of Hytera Southern Africa. "Wildlife conservation is crucial to a sustainable future and we are glad that our radios are making contributions to this. We wish ZimParks all the best in their ongoing efforts to protect wild animals and will continue to work with them closely."

A promising partnership

As a result of the partnership between Hytera and ZimParks, Zimbabwe recorded a decline in wildlife poaching in 2022, with a total of 36 key wildlife animals being poached in 2022, down from 42 in 2021.

Moreover, staff reported that they were extremely satisfied with the new technology.

"The remoteness of the area, the absence of cellphone signal coverage, and the nature of our work with high chances of encountering armed and dangerous wildlife criminals as well as dangerous animals, reptiles, and insects, make the work of rangers all the more challenging," said Theresa Makunike, one of ZimParks' rangers. "However, my training, as well as reliable Hytera radio communication coverage in the area, give me the confidence to engage with the poachers - and work in the excessive heat." ■

NRT and CCF rollout Africa's largest IoT conservation network

Northern Rangelands Trust (NRT) and Connected Conservation are safeguarding Kenya's most vulnerable species and natural resources with Africa's largest landscape-wide IoT conservation network.

The project is advancing wildlife and natural resource conservation using LoRaWAN IoT sensors and networks to collect, monitor and analyze real-time environmental data on a captivating scale. This data is coupled with analytics and conservation tools to help safeguard wildlife populations, promote peace, and empower community-led conservation.

NRT's IoT conservation network was the first of its kind in Kenya and has been made possible by Connected Conservation Foundation (CCF), bringing together a coalition of private and public sector partners including NRT, Cisco, Actility, 51 Degrees, and EarthRanger.

Changing the conservation game

LoRaWAN IoT technology has emerged as a game-changing solution for natural reserves that require robust signal coverage over vast and hostile environments, which often have zero connectivity.

The technology allows battery-powered sensors to communicate via a long-range, ultra-low data rate connection, resulting in longer battery life. Additionally, LoRa sensors are a fraction of the cost compared to satellite-enabled solutions – transforming the way conservation programs operate.

The IoT network currently covers 22 of NRT's community-led conservancies and four private reserves, (Lewa Wildlife Conservancy, Ol Jogi, Loisaba and Borana) with plans to bring more on board to increase coverage across the region. Over 190 new sensors have been deployed to all parks, with a further 250 scheduled.

"This IoT network is a game-changer for conservation efforts in Northern Kenya," said NRT's CEO, Tom Lalampaa. "We can now monitor our conservancies on a scale that was never possible. It is empowering our community-led conservancies to share, make decisions and collaborate in their conservation efforts."

"This cross-conservancy, IoT conservation network is changing the way private and community-led conservancies work together," said Sophie Maxwell, executive director of Connected Conservation Foundation. "Shared real-time information for large connected landscapes is helping secure threatened species, manage essential ecosystem services and benefit local communities."

Data from the ranger, vehicle and wildlife sensors are helping rangers monitor and respond to threats to prevent poaching, share information on vulnerabilities, bolster conservation management strategies and promote peace and security between ethnic communities.

"Our ongoing work with CCF, and other partners to deliver the largest landscape-wide IoT conservation network is part of Cisco's Partnering for Purpose initiative," said Chris Panzeca, senior director, global strategic partner sales at Cisco. "This network demonstrates the power of innovative technologies to support conservation efforts. Together, we are driving positive impact – creating safe havens for animals and empowering local communities."

Managing natural resources

2022 saw extreme drought in East Africa, sweeping away grasslands, water, local food, and animals. NRT has huge challenges to sustainably manage its natural resources and to pre-empt and reduce both human and wildlife conflicts.

The IoT network supports the plugin of livestock and environmental sensors to monitor foraging conditions, track livestock movements, and observe water levels that threaten the successful co-existence of wildlife and local people. Additionally, this natural resource tracking data will help validate the effectiveness of NRT's protected areas and help unlock new revenue streams by verifying community rangeland management for carbon projects.

Combined, this massive IoT undertaking will contribute vital digital infrastructure, to help Kenyan partners measure and achieve the Global Biodiversity Targets set out at COP15 – to protect 30% of the planet for nature by 2030.

For this project, the comprehensive LoRaWAN network management uses Actility's ThingPark platform to efficiently manage gateways, integrate sensors, monitor network operations and regulate the flow of data to application servers.

"Few individuals readily connect wildlife conservation and IoT; however, the pairing is indeed a perfect match," said Olivier Hersent, CEO at Actility. "Wildlife protection is an ideal use case for LPWAN IoT, given the vast territories to monitor, the necessity for long-lasting, low-cost sensors and the requirement for secure technology to combat poaching. We are delighted and proud to witness LoRaWAN and ThingPark playing a pivotal role in supporting this remarkable preservation endeavour."

Bringing peace to Kenya

NRT empowers 43 indigenous communities in Northern Kenya to manage their conservancies and maximize nature-based economies. Fair and transparent access to connectivity and IoT sensors is providing both private and local community-led conservancies with a boost in knowledge to prevent poaching, pre-empt human-wildlife conflict and halt habitat loss.

In fact, NRT reported that the provision of real-time data, digital radio communications and cross-conservancy network collaboration, has helped accomplish a reduction in poaching and human-wildlife conflict. This has helped boost Black rhino numbers by 10% in Kenya.

Now, Kenya is one of the few places in the world where black rhino populations are on the rise. But with this success comes an urgency to establish safe and connected rangelands for these critically endangered species to roam. This project has enabled innovative ways to monitor the rhino population and has helped bring the removal of fences between conservancies, creating larger, connected habitats for rhinos.

"These technologies are helping us achieve our goal of securing wildlife populations and bringing peace to the region," said Samuel Lekimaroro, NRT's director of wildlife protection. ■



Expanded NTN capabilities to connect the underconnected

Skylo Technologies has announced a strategic partnership and ongoing collaboration with Rohde & Schwarz to reinforce and expand the testing capabilities for non-terrestrial networks (NTN), ensuring that chipsets, modules, and devices using the NTN NB-IoT protocol integrate seamlessly with Skylo's network and are 3GPP Release 17 compliant. The two companies will integrate state-of-the-art testing methodologies to guarantee

that Skylo's groundbreaking connectivity solutions meet the highest standards of quality and efficiency.

Skylo's NTN is designed to bridge the digital divide by providing reliable and affordable connectivity to under-connected industries, such as agriculture, maritime and logistics. The network leverages advanced satellite and terrestrial technologies to allow real-time data transmission, thereby transforming

industries that have previously been limited by a lack of connectivity.

The Rohde & Schwarz NTN device acceptance test framework is built on the market-leading R&S CMW500 wideband radio communication tester. This framework is the go-to solution for all stages of terrestrial and non-terrestrial IoT testing, from R&D and GCF/PTCRB certification to carrier acceptance tests. With the powerful R&S CMW500 software

stacks, this framework guarantees reliable and repeatable results in a single box, ensuring that the whole ecosystem can achieve the highest levels of performance. It comes with NTN Release 17 features as well as support for different orbits. Customers can leverage their investment in R&S CMW500 testers with a single software update, which enables them to verify NTN NB-IoT as well as legacy NB-IoT devices.

Iridium GO! premium fixed install antenna kits connect mobility users on the go, on land and at sea

Iridium Communications has released Iridium GO! exec Premium Dual Mode and LITE Antenna Kits for fixed-install applications.

The new kits allow users to enjoy all the features of the device while in-cabin, below deck, or in-vehicle on-the-move both on land and at sea. The Premium Dual Mode kit includes a combined GNSS and Iridium antenna, Iridium certified extended antenna cables, and a variety of device mounts for boats, vehicles, and fixed locations like cabins. The LITE version of the kit offers a dedicated Iridium omnidirectional antenna, extended cable, and a fixed rail mount.

Iridium GO! exec operates off Iridium's global network, keeping users' favourite personal devices such as smartphones, tablets, and laptops connected anywhere in the world. With Iridium's weather-resilient L-band network, voice calling, two-way messaging, emailing, social media posting, internet access, and emergency SOS can all be completed, even in adverse weather conditions. This delivers the market a dependable and one-of-a-kind personal communications experience for those needing to use their own devices while outside cellular coverage.

"The high mobility and easy pole-mount installation system



of the Iridium GO! exec and external antenna kits deliver a robust, portable personal device connectivity experience," said Josh Miner, vice president, land mobile, Iridium. "A fixed external antenna kit paired with an Iridium GO! exec is a must-have for all types of remote workers, yachters, and off-grid travellers like RV'ers."

Consumers can choose between the two external antenna kit options, one with a premium dual mode antenna, and one without GPS and similar GNSS services built in, but at a significantly reduced cost. These options allow users to choose the kit best tailored to their specific communication needs. Equipment in both kits feature an IP68 rating, ensuring durability to withstand adverse weather conditions.

Industrial SMEs to benefit from compact private wireless connectivity

The new Nokia DAC PW Compact has been announced, featuring a new configuration optimised to meet the private wireless connectivity needs of small and mid-sized industrial sites.

As more industries move toward digital transformation to improve their business processes, a compact version of Nokia's private wireless solution delivers the rigorous security and reliable connectivity that ensures even the smallest enterprise sites can benefit from the transition.

The Nokia DAC PW Compact is designed to address the growing demand for small-medium size campuses. Based on the Nokia AirScale small cells, it delivers pervasive connectivity for both human and machine in the toughest industrial environments. Its smaller form factor aligns to the coverage requirements of small industrial sites, and with zero upfront investment, offers a cost-effective connectivity option for small industrial premises.

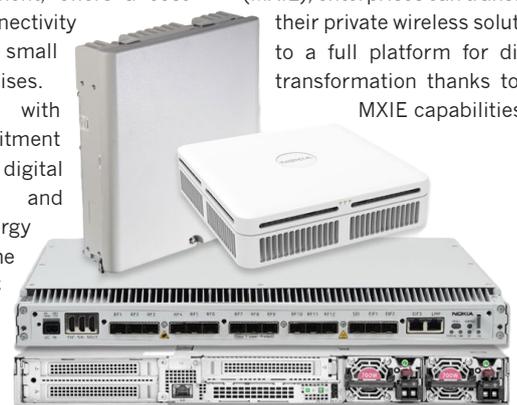
In keeping with Nokia's commitment to accelerate digital transformation and green energy adoption, the Nokia DAC PW Compact is up to 60% more energy-efficient than

WiFi, resulting in much lower energy footprint.

The platform is suitable for small enterprises within ports, manufacturing, mining, petrochemical, retail, and many more industrial segments. It is easy to use with plug-and-play deployment and IT native operability, and provides configurations for indoor, outdoor, and mixed radio coverage. Larger enterprises deploying the Nokia DAC PW Compact in small facilities will have the confidence of a single multi-site private wireless solution deployed across all their campuses.

As enterprises expand their private wireless deployment over time, there is an easy upgrade path to add incremental capacity, users, and radio configurations, as well as allow for the addition of WiFi technology. Additionally, by converting the deployed edge to Mission Critical Industrial Edge

(MXIE), enterprises can transform their private wireless solutions to a full platform for digital transformation thanks to the MXIE capabilities.



Sitetracker adds GIS for towerco design

Sitetracker has launched new capabilities to its solution to help network operators, engineering, and construction companies accelerate the rollout of fibre broadband by layering construction plans with geographic information systems (GIS) data.

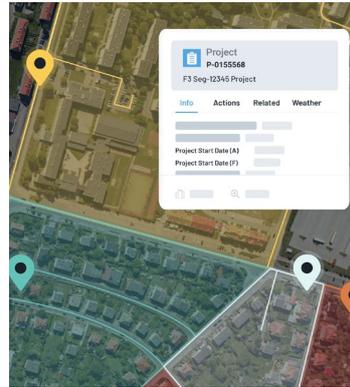
The new solution, Sitetracker GIS Link, connects geospatial data from web GIS systems such as Esri's ArcGIS within Sitetracker's deployment operations suite. GIS Link will also support new functionality within Sitetracker that will provide network operators enhanced visibility into deployments by rolling up key metrics such as homes passed by market and servicing area. These new capabilities will allow GIS data to be shared more efficiently, driving improved collaboration between internal and external parties, and enabling broadband to reach rural and underserved communities faster.

"We're excited to be among the first to roll out Sitetracker GIS Link! With fibre work continuing to ramp up, GIS-enabled workflows are vital to improving collaboration while reducing inefficiency," said Rob Reynolds, chief information officer and chief administrative officer at Congruex. "Aligning geospatial data with projects is a logical evolution that enables Sitetracker to remain

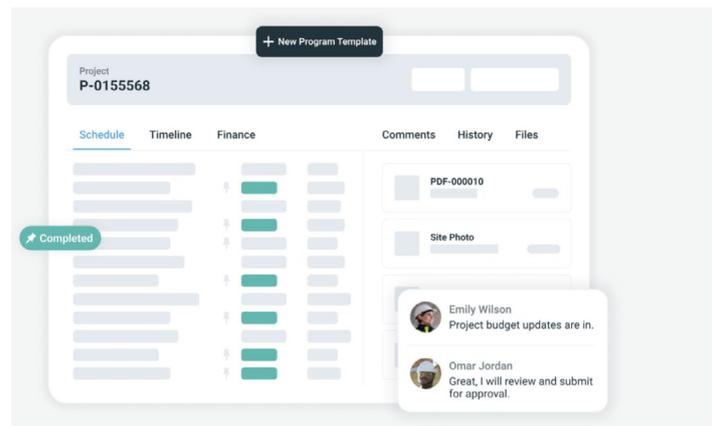
a key and core system in our overall architecture."

Sitetracker GIS Link will also benefit telecom towercos, solar developers, EV companies, and other infrastructure companies by enabling multiple map layers, so companies can reduce swivel-chair analysis of wireless site candidates or solar developments and instead use proprietary site data within their deployment operations management functionality.

With fully integrated geospatial data, GIS Link makes it easy to align planning, engineering, and construction work. The solution offers a unified, real-time workflow between stakeholders allowing them to keep network plans aligned with construction progress and enabling more efficient handoffs. For project managers, engineers,



and construction managers still relying on paper copies and ad hoc collaboration tools, the software simplifies the ability to receive GIS-based work plans, organize and schedule work, accurately capture production progress, and quickly report – all without manual processes or duplicate data entry.



Cloud-based 5G roaming laboratory enables MNOs to try before they buy

Tata Communications has launched a global, cloud-based 5G Roaming Laboratory, enabling mobile network operators to trial 5G standalone network use cases before introducing the service to their subscribers.

The cloud-based 5G Roaming Lab trials the international mobile roaming experience by closely monitoring traffic movement and network usage for giving the highest quality of experience to mobile phone users while roaming. Its tests get an objective performance assessment across networks, connected in the exchange process while a user is roaming. This also includes onboarding and

internet trials on the high-speed, high-reliable and low-latency 5G standalone network.

The new 5G Roaming Lab is designed with safety at the heart of its operations. It is equipped with hi-tech server applications that provide high-speed and seamless 5G roaming connectivity along with network security. Agile and secure network is critical considering 5G adoption is accelerating globally with GSMA predicting 5 billion 5G connections by 2030.

"Connectivity is a key ingredient in today's fast-paced digital world. An internet that is fast, secure and available at all times is of paramount

importance to customers, whether they are individuals or an enterprise. We are excited to introduce our newest capability in 5G roaming testing ensuring MNO customers are receiving proven services," said Mysore Madhusudhan, executive vice president, collaboration and connected solutions, Tata Communications. "By ensuring that the tests can take place across geographies, enhances the flexibility available to MNOs for delivering superior and agile services. Armed with fast and uninterrupted connectivity, this generation will accelerate a lot faster than its predecessors!"

Look out for...

AI comes to wireless comms

2023 is the year of artificial intelligence (AI). With generative AI coming into its own among consumer, enterprise and government spheres, AI is inching its way into every industry on the planet – and mobile is not immune.

One way that wireless performance is optimised is by providing accurate channel state information (CSI), which 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. Accordingly, wireless researchers at University of Malaga (UMA) – in partnership with Keysight - developed an AI / ML model for CSI feedback enhancement for 6G systems.

Keysight developed a digital twin platform to emulate the performance of ML models 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.

The interface allows 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.

To assist in this process, Keysight and UMA are working together to bring this to the 3GPP RAN-1 standards body for Release 18.

Magenta Telekom picks Mavenir for VoLTE and VoWiFi for assured services

 Magenta Telekom has selected Mavenir's end-to-end Cloud-Native IMS (IP Multimedia Subsystem) solution to enable software-defined voice services for end-users of Magenta Telekom's network.

This solution will be used to provide Voice over LTE (VoLTE) and Voice over Wi-Fi (VoWiFi) services to customers of Magenta

Telekom, paving the way for future delivery of Voice over New Radio (VoNR) services, including 5G Voice and Web Real-Time Communication (WebRTC).

The solution not only allows a single IMS investment to support multiple generations of voice services but also ensures service and feature parity with Virtual Network Function (VNF) and cloud-

native network function (CNF) deployments. Additionally, it facilitates voice continuity between 4G and 5G, noted the official release.

Mavenir asserts that its solution will deliver a consistent user experience for Magenta Telekom customers, regardless of their location or whether they are connected directly to the cellular network or through the WiFi network.

Cologne airport refreshes TETRA radio network

 Cologne Bonn Airport has awarded Motorola Solutions a contract to update the airport's TETRA digital radio network, used by frontline workers including ramp agents, baggage handlers and service personnel, as well as logistics partners, to communicate and securely manage essential workflows.

Cologne Bonn Airport is one of the largest airports in Germany, for both passengers and cargo, serving 8.8 million passengers and handling 971,000 tonnes of air cargo in 2022.

"The resilience of its communications networks is key to any airport's ability to communicate - both for everyday operations and in times of emergency," said Michael Kaae, corporate vice president at Motorola Solutions. "The new system will deliver flexibility and scalability, helping the airport to meet the growing demands of modern aviation. Additionally, Cologne Bonn Airport's largest shipping and distribution partners, who use the airport as a major logistics hub, will also be relying on the network."

As part of the contract, Motorola Solutions will deploy a DIMETRA X Core system, enabling highly secure voice and data communications to coordinate complex logistics, manage cargo, deliver improved passenger services, and provide full coverage both inside and outside terminal buildings. The system uses redundancy to prevent single-point failure risks and will also make administration more efficient by enabling centralized management of the communications network.

In addition to the refresh of the existing TETRA network, Cologne Bonn Airport awarded Motorola Solutions a ten-year service contract to optimize network operations 24/7 while also enabling technological advancements. Motorola Solutions will also provide technical support, maintenance, and repair services.

OneComm launches Bermuda's first 5G

 One Communications (OneComm) has become the first operator to officially launch 5G mobile services in Bermuda, starting in the capital, Hamilton.

OneComm's 5G Network promises to revolutionise the mobile service experience in Bermuda, beginning in Hamilton with internet access speeds up to ten times faster than the current 4G capabilities. The 5G network is designed to support a wide range of high-bandwidth applications, from streaming 4K UHD video to engaging

in seamless online gaming.

"We are thrilled to lead the launch of 5G in Bermuda! This transformative leap is a demonstration of our commitment to deliver the latest innovations and elevate connectivity across Bermuda. We are excited to bring the power of 5G to our customers and be the first carrier to introduce the latest 5G iPhone's, which demonstrate the unparalleled speed and reliability of our network," said OneComm in a statement. "5G services will initially

be accessible to postpaid customers with iPhone models 12 and newer. This will allow the company to ensure the highest quality of service for customers. 5G-capable Samsung devices will become compatible with the 5G network in the first quarter of 2024, coinciding with the launch of the new flagship Samsung devices."

The 5G network will be rolled out gradually throughout the island, with up to 75% being 5G ready. The rollout will occur in a phased manner based on capacity and traffic requirements.

Algar Telecom to expand 5G to 32 cities

 Algar Telecom plans to extend its 5G network to 32 cities across its original area of operation, encompassing the states of Minas Gerais, Mato Grosso do Sul, Goias, and Sao Paulo. The company expects to complete this expansive project by the end of the year, bringing high-speed connectivity benefits to both consumers and businesses.

Algar Telecom initially introduced 5G in three cities: Uberlandia/MG, Uberaba/MG, and Franca/SP. Now, the expansion will include additional locations, with a focus on implementing the 3.5GHz band.

This expansion underscores Algar Telecom's commitment to staying at the forefront of technological innovation. By extending 5G coverage, users can expect faster data speeds,

lower latency, and improved internet capabilities on their mobile devices.

The deployment of 5G in these regions not only offers residents access to cutting-edge mobile technology, but also presents new opportunities for businesses. The increased connectivity is poised to spur economic development and enhance the overall quality of life for individuals in these regions of Brazil.

Airtel restores connectivity in Sikkim

 Following floods in October in the Himalayan state of Sikkim, Bharti Airtel leveraged innovative solutions such as drone technology to restore connectivity to the region.

Airtel reported that the devastating flood had a significant impact on Sikkim, wreaking havoc on the region's infrastructure and causing severe disruptions, especially in communication networks.

Airtel's fibre optic network experienced a major breakdown,

affecting communication to users in the region. Recognising the urgency of the situation, Airtel partnered with IG Drones to explore potential solutions for the swift restoration of fibre optic connectivity.

Airtel joined forces with IG Drones to deploy a cutting-edge drone fleet equipped with specialised technology for network assessment and repairs. This measure ensured the restoration of the vital fibre optic line, reinstating uninterrupted connectivity across the flood-affected region.

The drones conducted aerial surveys to assess the extent of damage to the Airtel fibre optic line, providing crucial data for engineers to pinpoint the exact location of the damage and meticulously plan for repairs. The specialised drone equipment accessed the damaged section of the fibre optic line with precision and speed, conducted necessary repairs, and ensured that the fibre optic network was operational within an exceptionally short timeframe.

ComClark and DICT collaborate to connect remote Filipino communities

 The Department of Information and Communications Technology (DICT) and ComClark Network and Technology Corp will collaborate on a project to provide various connectivity technologies to over 2,000 remote areas across the Philippines.

The collaboration is part of the Universal Internet Subscription for GIDA (UISG) Project, which aims to deploy fixed VSATs, fibre and ‘satellite-communications-on-the-move’ terminals to more than 2,000 geographically isolated and disadvantaged areas (GIDA) across the Philippines. DICT says this will aid its assistance to other government agencies and LGUs with their connectivity needs during natural disasters.

The terrain of each area will determine which access connectivity technology is deployed – which means fibre wherever

possible, and satellite everywhere else. DICT says around 1,400 sites are geographically viable for fibre-enabled access points. Hilly and mountainous areas will be connected with fixed VSATs.

The UISG project will also make use of satellite-communications-on-the-move terminals – powerful and portable antennas that can be hooked up to automobiles and boats, making them ideal for augmenting disaster and emergency response. DICT says that it has received 34 satellite-on-the-move units for distribution to its regional offices.

ComClark chief operations officer Benedicto Bulatao said that an unprecedented 145Gb capacity was allocated for the project. Working with various connectivity providers, the UISG Project currently tracks over 4,740 active sites in 1,871 locations providing connectivity across all 17 regions of the

Philippines. DICT says that 97% of the sites have already been activated and accepted and are expected to be completed by the end of 2023.

DICT is working with ComClark’s subsidiary Converge ICT Solutions to implement the project. The supply of the equipment between DICT and ComClark is being implemented with We Are IT Philippines and Telered Technologies and Services.

“The Free Public Internet Access Program, under the Broadband ng Masa Initiative, seeks to bridge the digital divide and connect Filipinos to limitless opportunities the digital economy offers,” said DICT secretary Ivan John Uy. “Our collaboration with ComClark for the UISG Project exemplifies our dedication to turning this vision into reality. We are committed to ensuring that the benefits of the digital revolution reach every corner of our nation.”

IOH focuses on 4G in future capital Nusantara

 Indosat Ooredoo Hutchison (IOH) is actively building up its 4G network in Indonesia’s future capital city Nusantara.

Indosat president director and CEO Vikram Sinha, IOH already has 30 4G sites installed in Nusantara, and has invested \$10 million to add another 30 to 40 sites to boost the network.

The \$30 billion Nusantara project has been under construction for more than one year, since July 2022. While the overall goal is to relocate up to 1.9 million people in Jakarta to Nusantara by 2045, the Indonesian government plans to start moving some key functions from Jakarta to Nusantara in August 2024.

Indonesian President Joko Widodo has been pushing the project partly as a practical measure to reduce Jakarta’s population and traffic congestion, and partly as an opportunity to start fresh with a world-class green smart city.

Marlink delivers connectivity to North Pole

 Marlink has completed the integration of Starlink and Eutelsat OneWeb LEO internet services on PONANT’s Le Commandant Charcot, the world’s only luxury icebreaker, to provide all three LEO solutions for the ship’s polar itineraries.

The installation is the first in the maritime sector to combine Marlink’s Sealink GEO VSAT, with Starlink, Eutelsat OneWeb and Iridium LEO services. The agreement with PONANT reflects Marlink’s leadership in combining guaranteed throughput VSAT services with the emerging high speed, low latency LEO services.

The combination of three primary services means that PONANT can select the backbone VSAT for

data that requires a guaranteed throughput and in addition enjoy augmented polar coverage using Starlink, Eutelsat OneWeb and Iridium LEO services. Combined, Starlink and Eutelsat OneWeb will enable higher speed connections across a range of applications, raising the available throughput and reducing latency for guests and crew usage onboard.

The bandwidth delivered by GEO VSAT, LEO networks and 4G/5G services will facilitate seamless collaboration between the ship’s bridge, engineering crew and shore teams, and enhance connectivity to friends and family, thanks to Marlink’s SD-WAN-orchestrated connectivity.

A hybrid electric Polar exploration vessel powered by Liquefied Natural Gas; Le Commandant Charcot is the world’s only luxury icebreaking cruiseship. With 123 staterooms and luxury service, this innovative polar vessel takes passengers to the remotest, most isolated regions of the polar world, such as the geographic North Pole, the Weddell Sea, the Ross Sea and Peter I Island. She is an integral member

of PONANT’s fleet, which comprises 13 French-flagged small ships dedicated to voyages of exploration.

“PONANT is dedicated to innovation in all aspects of our operations, both for our company and our customers. The need for top-tier connectivity remains paramount, even when operating in high altitudes and extreme weather conditions,” said Jean-Louis Cambert, CIO, PONANT. “Marlink’s capability to integrate the best available connectivity across various bands and frequencies allows us to keep Le Commandant Charcot connected, ensuring the safety of our guests and crew.”

“Marlink is delighted to extend the solution orchestrated for PONANT to include Starlink and Eutelsat OneWeb, giving Le Commandant Charcot the unique combination of available services to stay connected wherever she sails,” said Tore Morten Olsen, president, maritime, Marlink. “Our expertise in creating digital hybrid solutions means these new services can provide immediate guest benefits while also contributing to safe and smart vessel operations.”

Axiata prepares to exit Nepal

 Axiata Group has secured a deal to sell off its majority share in its Nepalese operation Ncell, effectively ending the group’s business in Nepal after seven years due to an ongoing long-running tax dispute.

Axiata has entered an unconditional sale and purchase agreement with Spectrlite UK, for its holding company Reynolds which holds around 80% stake in Ncell and a mobile licence running until 2029.

“The increasing challenges in the operating environment represents a fundamental shift. It has led the Axiata board to conclude, after a thorough process, that our foray in Nepal cannot continue due to the unfavourable conditions for Axiata,” said Axiata chairman Tan Sri Shahril Ridza Ridzuan.



Nokia and Ooredoo Qatar deliver MEA's first private wireless network for remote energy sector

 Nokia and Ooredoo Qatar have reached a significant milestone by establishing the Middle East and Africa (MEA)'s first private wireless network in the region for the energy sector. The first-of-its-kind project will provide dedicated voice and customer data services in the most remote and challenging locations.

The solution covers an initial capacity of 20,000 subscribers for the offshore grid. It aims to connect offshore and onshore facilities, ensuring seamless voice and data services. By offering dedicated connectivity, this network will empower customers to digitalise and automate operations, marking a significant step towards enhanced efficiency and productivity.

Nokia will supply cutting-edge products tailored to deliver resilient mission-critical connectivity, along with deployment and care services, with its resident engineers providing expert support to ensure the network operates at optimal level.

The solution offers a native offshore system designed to deliver services, seamlessly integrating with the existing commercial core, enabling customers to improve operational efficiency and reduce interruptions from onshore connectivity. The

integration equally enables the efficient handling of interoperability and interservice handovers, making communication between offshore and onshore locations smoother and more reliable than ever before, while managing latency issues through localised data services to improve process efficiency. It will also improve customer experience, by replacing older WiFi and WiMAX technologies.

"This significant milestone underlines our commitment to transforming communication solutions for challenging environments," said Günther Ottendorfer, CTIO at Ooredoo Qatar. "This landmark project provides

dedicated voice and data services and paves the way for the oil and gas sector and others to replicate such solutions, marking a new era in connectivity for the industry."

"This Nokia enterprise solution, specifically designed for offshore locations, coupled with our delivery capabilities and expertise, ensures that the energy sector can now rely on a robust and resilient connectivity solution. Through this partnership with Ooredoo Qatar, we are setting new benchmarks for innovation, efficiency and reliability," said Samar Mittal, VP, cloud and network services (CNS), global business center (GBC) at Nokia MEA.



Dialog Axiata surpasses 200,000 users on 5G trial network

 Dialog Axiata has surpassed 200,000 users on its 5G trial network, which the telco claims to be the largest in Sri Lanka.

According to Dialog Axiata, its 5G trial network is available in over 70 locations across Sri Lanka, including Colombo and several key cities. To celebrate the occasion, Dialog is gifting customers using compatible 5G devices, including Apple and Android, with a 5Gb free data benefit monthly, allowing them to explore the limitless possibilities of 5G on its network.

The operator said that customers connecting to its 5G trial network can experience download and upload speeds of up to 1Gbps. Furthermore, Dialog Roaming customers can take advantage of 5G roaming services, with over 100 operators in more than 50 destinations now offering seamless 5G connectivity, including the latest addition, India.

The trial also came with two brand new 5G milestones. The first Voice over 5G (VoNR) service on a standalone 5G trial in Sri Lanka was made, and 5G was enabled for iPhones.

Telespazio gains fibre access to Sparkle's Sicily Hub

Sparkle has signed an agreement with Telespazio for fibre-optic access to Sparkle's Sicily Hub in Palermo.

The Scanzano Space Centre - operational since 1989 and located near the artificial lake of the same name about 47km away from Palermo - is specialized in providing hosting and housing services for large international satellite operators using low earth (LEO), medium earth (MEO) and geostationary (GEO) orbit constellations. These services require resilient and stable connections with a high level of performance.

Under the agreement, the Scanzano Space Centre is connected via its own fibre optic

ring to Sparkle's Sicily Hub in Palermo - a state-of-the-art neutral data centre and key internet hub in the Mediterranean thanks to the presence of content platforms and cloud applications of the world's major players and the connection of all international cables landing in Sicily - with the consequent opportunity of offering its customers high-speed and reliable connections worldwide.

With the activation of Sparkle's new BlueMed submarine cable - connecting Italy with France, Greece and several countries bordering the Mediterranean all the way to Aqaba in Jordan - the Scanzano Space Centre will be able to count

on connections at multiples of 100-400Gbps to Europe, Asia and the Middle East.

In Italy, where the cable is active since September, BlueMed increases the resilience of Sparkle's network by offering a safe and diverse route between Sicily and Milan, with a latency reduced by 50% compared to the terrestrial backbones connecting the two capitals.

"With access to Sparkle's Sicily Hub, the Scanzano Space Centre consolidates and expands its capacity to connect to the global network, enabling Telespazio to offer its customers connectivity services with increasing speeds and high reliability. This is essential

to promote the Scanzano centre as a Mediterranean satellite hub, enhancing its geographical position," said Alessandra Farese, SVP satellite systems and operations of Telespazio.

"We are very pleased with this agreement with Telespazio, a company of international relevance with which we share the mission of offering global services," said Enrico Bagnasco, CEO of Sparkle. "This agreement is a new confirmation of how, also thanks to BlueMed, the Sicily Hub in Palermo is strengthening its success as a strategic asset for the digitalisation of the country and a key hub for data traffic in the Mediterranean."

Q&A

Jerome Perret,
CEO,
IT-Development



Who was your hero when you were growing up?

Since my childhood, I have been inspired by: Jean-Paul Belmondo, a French actor, famous in the 1970s. His roles evoked in me a unique blend of sportive spirit, sense of humor, and charisma. Jean-Paul Belmondo embodied a spirit of adventure and cheerfulness, qualities that have deeply influenced my journey. These traits have shaped how I approach challenges, seamlessly combining professional seriousness with friendliness. Thus, in leading my team, I strive to embody these values, creating an environment conducive to growth and success.

What was your big career break?

My significant career breakthrough came with my initial role in the telecommunications industry. Taking that opportunity propelled me forward. It led me to Belgium, where I became the pioneering site acquisition consultant and one of the first two negotiators for Orange Belgium.

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

As a child, I aspired to be a police commissioner. I am driven by a deep affinity for order and justice. I relish action. While my path led me in a different direction, that early desire for law enforcement continues to inform my commitment to integrity and responsibility in all endeavors.

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

If I could share a meal with any famous figure, past or present, it would unquestionably be

Napoleon Bonaparte! After assuming his regnal title, he emerged as a prominent figure in the midst of the French Revolution. He distinguished himself as a formidable French military strategist and a pivotal political figure, achieving notable triumphs in the Revolutionary Wars. He stands as a monumental conqueror, illuminating his nation and leaving an indelible mark on history. His legacy extends far beyond his military conquests; he authored a multitude of laws that continue to serve as cornerstones in numerous countries worldwide. Napoleon's influence resonates in the bedrock of our modern world, shaping the way societies operate and thrive. Dining with such an influential figure would be an honor and a profound opportunity to gain insights into the mind of a visionary who helped forge the path of our contemporary civilization.

The Rolling Stones or the Beatles?

Given the choice between The Rolling Stones and the Beatles, I'd have to go with the Beatles! Their music provided the soundtrack to my youth, and unlike the Rolling Stones, they exuded a certain elegance and sophistication (it is a very personal opinion, I have to admit it!). I greatly admire the swiftness with which they achieved such immense success.

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

The deepest advice I've received is to 'help others and love thy neighbour.' This principle has guided my openness and genuine enjoyment of meeting new people. For instance, I relish the chance to engage with taxi drivers

in most places where I go, finding their stories and perspectives endlessly fascinating. This advice has not only enriched my personal interactions but has also shaped my approach to leadership. It enforces me of the importance of empathy, connection, and understanding in both professional and personal spheres.

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

If I were to embark on a different career path, there are two industries that have always intrigued me. The first is the world of sports. Becoming an agent for surfers, football players, or motocross riders would be an exhilarating journey. It aligns with my passion for these sports, for negotiation, adrenaline, competition, and the dedication that athletes embody. The second industry that has always beckoned me is the culinary world. I've nurtured a long-standing dream of opening an American-style steakhouse with an in-house BBQ, reflecting my love for cooking.

What would you do with £1 million?

With £1 million in my possession, my immediate inclination would be to invest it in my burgeoning startup, BuildAndRun, and my eponym software, 100% dedicated to smart contractors who want to upgrade their project management. This infusion of capital would bypass a fundraising campaign that we've been strategically planning. With a firm grasp of the industry, a strong IT presence, and our existing relationships with contractors,

such as Camusat, we're well-positioned to make significant strides in our expansion. This investment would not only foster the development of our innovative enterprise but also contribute to the ever-evolving landscape of technology and business, allowing us to harness the full potential of our entrepreneurial vision.

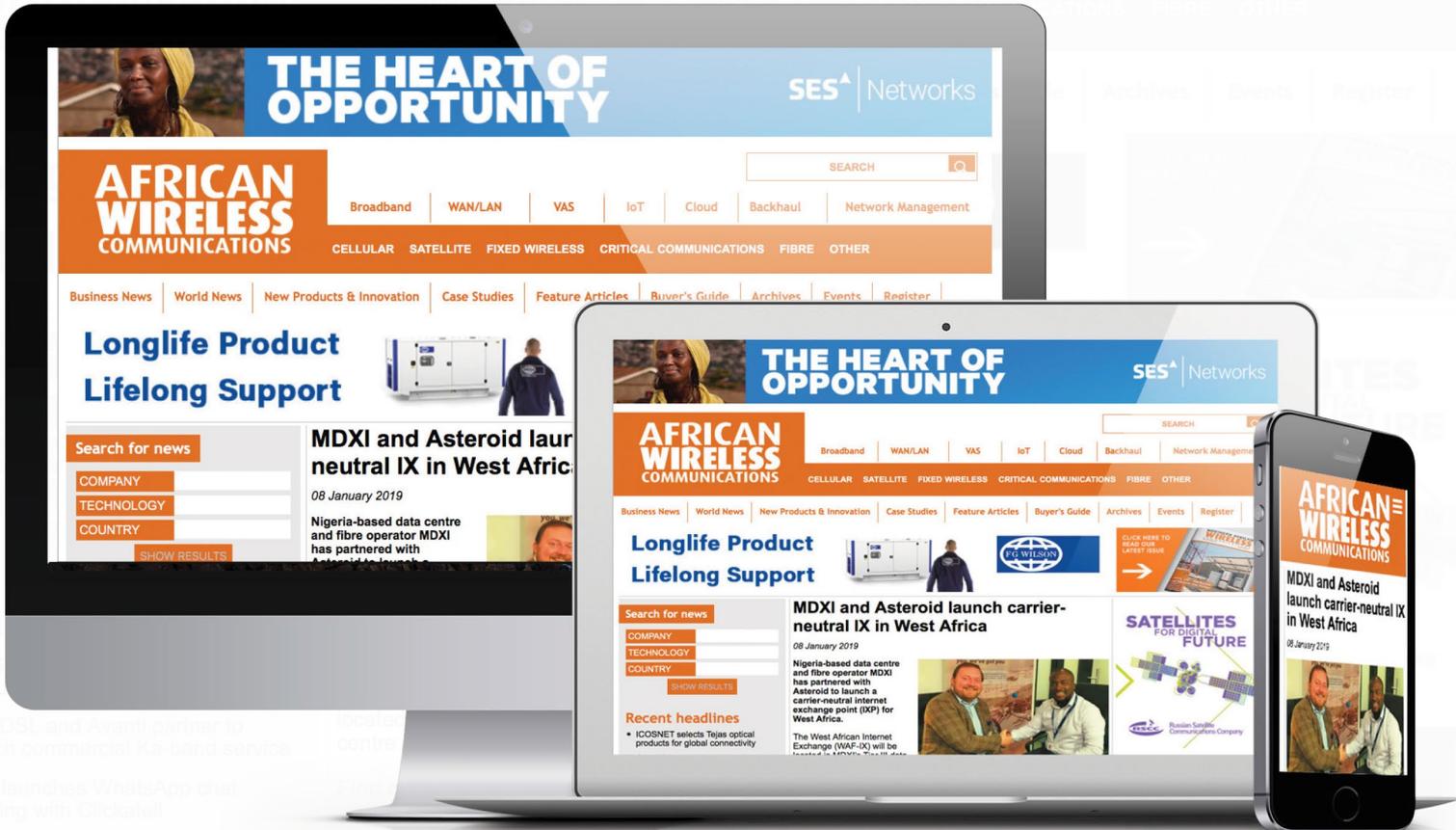
Where would you live if money was no object?

If money were no object, I'd choose to reside in several different places. This way, I'd have the opportunity to travel extensively and spend more time in Asia, like Vietnam (for its cuisine and to meet with our team more often), Egypt (for its rich history and the unique atmosphere of Zamalek), or even Abidjan in Ivory Coast (for the vibrant nightlife and the extreme kindness of the locals). Moreover, I'd allocate a month each year to Florida, reminiscent of my student days, where I could leisurely surf with friends and enjoy cold beers at Coconuts on the Beach not far from the 13th. And, of course, I'd maintain a residence in Europe, close to my roots.

What's the greatest technological advancement in your lifetime?

The most monumental technological leap in my lifetime has undeniably been the advent of the internet. Its transformative power has reshaped how we communicate, access information, and conduct business on a global scale. Following closely behind is the revolution of ChatGPT, a true amplification of capability. Together, these advancements have propelled us into a future brimming with limitless possibilities. ■

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