- **Addressing the energy dilemma**
- **Rural ISPs empowering communities**
- **Meaningful connectivity for every African**

THE INDEPENDENT TOWER INDUSTRY AS A KEY ENABLER OF THE DEVELOPMENT OF

AFRICAN
TELECOMMUNICATIONS

TELECOM
ADVISORY
SERVICES
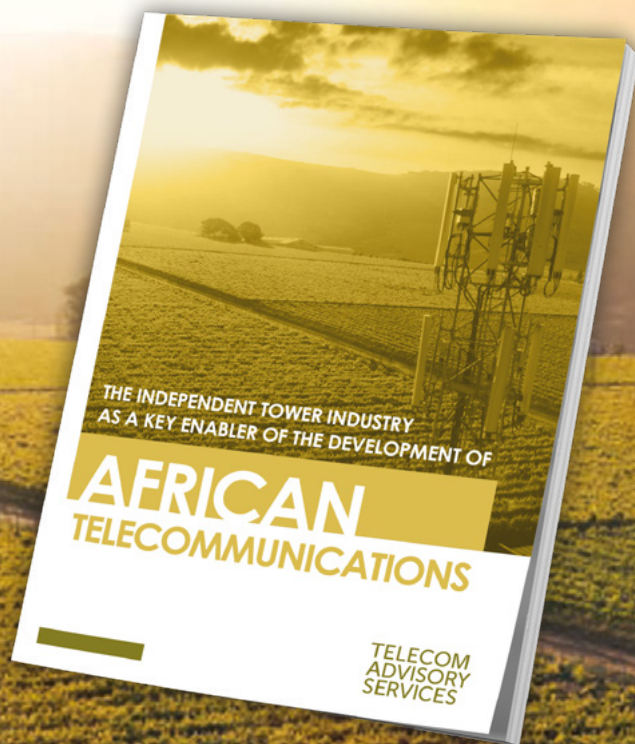
Passive infrastructure sharing has been and will continue to be a critical factor driving network deployment

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Photo courtesy of SBA Communications

MobileMark
antenna solutions

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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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SBA Communications Corporation is a leading independent owner and operator of wireless communications infrastructure including towers, buildings, rooftops, distributed antenna systems (DAS) and small cells. With a portfolio of more than 39,000 communications sites throughout the Americas, Africa and in Asia, SBA is listed on NASDAQ under the symbol SBAC and is part of the S&P 500.

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- Working with property owners to strategically develop and monetize the wireless infrastructure potential of their real estate assets.

Meet the SBA Communications team at TowerXchange Meetup Africa in Nairobi, Kenya, which takes place September 10-11, 2024.

Learn more: www.sbasite.com

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KADIUM

SSA to see 320 million 5G subscribers by 2029

Sub-Saharan Africa is expected to have 320 million subscriptions to 5G mobile telephone networks in 2029, compared to only 11 million in 2023, according to Ericsson's latest Mobility Report.

The report notes that the expected strong growth of 5G in the region will be driven mainly by the release of spectrum in the low and mid bands as well as the falling prices of devices compatible with this new generation of mobile technology. By the end of 2029, 5G subscriptions are expected to represent around 28% of all mobile network subscriptions compared to 38% for 4G and 8% for 3G. The share of 2G mobile networks accounted for 45% of total subscriptions in sub-Saharan Africa last year. However, it is expected to decline rapidly in the coming years as mobile operators migrate their subscribers to 4G and 5G networks, to reach less than 27% by 2029.

The total number of mobile phone subscriptions in sub-Saharan Africa is expected to increase from 950 million in 2023 to 1.170 billion in 2029, representing the highest average annual growth rate in the world (4% per year). The region will also see the fastest growth in smartphone adoption globally. Around 790 million people in sub-Saharan Africa are expected to use smartphones in 2029, up from 460 million in 2023, representing a compound annual growth rate of 9%.

The report also highlights that the acceleration of the migration of subscribers from 2G and 3G mobile networks to newer networks will boost mobile data traffic in the region. Data traffic on all active mobile networks will increase from 2 exabytes on average per month in 2023 to 13 exabytes per month in 2029, representing a compound annual growth rate of 38%.

Monthly mobile data traffic per active smartphone south of the Sahara is expected to reach 20GB on average in 2029 compared to 5GB during the past year, representing an average annual growth rate of 26%. The expected growth in data traffic in the region will be driven by the availability of more connections, greater coverage by mobile broadband networks, the accessibility of smartphones and the growing popularity of data-intensive content such as gaming and video streaming.


Figure 3: Mobile subscriptions by region and technology (percent)
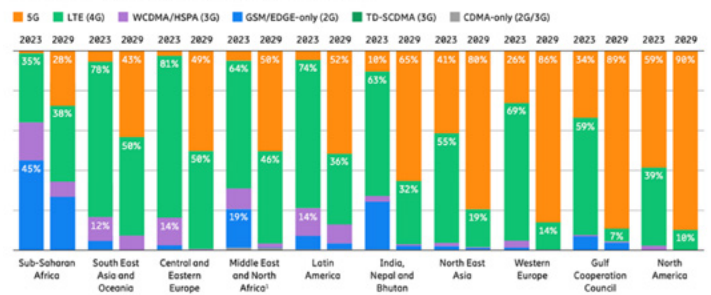
Zambia's first satellite station on the horizon

Zambia has spent more than $14 million to build its first satellite station in the Chibombo region of the Central Province.

"Experts are now testing the ground-receiving station as they prepare to go into the second phase of the preparations to launch the satellite," said science and technology Minister Felix Mutati. "The government is committed to launch the satellite station, which will help in agriculture, forestry, ground water management and other sectors."
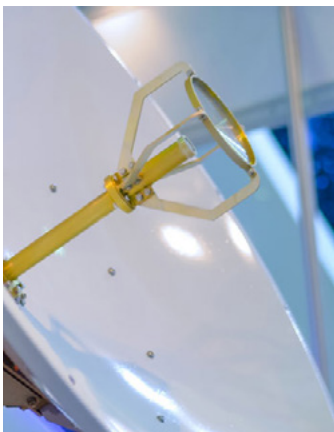
ICASA calls for new satellite licencing

The Independent Communications Authority of South Africa (ICASA) has initiated a consultation process for a new licensing framework aimed at regulating satellite services in South Africa, a move set to streamline the procedures for satellite service providers and enhance the regulatory landscape to keep up with evolving technologies in the sector.

ICASA's inquiry is a significant step towards modernizing the satellite service industry in South Africa. The proposed framework seeks to address the growing demand for satellite-based communications, particularly in remote and underserved areas where terrestrial networks are either impractical or costly.

The primary objectives of ICASA's proposed framework include providing regulatory clarity; developing detailed procedures for authorizing various satellite services; spectrum fee review; and outlining the procedures for international satellite operators to register and operate within South Africa.

As satellite technology advances, the capacity for satellites to provide high-speed broadband connectivity across large geographical areas has grown exponentially. This has led to a need for a regulatory framework that can keep pace with these technological advancements while ensuring fair competition and efficient use of the radio frequency spectrum.

The consultation also reflects South Africa's commitment to harmonizing its satellite licensing processes with those of other African nations. This effort aligns with the African Telecommunications Union's (ATU) recommendation for member states to adopt transparent and harmonized regulatory frameworks to support the growth of satellite services across the continent.

ICASA is inviting stakeholders, including satellite operators, telecommunications providers, and the general public, to submit their views on the proposed framework by 12 November 2024. The submissions will help shape the final regulations, ensuring they meet the needs of the industry while protecting the interests of South African consumers.
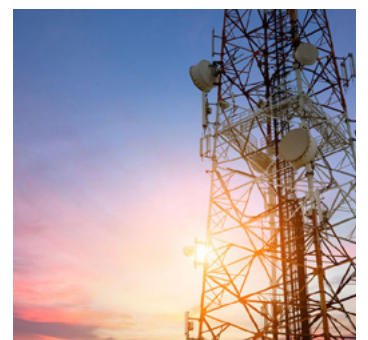
Namibia to benefit from new $100 million network investment to improve QoS

Telecom Namibia has embarked on a programme to invest between $90-100 million to improve the quality of its services and expand its network coverage in the country.

The investment program aims to improve certain mobile sites by upgrading them from 2G to 3G and 4G. It also plans to reduce the overload on certain telecom sites to guarantee optimal quality of services to the population.

The investment is part of the telecoms company's efforts to modernise its network in line with its Integrated Strategic Business Plan (ISBP) 2027.

2G/3G sunsetting too soon for South Africa?

The Association of Communications and Technology wants the South African government to lift its deadline for shutting down the country's 2G and 3G networks. The Department of Communications and Digital Technologies (DCDT) wants both to be switched off by 31 December 2027.

However, many South African residents and businesses, including the state-owned rail, port, and pipeline company Transnet, still rely on these older technologies. The Association of Communications and Technology's CEO says South Africans must be aligned regarding phasing out 2G and 3G. The organisation is calling for a massive public awareness campaign instead of just a closedown date.

The plan to shut down 2G and 3G aims to free up valuable resources for newer technologies, but there are apparently fears that a switch-off could harm essential systems and leave many South Africans without access to cellular communication.

A spokesperson from Vodacom told local media that 2G and 3G terminal sales still comprise a large portion of the market; and it hopes that regulator ICASA will work with the industry to develop a practical schedule for sunsetting of legacy technologies during its feasibility study.

The challenging economic conditions in South Africa, coupled with high taxation on 4G and 5G smartphones, are driving continuing demand for 2G and 3G devices. Several million remain active on South African networks. Many machine-to-machine and Internet of Things (IoT) devices also use the older technologies.

40% of Malawi's citizens remain offline

The Malawi Communications Regulatory Authority (MACRA) has reported that 40% of citizens do not have internet access, and it plans to launch locally produced mobile phones to bridge the digital divide.

MACRA will soon unveil a local smart device assembly program to produce low-cost phones, but no date was given as to when the initiative would begin.

"We need a multi-sectoral approach for citizens to have access to digital services at a reasonable distance," said Daud Suleman, director general of the MACRA. He has also advised the youth to shun cybercrime under Section 87 of the country's constitution.

Chomola Mikeka, director of science, technology, and innovation at the Ministry of Education, disclosed that efforts are ongoing to revise the country's curriculum to include digital education in schools. Connectivity remains a significant concern, with only 34% of primary schools and 82% of secondary schools connected to the power grid.

"We want to align to the fourth industrial revolution by having digital subjects before 2027," said Mikeka.

First phase of OADC Texaf Digital – Kinshasa DC goes live: DRC's first open-access carrier-neutral facility

The first phase of OADC Texaf Digital - Kinshasa, a joint venture between Open Access Data Centres (OADC) and TEXAF, is now live.

The 2MW-capable facility is the DRC's first live open-access, carrier-neutral and Uptime Institute Tier-III certified data centre, with ISO27001 post live certification on track for Q3 2024.

Clients are already establishing and installing in the facility and all major fibre network providers are present to provide vibrant interconnect to tenants. The facility offers integrated core digital infrastructure solutions comprising tailored colocation services together with a wide range of reliable connectivity and peering options. Power to the data centre is fed from utility sourced from hydro generation ensuring environmentally sustainable power generation in tandem with low Power Utilisation Effectiveness (PUE). The facility underpins and is accelerating the country's digitalisation and ICT capabilities, enabling clients to cost-effectively, flexibly and securely grow their operations within the DRC.

With a population of more than 16 million, Kinshasa is at the epicentre of demand for digital connectivity services within the DRC and the region. Configured with 1,500 square metres of IT white space to accommodate more than 550 racks, it delivers colocation, interconnect and peering services to support the colocation needs of enterprise clients, content distribution networks, local and international cloud providers. This enables them to improve efficiency, expedite digitisation initiatives, and more effectively service business and customer needs.

"OADC Texaf Digital - Kinshasa is central to boosting many sectors of the DRC's economy, creating rich and vibrant digital ecosystems, and providing content distribution networks and cloud content providers with access to a quality peering location in the country," said Mohammed Bouhelal, managing director of OADC Texaf DRC. "We already have over 12 leading national and international carriers connected, with the banking sector being the leading adopter of OADC Texaf Digital - Kinshasa solutions. The open-access, carrier-neutral facility is set to transform the country's digital infrastructure by creating a comprehensive, vibrant interconnection and peering ecosystem involving multiple carriers, ISPs, content providers and Internet Exchanges."

The facility embodies carrier-neutral principles, maximising interconnection opportunities for all clients. Increased competition and improved operator cost-efficiencies will contribute to the expected decrease in the cost of internet connectivity for the Congolese people and companies, serving as a major enabler for expansion of the DRC's digital ecosystem. It will not only offer businesses a viable alternative to self-build and self-manage data centre facilities, with all the benefits of dedicated resource, expertise, management time and costs that come with that, but also support the cloud infrastructure and content needs of a wide range of businesses and enterprises. Carriers will benefit too, as OADC Texaf Digital - Kinshasa offers them both additional connectivity revenue opportunities and the opportunity to extend their service portfolios to include managed colocation services.

"Establishing a strategic partnership to build a data centre in the DRC is crucial for driving digital transformation and economic growth in the region," said Christophe Evers, chairman of OADC Texaf's board of directors. "By leveraging the joint strengths and expertise of OADC and TEXAF, we are not only enhancing digital connectivity and infrastructure but also creating opportunities for businesses to thrive in a rapidly evolving digital landscape. This collaboration underscores our commitment to delivering world-class data centre services that meet the growing demands of enterprises and support the broader objectives of economic development in the DRC. It is a cornerstone of the DRC's National Digital Plan announced by the President of the Republic."

Empire Partner Foundation curates South Africa's ICT innovators

Empire Partner Foundation (EPF), a tech non-profit organisation, is curating the Directory of South African Innovation which aims to showcase local enterprises generating tech solutions that have an impact on society and to promote the local tech community.

EPF says that recognising these innovations would make it easier for the technology sector in South Africa to cooperate with like-minded partners and start-ups. More than a directory, the platform will support businesses and individuals looking for dependable, high-quality ICT solutions developed locally.

"We're bridging the gap between local talent and global opportunities. Our goal is to position South Africa as a beacon of innovation, where the world can look for cutting-edge solutions that are both relevant and effective," said EPF CEO Joanna Jacqueline Govender. "When you partner with these businesses, you're not just gaining access to their expertise and technology – you're tapping into a deep well of local market knowledge and a shared commitment to growth. These are companies that understand the unique challenges and opportunities within our communities, and they're building solutions designed to make a tangible impact."

The Foundation also supports pre-seed stage enterprises through its multi-million-rand EPF Tech Fund. To be eligible for funding, start-ups must have locally produced technology solutions, be led and driven by young people, and be scalable. The tech fund is privately managed, and the project's investors include organisations dedicated to 'future proofing Africa by investing in youth-led technology solutions that are scalable across the continent.'

Unitel faces privatisation

The Angolan government has authorized the introduction of 15% of the capital of the telecommunications company Unitel on the stock exchange, as part of its privatization.

The decree provides for the reservation of 2% of Unitel shares for acquisition, 'under special conditions,' by the company's employees.

The initiative could bring additional revenue to the Angolan state. Part of the funds could also be invested in improving the coverage and quality of services provided by the telecoms company.

Vodacom to invest R800 million in KwaZulu-Natal to improve operations

Vodacom is investing more than R800 million in KwaZulu-Natal this financial year on building new network sites, modernising its mobile networks, full fibre broadband rollout and energy projects to accelerate broadband connectivity and provide customers with excellent service.

"We are making a significant investment in the network in KwaZulu-Natal in order to achieve our goal of building an inclusive digital society," said Imran Khan, Managing Executive, Vodacom KwaZulu-Natal. "Our goal is to give our customers an excellent network experience by increasing the availability of a reliable and high-quality connectivity by adding new sites and upgrading our network. Importantly, we have set aside resources to roll out 130 new sites in deep rural areas in Ugu, Umhlabuyalingana, Abaqulusi and Edumbe local municipalities. It is no longer acceptable for deep rural residents to observe the digital revolution from the sidelines; they must participate in it and benefit from the associated socio-economic benefits."

The bulk of the funds will be used to improve radio access network, modernise the core the network infrastructure and deploying the latest and faster mobile networks such as LTE and 5G. This investment will provide faster network speeds and more connectivity for Vodacom customers across the province. By the end of the current financial year, Vodacom KwaZulu-Natal's 3G population coverage will increase to 98.89%, 4G to 98.86% and 5G to 50%.

The region has partnered with the provincial government and rolled-out several solutions to digitalise the public sector. Through the Digital Citizens Services, this platform has helped the provincial government in improving and managing service delivery in areas such as education, health and safety. In addition, SMEs are critical in supporting economic growth and employment in KwaZulu-Natal.

For clients who are under severe financial strain, the cost of communication is still a big concern. To lower the cost to communicate, Vodacom KwaZulu Natal launched customised, discounted voice and data deals including Just4You and Just4You Town bundles for residents in certain KwaZulu-Natal municipalities, as well as larger prepaid data bundles with Prepaid LTE. To drive down the cost of smartphones and facilitate digital inclusion, especially for low-income earners, Vodacom has introduced Easy2Own, which allows customers to pay for a smart device using their airtime over 12 months from as little as R8.50 and additionally get voice and data allocation free daily.

In its purpose-led goal to build inclusion for all, the region continues to sponsor educational programmes that develop young people's potential and advance socio-economic development in KwaZulu-Natal. The region provided 18-month internships for 100 youths and of these 76 have been permanently employed by Vodacom. The region donated tablets, books, stationery packs and uniforms to scores of learners at Nqayizivele Primary School in Umlazi and KwaDinda Primary School in Greytown. In addition, Vodacom KwaZulu-Natal donated R650 000 towards the relief efforts in Tongaat and Newcastle where a Tornado caused damage and devastation to these communities.

"We hope to significantly improve the communities we serve through our strategic alliances with local authorities and organisations. We are achieving our purpose of connecting everyone to a better future with our substantial network investment and ongoing CSI initiatives," concludes Khan.

Cell C aims for the stars with 5G

Cell C has started testing 5G with Vodacom and MTN, according to chief technology officer Schalk Visser, in a move expected to help improve the quality of its services and strengthen its competitiveness in the domestic market.

The move is part of Cell C's efforts to establish itself among South African telecom subscribers and follows a recent rebranding. In June 2023, it completed its migration to a virtual access network provided by MTN, abandoning its own network infrastructure. It also plans to launch VoLTE (voice over LTE) service.

The commercial deployment of 5G will notably enable Cell C to offer faster speeds with reduced latency. This will strengthen its ability to meet the expectations of its current subscribers while attracting new customers. Faced with already well-established competition in ultra-high-speed services, this technological advancement represents a major strategic asset for the company.

Clear Mobitel to invest US$200 million in Zimbabwe

UK-based Clear Mobitel has announced plans to invest US$200 million in Zimbabwe's telecommunications sector.

The decision comes amid growing interest from several global players and aligns with the country's ongoing efforts to attract foreign investment and bolster the country's economic growth.

"I am impressed by the country's business environment and prepared to invest US$200 million because of the open-for-business policy in Zimbabwe," said Clear Mobitel CEO Harpal Mann. "Our objective is to eventually spread our services throughout the SADC region."

Clear Mobitel has partnered with NEC Corporation to supply advanced technologies that will enhance Clear Mobitel's offerings in Zimbabwe.

Zambia targets cybercrime

The Zambian government has reaffirmed its commitment to curbing cybercrime and online misconduct, following a joint press briefing by the Honourable Ministers of Technology and Science, and Home Affairs and Internal Security.

The government emphasized that it would invoke Section 54 of the Cyber Security and Cyber Crimes Act of 2021 to address issues such as online hate speech, defamation, child abuse, and propaganda.

The public has been urged to comply with the law and avoid making social media posts that could bring them into conflict with authorities.

In addition to warning citizens against the dangers of fake news and misinformation, the government encouraged Zambians to promote responsible online behaviour. With substantial investments in cyber infrastructure, authorities assured the public that efforts are underway to identify and apprehend online scammers, who cause significant emotional and financial harm to their victims.

Raxio Group inaugurates DRC's largest data centre

Raxio Group has inaugurated its state-of-the-art data centre in Kinshasa, marking the country's largest data centre, with Tier III accreditation by the Uptime Institute.

The Raxio DRC1 is backed by a $30 million investment and represents a pivotal milestone in the nation's Plan National du Numérique to drive digital inclusion, foster private sector growth, and transform public services through digitalisation.

Located in Limete on the southeast of Kinshasa, the two-storey Raxio Data Centre spans 1,542 square meters. Its modern design can house up to 400 racks and can reliably deliver 1.5MW of IT power to customer equipment. The 24/7 'always-on' facility is ideally located along key fibre routes, delivering best-in-class colocation and connectivity services. Multiple paths for power and cooling systems underpin the centre's Tier III certification, while the usage of cutting-edge components, guarantee unmatched levels of efficiency and a strong commitment to sustainability principles.

"The inauguration of our Kinshasa data centre marks a significant achievement for Raxio and a pivotal moment for the DRC's digital landscape," said Robert Mullins, CEO of Raxio Group. "DRC is one of Africa's largest and fastest-growing markets with an existing latent demand for digital products and services that is forecast to soar in the coming years. With this facility, we are providing the critical infrastructure essential to supporting the digital economy and enhancing connectivity – and we expect to expand our presence in DRC through additional capacity and new facilities in years to come.

Our investment reflects unwavering confidence in the DRC's immense potential and our commitment to sustainable digital development across Africa."

The launch of the DRC facility marks the opening of Raxio's fourth facility this year with 1.5MW being the group's largest Day 1 capacity to date.

"Closing sub-Saharan Africa's connectivity gap is no longer a pipe dream – it is happening now and we are extremely proud to be among the key enablers that are driving digital inclusion," said Yannick Sukakumu, General Manager Raxio DRC. "The commitment and pragmatism of the government has been a key enabling factor in spurring our project from inception to completion in record time and stands as an inspiration for the wider region in grasping this incredible opportunity for a broad-based digital economy expansion. We are looking forward to welcoming customers into an international-standard data centre environment."

Botswana to gain new satcoms via Azerbaijan

Azercosmos, Azerbaijan's space agency, and the Civil Aviation Authority of Botswana have announced a new partnership, described as a 'new milestone in connectivity', to launch satellite services in Botswana.

Under this long-term agreement, the Botswana government agency will utilise data services provided via the Azerspace-1 telecommunication satellite. This marks the inaugural provision of satellite data services to Botswana via the African C-band coverage on the Azerspace-1 satellite.

Azercosmos currently supplies satellite services to nearly half of the 13 countries in Southern Africa. This collaboration with Botswana, it suggests, will enhance the deployment of Azerspace satellite services in large-scale data projects across Southern Africa.
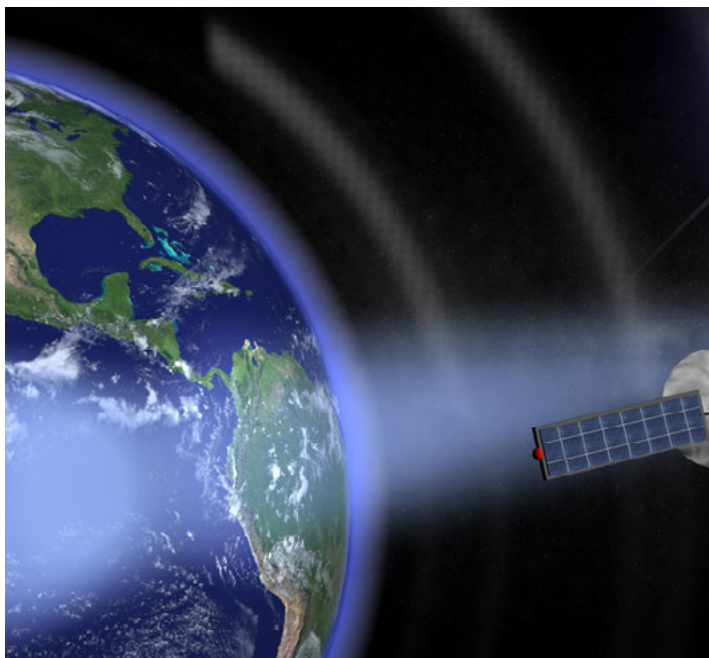
ARPCE reports on Congo's mobile networks

The Postal and Electronic Communications Regulatory Agency (ARPCE) has reported the results of its latest comprehensive survey on the quality of mobile networks in Congo.

The study highlighted a significant improvement in 2G and 3G coverage on national roads. The Yié-Mindouli sections on national road No. 1 and Lifoula-Makoua on No. 2 now benefit from better mobile phone coverage. This progress is attributed to two main factors: the sanctions imposed by the regulator and the coverage obligation imposed on operators, thanks to the implementation of national roaming.

Despite these advances, the report highlights that significant efforts remain to be made. In the south of the country, Airtel must strengthen its 3G coverage in Nkayi, Dolisie and Kintélé. MTN, for its part, faces similar challenges in Mouyondzi, Madingou, Dolisie and Kintélé.

The situation is also worrying in the north. MTN must improve its 2G coverage and quality overall, as well as its 3G in Gamboma, Owando and Ouesso. Airtel is not far behind, with progress to be made in 2G in these same cities. Brazzaville and Pointe-Noire, despite their status as major urban centres, also experience problems with network coverage and quality, particularly in 2G.

Benjamin Mouandza, Director of Networks and Electronic Communications Services at ARPCE, stressed the need for operators to reduce network access failures and outages during communication, particularly on national roads.

Regarding mobile internet, 4G is doing well by offering better performance. On the other hand, operators have been called upon to improve the quality of 3G, particularly in Owando and Brazzaville for Airtel, and in Oyo and Ouesso for MTN.

Faced with these results, the ARPCE has decided to serve formal notice on MTN and Airtel, in accordance with article 27 of law number 9. This law stipulates that the operation of networks and the provision of electronic communications services must comply with rules of permanence, quality and availability.

MTN representatives expressed satisfaction with the efforts made while acknowledging the need to improve coverage on national roads. The operator also explained that the assessment coincided with quality optimisation work across the country, which could explain some of the negative results. Airtel confirmed the work carried out on national roads and justified certain results by a software update carried out on its network from 14-20 June as part of ongoing improvements.

Telecom Namibia commissions Equiano submarine cable at Swakopmund landing station

Telecom Namibia (TN) has completed the commissioning of the Namibian segment of the Equiano submarine fibre optic cable with the inauguration of its landing station in Swakopmund.

The infrastructure, which connects Namibia to Europe and the rest of Africa, is expected to improve the quality of high-speed connectivity services provided to the population and businesses.

The inauguration comes a few weeks after Paratus Namibia announced the activation of the cable. This infrastructure will strengthen Namibia's national telecom infrastructure with its nominal capacity of 144Tbps.

The advent of Equiano in Namibia is expected to increase current internet access speeds by more than 2.5 times, increase internet penetration by 7.5% in the first three years and act as a catalyst for significant growth, job creation and sustainability.
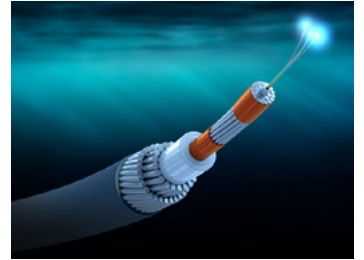
Zambia's women to gain from ICT bootcamp

Airtel Networks Zambia, in collaboration with Infratel, recently organised an ICT bootcamp aimed at addressing the gender gap in the ICT sector.

The event was designed to inspire and empower young girls to pursue careers in telecommunications and ICT. Senior staff from Airtel were enthusiastic about hosting 50 girls from various schools in Lusaka, providing them with insights into the industry and encouraging them to explore opportunities within this dynamic field.

The bootcamp is part of Airtel's broader commitment to impacting young minds and nurturing emerging talent. By exposing these students to the possibilities within the ICT sector, Airtel and Infratel hope to cultivate a new generation of female leaders in technology. This initiative highlights the importance of gender diversity in the ICT industry and reinforces Airtel's dedication to social responsibility and community development.

MVNO C-CONNECT launches across South Africa

MVNO C-CONNECT has launched nationwide to bring more choice to South African mobile subscribers.

With a commitment to providing cost-effective mobile services that don't compromise on quality, C-CONNECT aims to be the first and most rewarding choice for savvy prepaid subscribers.

The prepaid, SIM-only brand leverages C-Cell's robust network infrastructure and rewards people for something they already do, so that they can spend more on the things they really want. When subscriber's top-up their prepaid Airtime or Data, they can earn 10% back in the form of Cha-Chings, the in-app currency. Cha-Chings can be exchanged for a wide variety of lifestyle products and services, including products such as prepaid electricity/water and data, tickets for events, and gaming vouchers. This reward system empowers customers to maximise their mobile spending while accessing a range of lifestyle products and services.

"What sets us apart in a competitive market is that we offer people meaningful rewards for buying voice and data, an essential everyone needs," said Richard Anderson, Chief Operating Officer, C-CONNECT. "It's the most rewarding connection for South African cellular subscribers with no fuss and no frills, just a straightforward and simple way to access a world of prepaid services with added benefits. With C-Connect, we're not just offering connectivity; we're giving our customers the power to see real rewards from their mobile usage."

Talking critical

Stuart Will, TCCA TETRA Industry Group

TETRA's rising influence across vertical sectors

TCCA's Critical Communications World (CCW) 2024 conference and exhibition took place in Dubai in May and was one of the largest ever editions of the event. More than 4,700 visitors from 97 countries joined CCW over the three days, creating a true sense of international collaboration. More than 200 expert speakers took part in presentations, panel discussions, debates and Focus Forums that covered this year's core theme of Securing society and industry - Connection is the lifeline.

With a wide range of topics covered, from AI and antennas to satellites and smart energy, one topic truly underpinned the event core theme – TETRA technology. TETRA is the most widely used critical grade professional radio technology in the world. The technology provides organisations with critical communication network solutions that are essential for reliable, efficient and safe operations.

Key markets for TETRA are obviously public safety, as it is used by governments around the world to secure citizens and society, but other verticals include transportation, energy, mining, military, and commercial applications, and many more – let's take a look at a few of them.

For more than two decades, TETRA has experienced widespread adoption into the transportation sector including rail networks. TETRA is being regularly deployed, upgraded, and expanded, from metro systems to highspeed nationwide levels. Through ongoing investment, including enhanced security and resilience, and the introduction of new air interface encryption algorithms within the ETSI standard, TETRA is even more relevant and necessary for the rail sector. This helps to ensure that TETRA continues to meet needs for the rail sector today and well into the foreseeable future.

Across the world, the rail sector is expected to experience an upward trend, driven by several key factors such as infrastructure development and urbanisation, with the high degree of government emphasis on creating sustainable transport systems another major driver.

The mining sector is characterised by harsh user equipment and deployed base station environments, where networks must be always 'live' or operations stop – and that is costly. Long shifts need long battery life in communications equipment (typically >14Hrs). Noisy environments demand powerful audio and clear voice. It's an environment where users wear gloves, so TETRA manufacturers offer equipment with reduced keypad and programmable keys; and the safety of workers is key - TETRA offers lone worker, GPS, man-down, localisation of users and GPS geofencing. For mines that are constantly expanding, TETRA offers both repeater/gateway radios and easily deployable outdoor base stations fit for use in these environments. In 2023, the global mining market experienced a 6.1% growth, reaching over US$2,145Bn, and is projected to increase to more US$2,775 billion by 2027, with a 6.7% CAGR.

In the utilities sector, typically workers will need system radio coverage, the ability to have contact with a dispatcher, PBX connectivity and Direct Mode operation where users can switch to device-to-device ('walkie talkie' style communication), separate from the network – this gives users the ability to not be interrupted by hearing system 'chitter-chatter' while carrying out critical tasks.

Climate change bringing extreme weather means resulting damage needs to be rectified quickly. TETRA has a suite of applications usable by this industry such as workflow management for lineman maintenance teams, using a combination of location-based assignment and SDS instructions.

Oil and gas industries have a wide range of needs. TETRA meets these for each operational area beyond voice, such as solutions requiring telemetry – and like cellular, there is significant growth in the uptake of TETRA data services. For oil and gas organisations, wireless data has shown it can improve efficiency in several areas. For remote monitoring solutions – e.g. for corrosion monitoring (SCADA), faster decision making based on near real-time data enables more rapid identification of potential problems, and more efficient maintenance inspections and operator rounds. The collection of status data and records, alerts of emergency situations, and location solutions means more efficient management of the workforce.

Normally, in a military context, we associate TETRA use for 'must-have' communications, encrypted radios and clear audio speech, typically with rapid deployable base stations being used in Tactical Operations. However, there is an increasing use of TETRA for other uses, with armies around the world employing TETRA for use in training exercises. TETRA radios are used with biometric sensers to monitor soldier performance (heart-rate, blood-pressure, temperature etc.,) all sending data back to a central command monitor centre tracking troops in action and how the exercises affect their performance.

One of the most distinctive aspects of TETRA is the extremely high level of interoperability among products (e.g. network infrastructure, radio terminals) from different manufacturers. This is achieved thanks to TCCA's comprehensive Interoperability Certification (IOP) process which enables a truly open multi-vendor market for TETRA equipment and systems. This multi-vendor market gives concrete benefits both to the users in terms of a wide portfolio of compatible equipment, competitive pricing and rapid development of new product models; and to the industry in terms of a wider accessible market, faster market take-up and better possibilities for investment in new development.

TCCA recognises TETRA as a continuously evolving narrowband standard that delivers mission critical service globally every day. The work on updating TETRA encryption is designed to make TETRA secure for at least the next 20 years. For mission critical users requiring organisation-centric group voice communication and messaging services using narrowband technologies on dedicated frequencies, TETRA remains the optimal multi-vendor interoperable choice for the foreseeable future.

The TETRA story will continue to be told at Critical Communications World 2025, taking place 17-19 June at Brussels Expo in Belgium, with host operator ASTRID supporting the event.
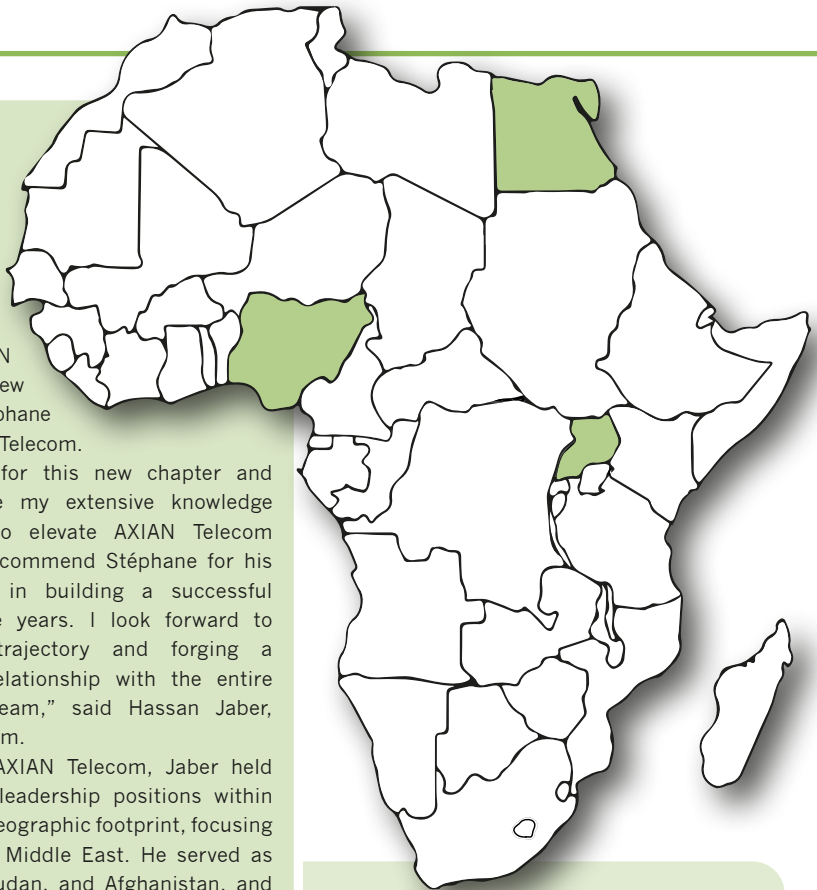
AXIAN Telecom names Hassan Jaber as CEO

AXIAN Telecom has announced the appointment of Hassan Jaber as the company's new chief executive officer, which came into effect on 19 August.

Jaber succeeds Stéphane Oudin, who will transition to the role of advisor to the chairman and board member of AXIAN Telecom's Operating Companies. Oudin will continue to support AXIAN remarkable growth and enhance the governance of both the group and its operational entities.

Jaber will work closely with AXIAN Telecom's teams across different markets to ensure they continue to deliver a strong performance and achieve the Group's objectives.

"With a proven track record of driving innovation, fostering growth, and achieving operational excellence, I am fully confident that Hassan is exceptionally equipped to lead Axian Telecom into its next transformative phase. I would also like to extend my heartfelt gratitude to the AXIAN Telecom teams for an incredible 7 years and for unwaveringly supporting my vision for the business. Our successes were only possible with your dedication and support. I eagerly look forward to continuing to support the growth of AXIAN Telecom in my new role," said Stéphane Oudin, CEO, AXIAN Telecom.

"I am excited for this new chapter and eager to leverage my extensive knowledge and experience to elevate AXIAN Telecom to new heights. I commend Stéphane for his exceptional work in building a successful business over the years. I look forward to furthering this trajectory and forging a strong working relationship with the entire AXIAN Telecom team," said Hassan Jaber, CEO, AXIAN Telecom.

Before joining AXIAN Telecom, Jaber held several executive leadership positions within the MTN Group's geographic footprint, focusing on Africa and the Middle East. He served as CEO in Guinea, Sudan, and Afghanistan, and most recently, as the COO of MTN Nigeria; exemplifying a broad range of experience across the continent.

60% of UTel to pass hands to Rowad Capital in attempt to rebuild

Uganda plans to sell 60% of state-owned Uganda Telecommunications Corporation Limited (UTel) to Dubai-based global contractor Rowad Capital for US$225million.

UTel relinquished its assets and operations in November 2022 and was placed under court-appointed administration. It is currently owned by the Ministry of Finance and the Ministry of Information and Communications Technology.

However, it retains an estimated 805,000 subscribers at the end of the second quarter of 2024.

It is hoped that the planned substantial capital injection might enable UTel to enhance its infrastructure, expand its market share, make its pricing more competitive, improve its services, and generally drive innovation.

IHS Nigeria renews tower lease deal with MTN Nigeria through 2032-end

IHS Nigeria, a subsidiary of IHS Towers, has signed an agreement with MTN Nigeria to renew and extend all tower lease agreements through December 2032. The partnership covers approximately 13,500 telecom towers.

"The renewed and extended contracts include new financial terms that the parties believe provide a more sustainable mix of local and foreign currency, as well as a new diesel component," said IHS Towers in a statement.

The new agreement comes about 11 months after MTN Nigeria announced it will begin leasing 2,500 network sites from ATC from 2025, when the current contract with IHS Nigeria expires. The move is part of the telco's drive to renegotiate and diversify its tower lease agreements to improve efficiency and ensure optimal performance from vendors.

Faced with this situation, IHS Holding reportedly offered 'better commercial terms' to MTN Nigeria in December 2023. It has just announced that it has obtained the renewal of 1,430 rental contracts, including new co-locations.

The new deal is expected to see IHS Towers strengthen its presence in the Nigerian telecoms market. The company currently owns 16,000 towers in Nigeria, of which 14,600 are leased by MTN.

AOI launches new mobile phone tower factory in Egypt

The Arab Organisation for Industrialisation (AOI) has established a mobile phone tower manufacturing facility in Egypt at the group's Aircraft Factory.

The organisation said the centre is part of its industrialisation efforts to localise technology, increase local production rates, and manufacture what is currently imported.

Chairman Mokhtar Abdel Latif emphasised the necessity of localising the technology for manufacturing mobile phone towers, saying the centre has already succeeded in producing towers with a 100% local manufacturing rate, and that it has begun fulfilling many of the towers needs of Etisalat Misr. The manufacturing and supply of 67 towers for Etisalat Misr was completed by the end of June under a framework agreement signed by Etisalat Misr and the Aircraft Factory.

According to Abdel Latif, production of 70 more towers for Etisalat Misr is underway, with delivery set for the end of September 2024.

"Coordination is currently underway to sign memorandums of understanding with Telecom Egypt and major companies operating in the field of communications in the Arab Republic of Egypt to expand the quantitative production of communication towers," said AOI in a statement.

The organisation also announced that negotiations are underway to bring more telecom companies on board, including the possibility of exporting to African and Arab countries.

Bayobab and Eutelsat sign deal for LEO capacity

Bayobab has announced a multi-year agreement with Eutelsat for secured low Earth orbit (LEO) capacity on Eutelsat's OneWeb constellation.

This collaboration aims to address the connectivity needs for enterprises and cellular backhaul, providing reliable solutions to enhance network performance and customer experience across the continent. Further, this partnership underlines the role of innovative satellite solutions to drive digital inclusion in Africa.

"At Bayobab, we're passionate about being at the forefront of harnessing technology to empower people and businesses across Africa," said Frédéric Schepens, Chief Executive Officer,

Bayobab. "Our partnership with Eutelsat and the integration of OneWeb's LEO satellite services into our solutions is a testament to this commitment. This collaboration brings cutting-edge digital connectivity to even the most remote corners of the continent and reaffirms our promise of 'Connecting Africa' – a promise rooted in partnership and driven by a vision of a digitally inclusive future."
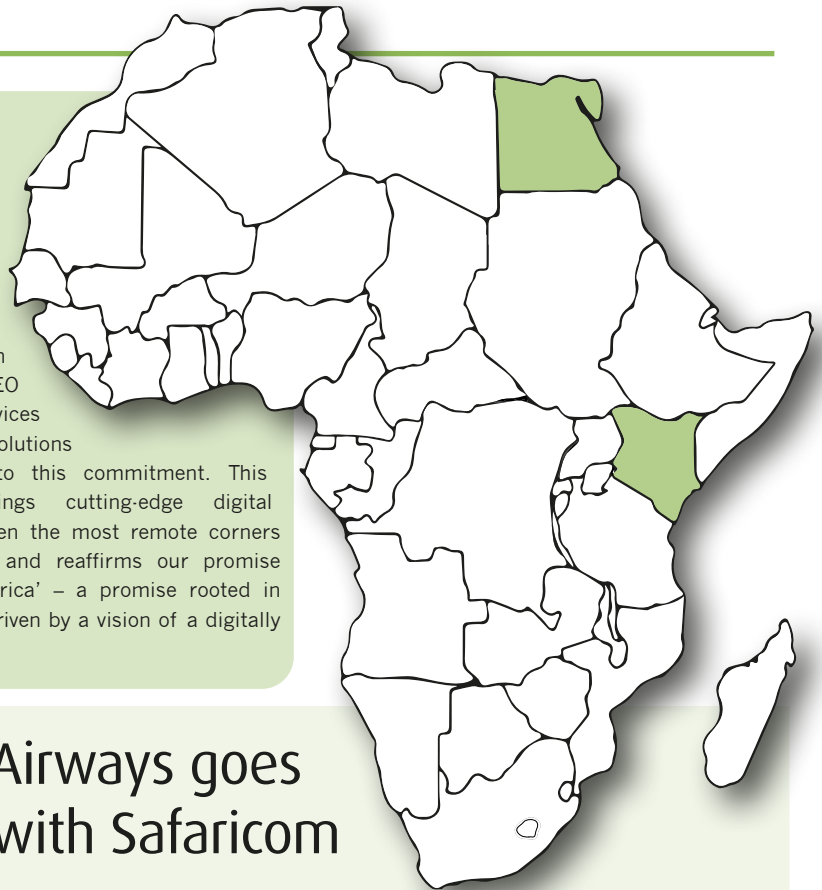
Liquid and Globalstar team up for 5G

Liquid Intelligent Technologies and Globalstar have joined forces to provide 5G solutions across Africa, the Middle East, and the Gulf.

Looking ahead, there exists potential expansion to Globalstar's satellite, Band n53 spectrum and IoT solutions on a non-exclusive basis.

The deal will grant Liquid exclusive sales and distribution rights to Globalstar's XCOM RAN private networks 5G access solution across the Gulf, Middle East, and Africa. This improves the 5G experience also supports AI-driven applications and is expected to 'revolutionise' the mining industry in Africa as well as high-end markets in the Middle East and Gulf.

"With this technology we are now able to provide services to large businesses like mines with their own 5G private networks that can also enable NextGen services like AI; this is huge," said Strive Masiyiwa, founder and chairman of Liquid Intelligent Technologies.

"The regions where Liquid is a leader are large and growing markets for our technologies which enable safe automation and remote control of mobile equipment in high value environments," said Paul E. Jacobs, CEO of Globalstar.

Kenya Airways goes digital with Safaricom

Kenya Airways has signed a strategic partnership with Safaricom aimed at driving innovations that will enhance the airline's operational efficiency, strengthen cybersecurity, and elevate the customer experience.

Kenya Airways and Safaricom will focus on enhancing connectivity, in-flight WiFi, infrastructure inspection, security surveillance, loyalty programs, data science, software development, and aviation innovation in areas such as agriculture. This comes in addition to other unnamed project areas.

"Kenya Airways collaboration with Safaricom is a testament to the power of co-creation. By harnessing our combined expertise, we are not only addressing today's challenges but also laying the groundwork for sustainable growth, enhanced connectivity, and transformative innovations that will benefit our customers and communities for years to come," said Fredrick Kitunga, chief information and data officer, Kenya Airways.

The companies will also collaborate in developing and implementing Internet of Things (IoT) solutions for warehousing, baggage tracking, aircraft materials and ULD, to cover tracking, location, reconciliation and stock taking.

"This Memorandum of Understanding solidifies our commitment to providing a transformative experience for our customers, connecting people in new and innovative ways. By leveraging our respective strengths — Kenya Airways in providing safe journeys and Safaricom in cutting-edge communications and technology — we ensure that our customers remain seamlessly connected throughout their travels," said Cynthia Kropac, head of business, Safaricom.

Kenya Airways' Fahari Innovation Hub is a one-of-a-kind centre of aviation innovation excellence in Africa that facilitates creative and collaborative ways of providing much-needed solutions to business problems.

The Hub is a centre for strategic innovation management offering opportunities for cocreation, networking, research, and learning; and is a springboard for new ideas and innovations that help communities and continent face current and future challenges.

Telecom Egypt appoints Mada Communications for SMS services to expand client base and revenues

Telecom Egypt has concluded a multi-year agreement with Mada Communications to serve as its preferred international SMS service provider.

Mada's services include voice, messaging, data, billing, fintech services, cyber security, digital transformation, and professional and managed services. With the new deal, Mada will handle all International Application-to-Person (A2P)

messaging services, including but not limited to two-factor authentication and automated notifications. The partnership allows Telecom Egypt to use Mada's capabilities to provide a better experience to its growing client base while also increasing A2P messaging revenues, according to the business.

"Being chosen by such a major player in the

industry is a testament to our commitment to excellence and innovation," said Charles Hage, CEO of Mada. "A special thanks to both the Telecom Egypt and Mada teams for their hard work and dedication in making this partnership possible. We look forward to furthering our cooperation with Telecom Egypt across multiple fronts and bringing exceptional value to their messaging services."

MTN Group finalises MTN Guinea-Bissau stake sale

MTN Group has completed the sale of its stake in Spacetel Guinea-Bissau SA (MTN Guinea-Bissau) to telecoms group Telecel. The transaction has obtained all required regulatory approvals.

"MTN has taken steps to ensure a smooth transfer of ownership, which the group believes is in the best interest of MTN Guinea-Bissau, its stakeholders and the sector in Guinea-Bissau in general," said MTN Group in a statement.

The initiative is part of the optimization of the MTN Group portfolio, which wants to focus on its high-potential markets such as Côte d'Ivoire, Nigeria, Ghana, and South Africa. In February 2024, it finalized the sale of its Afghan subsidiary to Investcom AF, confirming its definitive exit from the Middle East with the exception of Iran. It is also considering leaving Liberia.

This acquisition should enable Telecel to accelerate its expansion and strengthen its presence in the African telecoms market.

NCC demands Nigerian telcos be transparent in customer dealings

Nigeria's telecoms regulator has directed operators to be transparent in their dealings with customers, particularly when it comes to tariff plans, voice and data bundles, and promotions.

The Nigerian Communications Commission (NCC) said that the directive aims to provide subscribers with clear, understandable, and accurate information regarding the cost of phone, short message service, and data services. It has demanded that mobile network operators (MNOs) publish a thorough table outlining the features of their tariff plans and bundle offerings.

"The table should contain all necessary information for subscribers to make informed decisions, including details on add-ons, their prices, how consumers can opt-in or out, terms and conditions for renewal, and rollover policies," said Reuben Muoka, NCC director for public affairs.

The guideline was developed after consultations with industry stakeholders, including MNOs and customer focus groups, as well as substantial data analysis of customer preferences and expectations. Service providers must disclose all necessary information about their tariffs, including the plan name, price, validity term, price-per-second for on-network and international calls, predicted internet speeds, and fair usage regulations.

Safaricom raises red flag over Starlink

Safaricom is concerned about the entry of Starlink into the country's internet market.

In a letter to the Communications Authority (CA), Safaricom has recommended that it require satellite internet service providers to partner with local mobile network operators, rather than granting them independent operating licenses.

Starlink is rapidly gaining popularity in Kenya and has almost halved its one-time hardware cost from 89,000 shillings to 45,500 KES over the space of a year. A 50GB data plan is now also available for 1,300 KES per month.

Irungu Kang'ata, governor of Murang'a County, urged the government to ignore Safaricom's concerns, citing that Safaricom's internet is often slow, with speeds as low as 4.7Mbps, while Starlink offers speeds of up to 100Mbps.

SEACOM appoints Sajid Khan as new MD for digital services

SEACOM has appointed Sajid Khan as the new managing director for SEACOM Group Digital Services. Formerly the Managing Director of SEACOM's East Africa division, Sajid brings over 26 years of industry experience to his new role.

In his new position, Sajid will oversee the expansion and enhancement of SEACOM's digital managed services. This includes managing the full portfolio of products and solutions in Cloud, Connectivity, Cybersecurity, and Smart Networking, all critical components of SEACOM's service offerings.

This appointment is a key part of SEACOM's strategic growth plans. The company looks forward to the milestones Sajid will achieve in driving the development of its digital services.

Tunisia plans to deactivate unregistered SIM cards

The Tunisian Ministry of Communication Technologies and the National Telecommunications Authority (INT) have asked telecom operators to deactivate unidentified SIM cards or those with incomplete identification. The service will be activated only after the line is associated with a valid ID.

Other measures include updating the registers by correcting errors and completing missing data; requiring operators to identify the subscriber and verify the correspondence with an official identity document; prohibiting the sale of SIM cards in the streets and public markets; and allowing each user to verify the numbers associated with their identity with all telephone operators.

Nizar Ben Neji, Minister of Communication Technologies, said that these measures aim to protect subscribers to fixed and mobile telecommunications services. They come in a context marked by the resurgence of cybercrimes and financial fraud, despite the existence of legal frameworks.

Waafi partners with Paymentology on MoMo

Card issuing and processing platform Paymentology has announced a partnership with Salaam Bank's Waafi in Somalia, where more than two-thirds of all payments in Somalia are made via mobile money platforms.

The companies have collaborated on the launch of a co-branded, tokenised, tap-to-pay digital companion card along with a physical card for Waafi mobile app users.

Waafi is a mobile money app developed from a collaboration between Salaam Bank, a leading financial institution in East Africa, Somali operator Hormuud Telecom, Somali ICT services provider Telesom, and Somali regional telecoms service provider Golis. The Waafi mobile money app offers communications, entertainment and payment functionalities, intending to promote a digital lifestyle and a cashless society. Waafi has, it seems, now turned into a full-fledged digital bank with the extension of its card offering, which now leverages Paymentology's issuing processing platform.

The co-brand partnership with the Waafi mobile app offers users the opportunity to digitally open an account, create a digital Mastercard card, link the card to a wallet or account, tokenise the card on a digital device, and make contactless payments with ease.

"Mobile and digital wallets play a crucial role in the financial ecosystem in Somalia. We are excited to bring the first digital card to the Horn of Africa, paving the way for a future where digital and contactless payments are the norm," said Kirsten Wortmann, Regional Director for Africa, Paymentology.

Talking towers

Christopher Greaves, researcher, Middle East & Africa, TowerXchange

African towers and the rise of the infraco

In 2010, tower activity in Africa exploded with Helios Towers signing the continent's first ever tower deal with Millicom/Tigo, IHS Towers acquiring Visafone's sites in Nigeria, Eaton Towers acquiring Vodacom's towers in Ghana, and American Tower acquiring sites from MTN and Cell C.

This set the precedent for the 'big four' towercos in Africa, who rapidly expanded mostly through various acquisitions from the regional giants MTN and Airtel Africa. After Eaton Towers was acquired by American Tower in in 2020, three big international towercos took centre stage in Africa's tower ecosystem; IHS Towers, American Tower and Helios Towers.

TowerXchange now tracks over 40 towercos in Africa of varying scale and size, who combined own 58.7% of Africa's 186,567 telecom towers.

This year, TowerXchange is moving to Nairobi, Kenya, to run alongside ITW and Datacloud, joining forces to deliver a who's who of African digital infrastructure. While historically a more siloed part of the infrastructure space, the tower industry is now starting to intersect with the wider connectivity ecosystem.

Energy remains king for cost-efficiency, carbon emissions, and clear reliability

In Africa, managing digital infrastructure comes hand in hand with managing energy, especially with distributed assets like towers. Less than half the continent enjoys a reliable supply of grid electricity, and rapid population growth combined with stagnant grid expansion has led to loadshedding and energy access challenges.

MNOs have been steadily offloading this headache to partners to better manage capex and opex. Towercos have been a go-to partner as energy ties in with their existing services and they have experience navigating Africa challenging operating environment

Many markets have around 40-60% of towers off grid, with on-grid sites contending with loadshedding ranging from 3-12 hours per day or unplanned outages. Most towercos now provide power-as-a-service, with uptime requirements often above 99.8%, which is extremely challenging to maintain given Africa's operational environment.

Many networks rely on diesel generators as the primary source of power, often inherited as part of the legacy sale, but towercos have been investing heavily in upgrading existing power systems with solar PV and battery banks. Other solutions such as wind and hydrogen fuel cells have been applied in certain cases.

Energy Service Companies (or ESCOs) have also emerged as energy partners for both towercos and MNOs, seeing success partnering with operators who have not sold their towers. Orange has signed ESCO contracts in most of their markets to offload energy management to companies such as IPT Powertech, Aktivco, CREI and Energy Vision.

Rural is seeing the biggest growth in infrastructure

Africa faces an enormous telecom infrastructure gap. According to the most recent GSMA data, 15% of African's do not have mobile broadband coverage; more than 200 million people. MNOs have been on the front lines implementing government digital connectivity strategies to achieve 95%+ geographic coverage targets.

While towercos have become the primary infrastructure provider, the fixed-lease, multi-tenant macro tower model that is effective in areas with high demand, becomes commercially and financially challenging in low-demand rural communities.

But MNOs have targets to achieve, and a new type of connectivity infrastructure company has emerged to fill this gap. Network-as-a-Service companies (NaaSco) are seeing early but explosive success in their expansion across Africa, signing large deals predominantly with Orange, MTN and now Airtel Africa.

These companies offer a variation to the traditional tower model; providing capex and opex for the installation, operations and maintenance of passive infrastructure, active equipment and on-site power delivery (as rural sites are nearly entirely off-grid).

Many NaaScos operate on a revenue-share model (although it is common to have a mix of fixed-lease and revenue-share sites), whereby the towerco receives a percentage of the revenue earned from end-user activity as opposed to a fixed-lease, mitigating the risks to MNOs of signing unprofitable lease agreements.

NaaSco's such as AMN, NuRAN, Vanu and iSAT Africa have signed major deals, primarily with Orange and MTN, to deliver a total of around 15,000 towers (or around 5% of Africa's entire tower stock).

New players are also getting in on the action; pan-African managed service provider i-engineering has signed a NaaS deal with MTN Nigeria with 40 towers live. Another managed service provider NETIS is also currently exploring the model.

Moving beyond the macro tower

Despite Africa's mature tower industry, African towercos lag behind other markets in terms of adjacent verticals, owing largely to the enormous ongoing demand for core macro tower infrastructure.

Towercos want to be turnkey infrastructure partners to their customers, and the industry is adapting their product portfolio to meet this. Helios Towers is deploying outdoor DAS in Tanzania for high-density areas, ATC Uganda is working with the Kampala city municipality to deploy smart city street furniture, and Kenyan towerco AlanDick & Co operates a 5G small cell network in Nairobi.

In Nigeria, IHS Towers has seen great success in their fibreco GICL, which recently completed 10,000km of fibre optic cables. Helios Towers operates 15 small data centres in South Africa, and while currently only a small part of the business, is positioning itself to support operators for future edge computing capabilities.

Zambian towerco Infratel is Africa's only full infraco, operating around 1,250 towers, a fibre backbone network and three full data centres. But several other towercos are in various stages of exploring a similar infraco model.

While macro tower will remain the core business in Africa for towercos, there is increasing interest in exploring alternative services that build on customer needs, to ensure the industry remains a first-choice partner for operator infrastructure needs.

Independent Tower Companies are Key Drivers of Africa's Wireless Connectivity

As Africa's wireless industry evolves toward an increased share of independent tower companies, policies mandating passive infrastructure sharing can play a pivotal role in the buildout of 5G networks across the continent, according to a groundbreaking whitepaper titled "The Independent Tower Industry as a Key Enabler of the Development of African Telecommunications."

Commissioned by SBA Communications, a leader in the independent tower industry, and conducted by international consultancy firm Telecom Advisory Services, the study examines the telecommunications landscape across 14 African countries. It explores key aspects of the continent's wireless industry, the expansion of 3G, 4G and 5G networks, broadband adoption, wireless competition and wireless capital spending.

The findings highlight the significant impact independent tower companies have on enhancing wireless connectivity in Africa. Countries with a higher proportion of independent tower companies have better coverage, use, affordability and quality of wireless connectivity. Furthermore, the study outlines a variety of proactive policies and regulations designed to incentivize the development of the tower industry. The study's recommendations illustrate how African governments and regulators can maximize the potential of tower deployment, foster competition and facilitate the growth of 5G networks.

The Development of 3G, 4G and 5G Networks

The development of the African wireless industry over the past two decades has been remarkable. The deployment of 3G and 4G networks has enabled consistent increases in wireless broadband coverage and is expected to reach high deployment by 2030. By the end of 2023, 3G coverage reached 92.46% of the continent's population, according to GSMA Intelligence. This is in line with other developing regions and exhibits little difference between North and sub-Saharan Africa.

In parallel, 4G coverage reached 80.37% of Africa's population in 2023 with sub-Saharan Africa at 77.49% and North Africa at 99.23%. 5G coverage, however, remains in an early stage at 5.05% in 2023. Projections indicate that by 2030, 3G and 4G coverage will reach 95.93% and 87.56%, respectively, while 5G is expected to grow to 36.84%, according to the white paper.

Despite the impressive increase in 3G and 4G coverage, 7.5% of Africa's population lacks access to basic mobile broadband service via 3G while 19.6% cannot access via 4G networks. Beyond the supply gap, the digital divide identified in the study is the result of a demand gap characterized by the non-subscribers living in areas already served by broadband. As of 2023, limited affordability remains the primary barrier to adoptions, affecting 62.10% of the population.

Moving forward, the growth of the wireless industry, including the implementation of 5G, faces constraints due to limited capital spending.

Infrastructure Sharing is a Vital Strategy

The study identifies passive infrastructure sharing as a vital strategy that would enhance network deployment and reduce costs. An analysis of a simulated African country with an average digital divide of 69.64% suggests that mandating infrastructure sharing could increase unique mobile broadband users by 14.63%. This would drive GDP per capita growth by 4.82% over eight years. Such policies would not only help bridge the digital divide but also facilitate the development of 5G technology and improve rural connectivity.

The study's correlational and econometric analyses reveal that African countries with more than 40% of tower stock owned by independent tower companies and tower deployment in excess of 150 per million population exhibit higher wireless industry performance metrics than those with less than those figures. They have better 4G coverage, faster network speeds, more capex, better affordability, higher adoption of mobile broadband and more intense competition.

Policy and Regulatory Initiatives: Essential Drivers

A review of research literature and interviews with regulators and policymakers identifies several initiatives that can significantly contribute to the development of the independent tower industry:

- Passive infrastructure regulatory framework
- Specific tower regulation
- No need for service concession agreements for tower operators
- Regulatory harmonization between central government and municipalities
- Need for fast permit approvals driven by consistent and reasonable time frames
- Establishment of a cap of fees and taxes, and rights of construction
- Regulations to prevent over-deployment
- Implementation of policies to promote development of shared infrastructure for deployment of 5G
- No need of price regulations of tower company contracts with service providers
- Define long-term guarantees in regulations and permits

While some African countries have adopted certain initiatives, most currently lag, hindering progress and limiting connectivity advancements across the continent.

The growth of an independent tower industry is crucial for enhancing telecommunications across Africa, especially given the high level of service penetration. To leverage the potential for tower sites to support edge computing, network distribution nodes for both fiber and wireless networks and future generation of alternative energy, the study notes that it is imperative for governments to enhance policies and regulations that create the right incentives for sector growth.

The successful development of the wireless and independent tower industries is closely intertwined. Independent tower companies play a critical role in enabling the future deployment of 5G, especially considering ongoing capital expenditure pressures facing mobile network operators. By acknowledging this relationship, regulators and policymakers can support the growth of independent tower companies.

Read the full report: The Independent Tower Industry as a Key Enabler of the Development of African Telecommunications

Note: This article contains extracts from the white paper, "The Independent Tower Industry as a Key Enabler of the Development of African Telecommunications." The report was written by Telecom Advisory Services and commissioned by SBA Communications. Extracts have been used with permission. ■

How rural ISPs can empower rural South African communities

Tholo Lerotholi, co-founder and director, Merge X

In the age of digital transformation, the quest for connectivity is no longer a luxury but a necessity, especially in South Africa's rural and deep rural areas. While the government's efforts to bridge the digital divide are commendable, it's time to rethink the strategy. But smaller Internet Service Providers (ISPs) have the power to drastically change the internet landscape.

Government initiatives: ambitious plans and collaborative efforts

In a recent announcement by the minister of communications and digital technologies, Mondli Gungubele, the South African government unveiled ambitious plans to connect 1.5 million rural and township households to the internet by the end of the year. This initiative aims to address the pressing issue of digital exclusion by providing WiFi hotspots as gateways to connectivity.

Gungubele emphasised the government's dedication to bridging the digital divide by ensuring universal access to the internet. He highlighted the involvement of 76 ISPs, many of which are Small, Medium and Micro Enterprises (SMMEs), in the deployment of over 4,250 WiFi hotspots, resulting in the connection of over 740,000 households.

The role of smaller ISPs: local expertise and tailored solutions

But why should the government pay attention to smaller ISPs? Well, for starters, these rural ISPs bring something invaluable to the table – local knowledge and community integration. Unlike their corporate counterparts, they understand the terrain, the people and the unique challenges that come with rural connectivity. This gives them a distinct advantage in delivering tailored solutions that truly make a difference.

Moreover, partnering with these ISPs opens up a world of possibilities for the government. Instead of relying solely on top-down approaches that often fall short, embracing grassroots initiatives can yield faster, more sustainable results. Imagine a network of interconnected rural ISPs, working in harmony to blanket the countryside with high-speed internet, one village at a time.

For South Africans living in rural communities, the internet is a vital link to educational and job opportunities, government services such as healthcare and communication tools. The lack of economic opportunities and resources in rural areas perpetuates cycles of poverty and inequality, highlighting the urgent need for comprehensive strategies to address systemic issues related to education, healthcare and economic development.

Empowerment through connectivity: job creation and economic development

In addition to addressing connectivity challenges, the government's focus on digital skills development is essential for ensuring the long-term sustainability of internet access in rural areas. Initiatives such as the national Digital Skills Forum and the State Information Technology Agency (SITA) Cyber Labs are equipping learners with the skills they need to thrive in the digital economy. By empowering youth to become Digital Skills Ambassadors and training their communities in digital literacy, these programmes are laying the foundation for a more inclusive and digitally literate society.

Economic empowerment through internet connectivity can transform rural communities. Access to high-speed internet enables local businesses to reach broader markets, offers farmers access to crucial agricultural information, and provides a platform for entrepreneurs to innovate. These opportunities stimulate local economies, create jobs and reduce migration to urban areas by making rural living more sustainable and attractive.

Empowering rural ISPs for lasting impact

Merge X brings a fresh perspective on competition to intentionally reshape the industry, empowering smaller ISPs with renewed motivation to do what they do best: connecting countless individuals and communities for a more connected and inclusive future without compromising service and reliability. Investors keen on tapping into the pulse of innovation and social change are finding themselves drawn to explore this powerful movement and potential.

For instance, partnerships between local governments and rural ISPs have proven effective in some pilot projects where high-speed internet was deployed in remote areas, leading to noticeable improvements in educational outcomes and local business productivity. Such collaborations not only enhance the quality of life but also pave the way for scalable solutions that can be replicated across other underserved regions.

Rural ISPs can harness their deep understanding of local needs to develop tailored solutions that address specific challenges faced by these communities. For instance, they can create targeted packages that cater to the bandwidth requirements of local schools or healthcare centres, ensuring these critical institutions have reliable and adequate internet access. Such focused solutions are less likely to emerge from larger, more generalised providers who might not have the same level of engagement with the community.

Furthermore, the involvement of local ISPs in digital infrastructure projects fosters a sense of ownership and accountability within the community. These providers are not just businesses but part of the fabric of their communities.

> "In addition to addressing connectivity challenges, the government's focus on digital skills development is essential for ensuring the long-term sustainability of internet access in rural areas."

continuity of service, providing a critical communication lifeline during emergencies.

The role of government in this ecosystem remains crucial. Policy frameworks that encourage investment in rural broadband, offer financial incentives to smaller ISPs, and reduce regulatory burdens can create a more conducive environment for these players to thrive.

Additionally, public-private partnerships can leverage the strengths of both sectors, combining the scale and resources of the government with the local expertise and agility of rural ISPs.

It's time to bet on the underdog – because when it comes to connecting the unconnected, sometimes the smallest players pack the biggest punch due to the sheer volume of the collective. With the right support and collaboration, rural ISPs can not only bridge the digital divide but also pave the way for a more inclusive and sustainable future for all South Africans. ∎

Their success directly impacts their neighbours, creating a vested interest in maintaining high service standards and driving continuous improvement. This community-centric approach can lead to higher user satisfaction and stronger, more resilient networks.

One of the significant advantages of rural ISPs is their ability to innovate and adapt quickly. Unencumbered by the bureaucratic layers that often bog down larger corporations, these smaller entities can experiment with new technologies and business models. This agility can be crucial in a rapidly changing technological landscape where the ability to pivot and adopt new solutions can determine success.

The economic implications of empowering rural ISPs extend beyond immediate connectivity. As these providers grow, they create local employment opportunities, not just in terms of technical and support staff but also through the ripple effects of improved internet access. Enhanced connectivity can attract new businesses to the area, stimulate local entrepreneurship, and enable remote work opportunities, thereby reducing the rural-urban migration trend and supporting more balanced regional development.

Moreover, rural ISPs can play a pivotal role in disaster resilience and response. In many rural areas, traditional communication networks are often the first to fail during natural disasters, leaving communities isolated. Local ISPs, with their intimate knowledge of the terrain and infrastructure, can develop more robust systems tailored to withstand such events. By integrating alternative energy sources like solar or wind power, these ISPs can ensure

Powering Africa's communications networks

How big an impact is unreliable energy having on Africa's wireless communications services – and are renewables the answer?

Energy disruptions are having a significant impact on Africa's wireless communications sector – and given that consistent energy is essential to maintaining operations, this issue is critical.

According to the GSMA's 'Energy Challenges for Mobile Networks in sub-Saharan Africa' report, mobile operators in sub-Saharan Africa face multiple energy-related challenges, including power outages, lack of grid access, high energy costs, and difficulties purchasing and connecting to renewable energy. Nearly all operators (who responded to the survey) said that their three biggest energy challenges were power outages, high and rising energy costs, and a lack of grid access; and approximately half of responding operators – mostly in South Africa and the DRC – reported difficulties purchasing renewable energy and a lack of transmission and distribution infrastructure to connect to renewables.

Powering the infrastructure

For Africa's towercos, energy costs represent a substantial portion of operational expenditure, with some estimates suggesting that power accounts for 30-60% of total operating costs. This is exacerbated by heavy reliance on diesel generators, which are costly due to rising fuel prices and high carbon emissions.

"Towercos, with 4G and 5G, have seen a rapid increase in the power demanded on their access equipment, requiring more powerful systems," confirms Vertiv's technical director for Africa, Jonathan Duncan. "The additional power security and potential disruption is not acceptable for users. As a consequence, the towerco infrastructure has to become more resilient, with larger energy storage requirements on these edge sites. Along with this, we

see an increase in concurrent deployment of solar systems, where space allows. The nature of this cyclic power requirement further challenges the type of technology we deploy."

Troubles with energy supplies have indeed been amplified by the ongoing expansion of connectivity across the continent. With more users than ever before signing up to 4G/5G services, the demand for more coverage, new infrastructure, and higher quality connectivity requires even more power.

"Due to unreliable grid power, many operators and towercos depend on diesel generators, which are expensive to run and maintain. The fluctuating cost of diesel fuel further exacerbates financial pressures," says Sibongile Thobakgale, project sales manager (data centre) for Southern Africa at Aggreko. "The heavy reliance on these generators leads to frequent maintenance and repair needs, increasing overall operational expenses. Additionally, investing in and maintaining these energy sources can be complex and costly, especially in remote areas. Another challenge faced by network operators and towercos is battery theft. When the batteries are easily accessible, they are often stolen, which means that there is no back-up power in the event of a power outage, which again results in financial losses."

Power outages can also cause considerable network downtime, negatively impacting the reliability of mobile and internet services, resulting in lower customer satisfaction and potential subscriber loss.

"Africa has seen its share of the global energy disruption of network operators over the years, which is a huge challenge," says Nsikak Ekere, communication associate, Bridgia. "Nonetheless, the energy mix provides renewable energy as an alternative, especially in the era of climate change and

green energy. The demand for solar panels is on the increase, and green hydrogen and natural gas (NG) can provide economical, environmentally friendly energy and electricity supply to support data centres, operators, and towercos in delivering consistent, reliable services."

Hampering digital transformation

Without a doubt, Africa's unreliable energy supply continues to hold back digital transformation.

"Reliable energy is a fundamental requirement for the operation of digital infrastructure, including mobile networks, data centres, and internet services," asserts Thobakgale. "Frequent power outages and the inconsistent energy supply make it difficult for network operators and service providers to maintain stable and reliable services. This impacts the quality of internet connectivity, leading to frequent downtimes, slower data speeds, and unreliable service, which in turn hinders the adoption of digital technologies by businesses and consumers."

"Unreliable energy means that Africa sees additional costs with measures taken to mitigate these issues. This means investments are more selective as the ROI models are not always so feasible," adds Duncan.

Ekere reports that, according to the International Energy Agency Electricity Midway Report in July 2024, global electricity demand is anticipated at 4% in 2024, a record high since 2007. Africa's unstable electricity is affecting the QoS, quality of experience (QoE), operational delivery, and the quick ROI of digital transformation by companies.

The International Data Corporation 2023 report shows that Africa has 1MW of power supply and relies heavily on external sources. Africa is far behind when

compared to their counterparts in America (88.5MW), Europe (73.93MW), and Asia (28.68MW).

"Be that as it may, many businesses have found a way to transition and leverage alternative sources of energy supply, particularly compressed natural gas (CNG) and solar energy," says Ekere. "Africa can still succeed with the introduction of innovative energy models and other renewable sources of power supply by commercialising its large natural resource deposits."

"The lack of a stable energy supply affects other critical sectors that are essential for digital transformation, such as education, healthcare, and e-governance. Schools, hospitals, and government institutions require reliable internet and power to implement digital solutions effectively. Without a stable energy foundation, these sectors struggle to leverage digital technologies to improve service delivery and efficiency, thereby slowing down overall socio-economic development," shares Thobakgale.

With not-so-great power comes great responsibility

With digital transformation hindered, and large swathes of the populace being charged a hefty fee for unreliable mobile connectivity, whose responsibility is it to ensure reliable energy supply for wireless communications networks and related infrastructure?

Ekere believes that the government is ultimately responsible for establishing cutting-edge infrastructure that can efficiently provide an affordable system of energy supply for wireless communications.

"However, the internal power supply for infrastructure is largely fuelled by public-private partnerships," says Ekere. "As a result, Africa is attracting international players like Microsoft, Huawei, and Equinix, and this can boost distinctively relevant infrastructures at the national and subnational level for telcos, wireless communication operators, and MNOs. This will facilitate an enabling environment for businesses to thrive. Also, it must put in place clear fiscal policies to address high taxing and multiple taxing, as well as regularly monitor the quality of service (QoS) and quantity of electricity delivery to wireless communications networks."

"Ensuring a reliable energy supply for wireless communications networks and related infrastructure is a shared responsibility among multiple stakeholders, including governments, energy providers, network operators, and towercos," adds Thobakgale. "Governments play a crucial role in establishing and maintaining a stable and efficient energy infrastructure. They must implement policies that promote investment in energy projects, incentivize the use of renewable energy, and ensure a regulatory environment conducive to the development of robust energy systems. Energy providers are responsible for delivering consistent and reliable power, investing in grid improvements, and adopting sustainable energy sources to reduce dependence on fossil fuels."

Duncan, on the other hand, believes that "this responsibility lies with the towercos themselves; however, their business models will mean a higher cost to serve being pushed back onto the consumer; a higher cost per data MB than in other parts of the world. This becomes somewhat of an oxymoron, as

these remote districts with lower income theoretically have the highest cost to serve. Should governments have some co-investment is a question that could be asked, and what about limiting 'profiteering'?"

"Network operators and towercos must also take proactive steps to secure reliable energy supplies for their operations," agrees Thobakgale. "They should invest in alternative energy solutions, such as solar and wind power, to reduce reliance on the often-unreliable grid power. Implementing energy-efficient technologies and infrastructure can minimize power consumption and improve operational efficiency."

Hybrid solutions

Particularly on a continent like Africa with its ample sunshine, balancing sustainability with the need for reliable power should not be an insurmountable task.

Indeed, "operators can meet sustainability goals around energy consumption while ensuring reliable connectivity by investing in renewable energy sources and adopting energy-efficient technologies," says Thobakgale. "By integrating solar and wind power into their energy mix, operators can reduce their dependence on fossil fuels and lower their carbon footprint. For instance, installing solar panels and wind turbines at cell tower sites can provide a steady supply of clean energy, reducing the need for diesel generators. This not only supports sustainability goals but also ensures more reliable connectivity by providing a consistent power source, even in areas with unstable grid power."

Renewable energy is often considered the be all and end all for sustainable power generation. However, when the grid goes down, the best backup power solutions for Africa's towercos and MNOs are hybrid systems, says Thobakgale, which combine renewable energy sources with traditional power generation methods.

"By integrating solar panels with battery storage systems, towercos and MNOs can harness and store solar energy during the day, ensuring a reliable power supply even during outages. Solar energy systems are not only sustainable but also reduce operational costs in the long run by decreasing reliance on expensive diesel generators," says Thobakgale.

"Each situation and geolocation is different, however all should be trying to reduce their carbon emissions, so solar does seem attractive," agrees Duncan. "However, on higher power sites, an availability of a football field sized space for panels may not always be practical. Lithium today seems to be the best energy storage solution due to its power density and high cyclic ability."

"In addition to solar power, hybrid solutions that incorporate wind energy, where feasible, can further enhance the reliability of backup power," adds Thobakgale. "Combining these renewable sources with diesel generators or other traditional power systems can create a robust and flexible energy solution. This approach ensures continuous operation during periods of low sunlight or wind."

A low carbon future

In the absence of a complete, continent-wide overhaul of the power supply, and the desire to

adopt more sustainable practises, Africa's wireless communications industry could well be on the path to a low carbon future.

"The future of Africa's energy has strong potential to be low carbon, driven by the continent's abundant renewable energy resources and increasing investments in sustainable energy projects," says Thobakgale. "Africa is endowed with vast solar and wind resources, making it well-suited for large-scale renewable energy generation. Many countries are already investing in solar farms, wind parks, and other renewable energy projects to diversify their energy mix and reduce reliance on fossil fuels. Technological advancements and decreasing costs of renewable energy technologies are making these options more accessible and economically viable for widespread adoption."

Ekere believes that Africa is on the path of a low-carbon emission future with short term and long-term low emissions strategies (LT-LEDS) and has set an ambitious target both at the AU, ECOWAS, and at some national level through Nationally Determined Contributions (NDCs).

"Africa is significantly adapting and adopting mitigation strategies for climate change and energy-efficient systems," says Ekere. "But currently, the reality is that there's an increase in carbon activities, and Africa needs to reduce mineral and fossil fuel exploitation through resilient actions by the stakeholders. Africa must increase budgetary allocations for climate projects and the enforcement of green policies to achieve net-zero emissions by 2060. Africa also needs more advocacy, innovative research, public-private partnerships, and infrastructural development from the government to drive sustainable development."

"International support and funding are playing crucial roles in accelerating the transition to low-carbon energy. Various global initiatives and partnerships aim to enhance Africa's capacity to develop and implement renewable energy projects," agrees Thobakgale. "For instance, the African Development Bank and other international organisations are providing financial and technical assistance to promote green energy solutions. Governments across Africa are also setting ambitious renewable energy targets and implementing policies to encourage private sector participation in the renewable energy sector. As these efforts continue to gain momentum, the continent is well-positioned to shift towards a low-carbon energy future, fostering sustainable development and mitigating the impacts of climate change."

But how does Africa's wireless communications sector compare with the rest of the world?

"The future of the world is 'lower carbon' paradigm," concludes Duncan. "In Africa, we are a few years behind the rest of the world and in parts of the continent we do have carbon fuel reserves. It seems almost unfair that emerging markets should have to use more expensive energy solutions and ignore those carbon fuels on hand but being part of the 'global village' we are subjected to a dichotomy whereby we need to reduce carbon emissions and yet much of Africa needs development and electrification. However, this type of situation sometimes allows us to leapfrog technologies and adopt the latest and greatest available." ∎

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Meaningful connectivity for every African

The African continent continues to advance along the path towards offering truly meaningful connectivity for every inhabitant…

What is meaningful connectivity?

For a long time, we've been talking about connecting continents, bridging the digital divide, and so on. However, truly meaningful connectivity encompasses so much more than just the physical or digital connection between individuals or entities; it implies a deeper, purposeful interaction that adds value, fosters understanding, and cultivates relationships.

"Connectivity is a fundamental characteristic of what it means to be human," explains Andrew Schafer, CEO, PowerX Technology Ltd. "We are a social species - and the connections we have to our loved ones, our peers and the world beyond our immediate circle defines the nature of our existence. Technology has long played a key role in enriching and extending this connectivity – from cuneiforms on clay tablets, to letters, telephone calls, emails, and now mobile devices. Today, a smartphone can connect you to the vast bulk of accessible knowledge of the human race, and to most humans on the planet.

Having truly meaningful connectivity provides individuals, businesses, and governments with access to reliable, affordable, high-quality internet and telecoms services that enable them to effectively participate in the global digital economy and society.

"For individual consumers, this is access to opportunities, knowledge and services on demand," explains WIOCC Group head of brand and communications, Greg Sellars. "For businesses, meaningful connectivity is a catalyst and is fundamental to success and competitiveness. For governments, meaningful connectivity plays a pivotal role in driving economic growth, fostering social inclusion and enhancing governance."

According to Dobek Pater, director: business development, Africa Analysis, meaningful connectivity needs to fulfil three parameters:

Connectivity – This needs to be sufficient (in terms of throughput, download/upload speed) to allow unhindered use of the connection for range of tasks – work, education, health, other e-government services, leisure, and entertainment. The minimum parameters currently vary, depending on household and individual use, and range from 10-50Mbps download speed. This requirement will be higher in the future.

Data quantity availability – The quantity of data which a person or a household can afford over a period (e.g., a month) must be sufficient to enable the connection for the use in various use cases – work, education, health, e-government services and some leisure use. Currently, the minimum is probably 5-10GB per month and it will increase significantly.

Connection technology – A connection technology offering true broadband-quality services is required. Currently, this is offered by 4G and 5G (mobile or fixed wireless), several other fixed wireless access (FWA)/radio technologies, fibre, DSL, and some of the satellite technologies.

Meaningful internet connectivity provides access to a wealth of information and opens opportunities for education, healthcare, and jobs.

"Take cocoa farmers for example, who before mobile connectivity had to sell their produce to intermediaries and wholesalers without any knowledge of what the cocoa was fetching on the open market (and what margins the go-betweens were carving out for themselves). Now they can do business connected to the cocoa spot price on global commodities exchanges and protect their margins from avaricious middlemen," explains Schafer. "Another example is the ubiquitous adoption of mobile money, an unintended consequence of being able to transfer talk-time from user to user but which has rapidly grown into the de facto method for Africans to transfer funds amongst themselves or pay for goods and services."

But the promise of connectivity is not enough. For these benefits to be truly realised, access to the digital ecosystem requires affordability, reliability, and speed.

"In Africa, this means creating, extending, and in-filling networks to be resilient and cost-effective. Without an infrastructure that delivers appropriate bandwidth, reliable uptime and within manageable OpEx and CapEx cost constraints, tower operators and mobile network operators (MNOs) will be unable to make connectivity practical, meaningful, affordable, or reliable in this vibrant and developing region," asserts Schafer.

Connecting the masses

Achieving meaningful connectivity across a continent as diverse as Africa is no simple task.

"There is no technological magic bullet that will immediately deliver meaningful connectivity to every African," opines Schafer. "Instead, the expansion of

FEATURE: CONNECTIVITY

digital services into new regions will come from efficient enterprises delivering a mixture of technologies dependant on geography, population density, infrastructure availability, and cost-effectiveness."

There is a range of access technologies which can fulfil the requirements, which coexist and compete with each other, depending on the localisation.

"The different technologies are also suitable for different types of user behaviour. In areas where they compete, they provide a choice of connectivity with competing price and other characteristics, allowing users to buy services delivered by technologies that best suit their particular needs," says Pater. "For example, fibre offers the best quality of connectivity for a person or a household that uses it for work, education and entertainment from a single location, while 5G would be more suitable for someone who needs connectivity in more than one location or on the go."

Africa is a mobile-first continent, and even with expansion of fixed connectivity, large segments of society will continue to use mobile. Just 36% of Africans are connected today, implying lack of mobile connectivity access, awareness of its benefits, and affordability of handsets and mobile contracts.

"For most users in Africa, cellular networks are the go-to gateway for access to each other and the wider world, delivering high-speed internet, voice, data, and multimedia," shares Schafer. "With an estimated 208,000 cell towers across the continent, expected to rise to 261,000 by 2029, cellular networks are continuously growing and evolving to meet increasing demand for data, coverage, and capacity."

Today, "satellite is important for the provision of meaningful connectivity in very remote locations," adds Pater. "However, with the expansion of LEO services, the importance and prevalence of satellite for broadband connectivity will likely grow in Africa. From a monthly premium perspective, Starlink, for instance, is price-competitive with many fibre or FWA services in Africa, while the upfront cost is also decreasing. From a performance perspective, LEO is also very competitive with a number of terrestrial broadband technologies."

Schafer reports that, for those in urban areas, fibre promises the fastest and most reliable internet connection available - with high-speed, low latency broadband capable of delivering gigabit-speed internet. However, despite being the gold-standard in speed and

bandwidth, fibre infrastructure is expensive to roll-out, requires substantial time and labour to deploy, and is vulnerable to breakages and theft, making it unsuitable for the expansive terrain, challenging transport and utility infrastructure, and dispersed populations of the African continent outside of urban centres.

If it's rapid deployment that's needed, meanwhile, "FWA has gained popularity in recent years, using a network of antennas and radio signals to deliver high-speed connectivity at a lower cost," says Schafer. "FWA has some technical constraints however including line-of-sight limitations due to obstructions, frequency overlap with other networks, and impacts from harsh weather."

Cooperation is key

As beautifully exampled following the March 2024 cable cuts and subsequent rapid reconnection of the populace, when it comes to effectively connecting an entire continent, cooperation is key.

"Operators should cooperate where necessary, e.g., limit overbuild in the case of terrestrial infrastructure which can be shared (such as fibre)," says Pater. "This would allow them to use the CapEx not wasted on network duplication to expand into areas of lower profitability. To this extent, the government can also play a role by forcing operators to build in certain areas of the country only and then share infrastructure to provide services nationally. This can be done as a spectrum assignment condition, for instance."

Schafer agrees that "the most significant contributions to delivering meaningful connectivity come from investment in infrastructure, improving quality of service and making digital connectivity affordable. Investment is essential for expanding coverage and improving the quality and reliability of connectivity across the continent, and this is one area where Africa is uniquely positioned to raise the bar. As mature markets struggle to retrofit existing towers with recent technology, often on sites constrained by physical limitations, African TowerCos and MNOS have an opportunity to leapfrog with investment in new towers that employ the very latest passive and active equipment. This will deliver innovative mobile services with resilient, cost-effective power solutions designed and optimised to meet the challenges of Africa's diverse terrain, climate, and grid issues."

Fully planning out new sites is crucial to deploy networks that really work for every African. Further, the expansion of footprints with new towers can also have an additional impact on remote communities with no grid access, says Schafer: power systems installed for a cell tower can be provisioned to support a level of local community power access, having an even greater impact on the communities they serve through the creation of mini grids.

They say that 'it takes a village' to raise a child; but it also takes a village to connect Africa's unconnected: "operators and service providers can seek out suppliers of lower-priced end-user devices, such as mobile handsets, routers, other customer premises equipment. This would lower the barrier to entry for a segment of the consumer and business markets, ensuring higher adoption rates and greater revenues for the operators and service providers," says Pater.

Operators and service providers can also innovate

their business models to reduce operating costs to make meaningful connectivity more affordable through lower total cost of ownership; and structure the products to be more in line with economic characteristics of the users, such as selling connectivity in bite-size chunks in a cash-based, informal segment of the market, where income is irregular. This is particularly important in lower income regions of Africa, reports Pater.

Moreover, "operators and service providers who are able to afford it financially can provide free connectivity services to certain institutions, such as schools, particularly those that may struggle to pay for such services," adds Pater. "This can be considered part of the operators' corporate social responsibility and would contribute to greater use of meaningful connectivity and enable digital education of segments of the society."

Trials and tribulations

In the search for meaningful connectivity, price competition becomes a tricky balancing act. While in and of itself, competition seems positive for consumers by rendering premium products more affordable – for example, high quality fixed broadband, once a premium product for Africa, is well on its way to becoming a commodity, which benefits operators who gain an expanded customer base and higher revenues – it also causes certain problems.

"This has taken place in South Africa, in the FTTx market," highlights Pater. "Operators and service providers try to gain market share by competing on price. This takes the value out of the market for everyone, including potentially the users of services, if an operator or a service provider goes bankrupt due to unsustainable price competition."

Service providers must therefore become technology service providers, not only connectivity providers, to generate higher revenues and profit margins, asserts Pater. This would alleviate the need to maximise revenue from connectivity only; and diversify the revenue stream to make operations more sustainable.

Schafer, meanwhile, warns that where well-intentioned network expansion and related investments do not fully deliver on their potential, this results in higher energy and maintenance costs than expected, as well as under-utilised assets and sub-optimal renewable yields.

"Often this is a product of the, 'if it isn't broken, why fix it?' mindset, where TowerCos and MNOs don't have a view of inefficiencies or optimisation potential, letting CapEx, OpEx and revenue opportunities go unnoticed and unrealised," explains Schafer. "The inadvertent consequences are increased operating and maintenance costs that subsequently end up being passed down to consumers, pricing services out of reach for low-income populations and exacerbating the digital divide."

Connecting Africa (meaningfully) – when, not if

The future of connectivity hangs in the balance. Ensuring that every single African has access to truly meaningful connectivity, and the ability to participate in the global economy (if they so wish), is the very definition of an ambitious target.

"This is a goal that should be actively pursued given

Andrew Schafer

the tremendous benefits it unlocks. Some estimates suggest that significant improvements could be achieved within the next decade, but full coverage may take longer, possibly several decades," shares Schafer. "It will require a concerted effort from governments, the private sector, and the international community to overcome the existing challenges and bridge the digital divide across the continent. Considering this, I think it's a question of when, not if, every African is truly, meaningfully connected."

"It may take another 15-20 years, and this could be an optimistic scenario when we consider the entire continent. The ability to connect all Africans meaningfully is a function of a number of factors which will determine how quickly or slowly we achieve meaningful connectivity," warns Pater.

Such factors include affordability, which is dictated by the price of service vs. disposable income; as well as the upfront price of connectivity, as high costs may create a barrier to entry. Meanwhile, useful services and use cases will help drive adoption and must comprise local content; here, the government can play a key role by pushing e-government services.

To really bring meaningful connectivity to the African populace, enabling infrastructure must be available in all inhabited areas. However, operators are unlikely to deploy such infrastructure if it won't generate an expected return on investment (RoI), explains Pater. This may be problematic in low-income areas, which is where government assistance and public-private partnerships become important. The government can also set certain obligations on the operators to enable meaningful connectivity in under-served areas.

"Whilst factors such as policy and regulatory frameworks, international cooperation, digital inclusion initiatives and public-private partnerships all play their part in improving connectivity in Africa, the heart of the issue is the rollout and subsequent management of infrastructure," agrees Schafer. "The speed with which MNOs and TowerCos can extend the reach of their networks depends on the delicate balance between their revenues from new and existing customers and the cost of running and maintaining their networks. Building new towers and in-filling for 5G requires considerable CapEx, and so the more efficiently and cost-effectively they can operate their networks, the more they can direct financial resources into the expansion of their infrastructure."

"Digitalisation and the application of advanced data science (including ML/AI) to achieve networks optimised for power and maintenance is part of

Africa's future telecom growth strategy," adds Schafer. "This minimises energy and maintenance OpEx, improves asset performance and drives up employee productivity in managing expanding networks. By achieving these efficiencies, the objectives of reliable, cost-effective tower operations can be realised, and data science becomes a key enabler in delivering the vision of widely accessible, meaningful connectivity across the African continent."

"Government intervention/assistance is required to ensure that unprofitable areas of a country also have high-quality digital infrastructure available and those least able to afford meaningful connectivity are able to do so," asserts Pater. "This can be in the form of

subsidies for infrastructure deployment and/or for services provision. However, an important role that the government can play is to enable and support (through policy, legislation, and regulation) a competitive environment for the provision of connectivity and related infrastructure and services."

The key, according to Pater, is to ensure that various state and private institutions have high-quality broadband connectivity as soon as possible. Schools are one example, allowing individuals access to connectivity meaningfully even if it is not yet available in the household or individually.

Will Africa ever be meaningfully connected? It seems so, but there's a long road ahead… ∎

AI: reshaping the telecommunications landscape

This year's hot topic is seeing AI integrated into telecommunications left, right and centre to advance operative effectiveness, improve customer experience and cut costs. Samit Banerjee, division president, Amdocs cloud operations and customer services, advises operators to consider how, when and why, to ensure seamless and successful AI integration…

AI is profoundly reshaping telecommunications by leveraging technologies like machine learning (ML), automation, natural language processing, and predictive analytics. These advancements enable real-time data analysis for network optimisation, predictive maintenance, and proactive issue resolution, leading to improved efficiency, reliability, and reduced costs.

Generative AI (GenAI), a subset of AI, is further enhancing the sector by offering deep insights into customer behaviour, enabling highly personalised services that boost satisfaction and loyalty. GenAI-driven applications (such as chatbots) improve customer support with accurate, context-aware responses, while its predictive capabilities enhance network performance and targeted marketing. Overall, AI and GenAI are revolutionising telecommunications by optimising operations, enhancing customer experiences, and driving revenue growth through advanced data analysis and automation.

Despite its potential, implementing GenAI effectively requires high-quality data and skilled personnel, alongside addressing technical, legal, and governance challenges. Ensuring data quality, privacy, and robust governance are essential. And while GenAI technologies are advancing rapidly, many communication service providers (CSPs) are struggling to keep pace, as it is time and cost consuming to build their own GenAI platform.

Helping the operators

AI can play a significant role in helping mobile network operators (MNOs) address various day-to-day challenges.

When it comes to taking on the competition, AI can assist in analysing customer data, preferences, and behaviour patterns, enabling MNOs to offer personalised services, targeted promotions, and tailored pricing plans to retain customers and attract new ones. Moreover, predictive analytics can help identify potential customer churn risks and proactively take measures to address them, such as offering incentives or improving service quality.

Churn, a common challenge for MNOs the world over, can also be effectively addressed. Indeed, AI and machine learning models can analyse vast amounts of customer data, including usage patterns, complaints, and interactions with customer service, to identify potential churn indicators and predict customers at risk of switching providers. Based on these insights, MNOs can implement targeted retention strategies, such as personalised offers, improved customer service, or addressing specific pain points. Additionally, AI-powered chatbots and virtual assistants can provide personalised support and address customer queries more efficiently, improving overall customer satisfaction and reducing churn.

In combatting and fighting back against fraud, AI and machine learning algorithms can detect anomalies and patterns indicative of fraudulent activities, such as suspicious call patterns, unauthorised access attempts, or unusual data usage. Real-time fraud detection systems powered by AI can block or flag suspicious activities, preventing financial losses and protecting MNOs from various types of fraud, including subscription fraud, call fraud, and SIM box fraud.

Sustainability, an expanding topic of import for operators everywhere, can also be aided with AI. Energy optimisation techniques can help MNOs reduce energy consumption and carbon footprints by optimising network infrastructure, adjusting resource allocation based on demand, and identifying potential energy savings opportunities; while predictive maintenance powered by AI can detect potential equipment failures or degradation, enabling proactive maintenance and reducing the need for resource-intensive replacements or repairs.

By leveraging AI and its various applications, MNOs can gain valuable insights, optimise operations, enhance customer experiences, and improve overall efficiency, ultimately addressing network challenges more effectively.

Making money

With average revenue per user (ARPU) stalling for many mobile network operators, new ideas for monetisation are coming to the forefront – and telcos can leverage the power of AI to unlock new

> "By leveraging AI and its various applications, MNOs can gain valuable insights, optimise operations, enhance customer experiences, and improve overall efficiency, ultimately addressing network challenges more effectively."

revenue streams.

One key area is personalisation, where AI can analyse vast amounts of customer data, including usage patterns, preferences, and behaviour to create highly tailored offerings and targeted marketing campaigns. By delivering services, pricing plans, and promotions tailored

to individual customer needs, telcos can enhance customer satisfaction, increase revenue, and reduce churn.

One of the more impactful use cases is reducing average handle time (AHT) in call centres and repetitive calls. This can show immediate ROI from business and workforce perspective. Such use cases result in improved customer experience, decreased operations costs, latency enhancements, and accuracy improvements. Indeed, the path forward with monetising with AI around the care domains is analysing the interactions of customers with call centres and providing means to refrain the calls from coming to the call centre in advance.

AI-driven network optimisation can help telcos efficiently manage their infrastructure, allocate resources more effectively, and reduce operational costs. By leveraging AI for predictive maintenance, fault detection, and automated network management, telcos can minimise downtime, improve service quality, and optimise their overall operational efficiency, leading to cost savings and potential revenue growth. AI can also enable telcos to develop innovative services and business models, particularly in areas such as 5G and IoT. Companies are assisting telcos in monetising 5G and IoT use cases in sectors like logistics, healthcare, and connected devices. Here, AI can facilitate real-time monitoring, predictive analytics, and intelligent automation, enabling telcos to offer new value-added services to enterprises and consumers.

Overall, AI-powered agents, virtual assistants and predictive maintenance capabilities can significantly improve customer experience, leading to increased customer loyalty and reduced churn, contributing to revenue growth. With the advent of 5G and IoT, CSPs can leverage AI to offer intelligent edge computing and IoT services, processing and analysing data at the edge to provide real-time insights, predictive maintenance, and optimised services to enterprises. By embracing AI capabilities, CSPs can unlock new revenue streams through innovative services, personalised offerings, and data-driven business models, positioning themselves as key players in the digital economy.

Starting the journey

While the adoption of AI can bring significant benefits to MNOs, several factors may be holding back some operators from fully embracing this technology to improve their business strategies.

One significant barrier is the high initial investment required for AI infrastructure and skilled personnel, which can be prohibitive, especially for smaller operators. There is a lack of high-quality, clean data essential for training effective AI models, often compounded by data privacy and security concerns. The complexity of integrating AI into existing systems and workflows poses another challenge, requiring substantial changes to operational processes. The regulatory and governance issues, including

compliance with evolving laws and standards, add an additional layer of complexity, making it difficult for MNOs to navigate the AI adoption process effectively.

Overcoming these barriers requires a strategic approach, such as investing in data management, upskilling employees, addressing cultural resistance, and carefully evaluating the potential risks and rewards of AI adoption, enabling MNOs to leverage the power of AI to improve their business strategies and remain competitive in the evolving telecom landscape.

Key factors to consider

Before integrating AI into their networks, operators should consider several crucial factors to ensure successful implementation and operation.

1. **Data quality and management:** High-quality, comprehensive data is essential for training effective AI models. Operators must ensure they have access to accurate, up-to-date, and relevant data, and employ proper data management practices.

2. **Security:** AI integration can introduce new security vulnerabilities. Robust cybersecurity measures are necessary to protect sensitive data and prevent unauthorised access. Continuous monitoring and updating of security protocols are essential.

3. **Scalability:** AI solutions should be scalable to handle increasing amounts

of data and network traffic. Choosing AI platforms that can grow with network demands ensures consistent performance.

4. **Interoperability:** Ensuring seamless integration of AI systems with existing infrastructure is critical. Operators should select AI solutions compatible with their current hardware and software to avoid complex integration processes.

5. **Skill set and training:** Skilled personnel who understand both AI technology and telecommunications are vital. Investing in training or hiring experts is necessary for effective AI management.

6. **Regulatory compliance:** Adhering to local and international regulations regarding data privacy and AI usage is crucial. Compliance with laws like GDPR or CCPA helps avoid legal issues and maintain customer trust.

7. **Cost considerations:** Implementing AI involves significant costs. Operators should conduct a thorough cost-benefit analysis to ensure the investment delivers tangible returns.

By addressing these considerations, operators can effectively integrate AI into their networks, enhancing operational efficiency, improving customer experiences, and maintaining a competitive edge in the telecommunications industry. ■

Debmarine Namibia gains ship-to-shore critical communications

Debmarine Namibia, a joint venture owned by the government of the Republic of Namibia and De Beers, mines in the offshore mining licence area off the southern coast of the country, some 90-150m below sea level. The company's vessels mine diamonds from the ocean floor using advanced drill technology supported with sophisticated tracking, positioning and surveying equipment.

A new vessel

Debmarine Namibia commissioned a new N$7 billion custom-built vessel to expand annual production by around 45% with an additional 500,000 carats of high value diamond. The new Benguela Gem vessel was fitted out with proprietary mission equipment by De Beers Marine South Africa.

Taking two years to construct, it was the most technically advanced diamond recovery vessel in the world, underpinned by high standards of sustainability and safety performance. The vessel combines the latest technology and a fully integrated design to achieve unrivalled efficiency, reliability and accuracy. A state-of-the-art dynamic positioning system automatically optimises the vessel's performance in changing weather conditions to minimise energy use. It also generates its own fresh water using heat recovery systems and a reverse osmosis plant.

The vessel was communicating to shore using a Line-of-Sight (LOS) system which had become obsolete since its 2022 launch, offering throughput of less than 25Mbps. The growing need for information to be transferred from the vessel to shore caused the client to investigate more efficient and cost-effective technologies. Indeed, the MV Benguela Gem required a communication system to provide a bi-directional IP (data and video) feed between the shore and the vessel.

Ship to shore

Ceragon's PointLink Access was identified as one such technology that could amp up essential ship to shore communications.

The marine-grade Point to Point (PtP) and Point to Multi Point (PtMP) connectivity system provides a secured, high capacity, low latency solution, enabling offshore and maritime operations. It integrates highly reliable microwave equipment with customised antenna stabilisation technologies as well as resilient paths and topologies to provide high reliability.

The PointLink Access enables effective communication to smaller vessels and mobile users, with communication based on technologies like LTE/4G in licensed frequency bands, WiFi in unlicensed bands and microwave links in both licensed and unlicensed bands. Following the installation by Altron Nexus, the Benguela Gem gained high-capacity connections with more than 50Mbps full duplex speeds to a maximum distance of 80km, and with less than 1ms link availability for minimum capacity and maximum distance better than 99%. Link availability for 200Mbps and 40km distance was also better than 99.99%.

The compact lightweight design saved valuable deck-space on board the Benguela Gem, and with a total weight of approximately 25kg including data modem, antenna and 60cm radome, the system was easy to install. Software controls the orientation of the directional antenna, securing optimal link margin in systems deployed on moving vessels and platforms. The system features automatic switchover between sectors in a multi-sector system, and automatic multi-homing in a distributed base station network.

Dual axis actuators compensate for pitch & roll motions up to +80/-30 degrees, with the help of motion sensors. Combined with accurate heading information from the GPS compass, the system ensures a unique pointing accuracy even under highly dynamic conditions.

Each microwave connection consists of a dedicated onshore PointLink antenna system. On the vessel, a dual PointLink antenna system is required, which enables true 360-degree connectivity between the vessel and the ground station at Kerbehuk. A high power RFU-D-HP radio is connected to the microwave radio antenna which has 35db (4&5GHz) / 37dB (6/7GHz) output power and a covered radome to protect both microwave and internal stabilisation systems. This proposed configuration is for very long links over the sea and in areas with difficult propagation conditions.

The link will benefit from small frequency diversity improvements by using two separate frequency carriers/connection from one dual core radio. Both carriers have the capacity to support modulations from QPSK – 4096 QAM. The available capacity and modulation schemes are limited by capacity activation keys. Current considered modulations are from BPSK to 32 QAM to deliver up to 100Mbps per carrier; however, 200Mbps capacity is possible with both radios having both cores activated running in an MC ABC configuration.

Supporting the Namibian economy

With the richest known marine diamond deposits in the world and being among the top 10 country producers of gem quality diamonds globally, Debmarine Namibia can now continue to support the Namibian economy with its lucrative diamond mining activities, supported by the most modern wireless communications capabilities available. ■

Last mile wireless connectivity at Bathopele Mine

The Bathopele Mine, run by Sibanye-Stillwater, is located in the north-western part of South Africa in Rustenburg. It represents one of the largest platinum reserves in South Africa having estimated reserves of 5.3 million oz of platinum and an annual production capacity of 120,000oz.

A key enabler for digitalisation in underground mining is securing mine-wide, robust and resilient broadband wireless connectivity. Such digital infrastructure must operate and be maintained in a harsh environment. While legacy fibre installations are established and commonplace, these are generally terminated with a network switch at level access or waiting places with limited connectivity available up to the last mile. Without connectivity in the last mile, there is limited opportunity to receive and trend real-time data for asset and personnel intelligence and optimisation.

To remedy this, Dwyka Mining Services (DMS) partnered with Sibanye-Stillwater to roll out a proof of concept (POC) underground network to secure and extend its capability to aggregate real-time data in an active section at the Bathopele Mine.

Taking out the guess work

The primary goal was to establish an easily maintainable and extendable broadband wireless network with high up-time availability to ensure agreed levels of 802.11n wireless coverage in each working panel.

Success for this goal involved ensuring data rate and range were managed and optimised to rapidly upload real-time data across multiple underground WiFi enabled devices. The second goal was to provide a last mile backbone to connect the IOT.nxt Raptor hardware and enable the cloud-based Commander IoT visualisation software to visualise real-time trackless mobile machinery (TMM) availability, alarms and other mission critical sensor data whilst active at the face. Success could only be achieved by a stable wireless network with broadband coverage into the active working panels for data transfer.

Maestro Digital Mine's Plexus PowerNet was identified as a potential solution to provide high broadband connectivity into each working panel. Indeed, Plexus PowerNet would address two primary challenges. It would allow for the establishment and extension of wireless connectivity from the belt tip to the working face by connecting and powering strategically positioned 802.11n wireless access points (WAP's) from terminating nodes installed less than 40m from the face with min-ready, high-gain antennas to extend coverage into each panel as well as along TMM tramming routes. Moreover, since fibre splicing underground can be complex with humidity, dust and concussion in mining locations, Plexus PowerNet would enable pre-terminated connections as the tip advances for backhaul for increased installation flexibility and greater data integrity - as a ruggedised alternative to the requirement of irregular fibre splicing performed underground.

As a global first, site survey technology was utilised underground to take the guess work out of network design. These heatmaps were utilised to dynamically design and optimise the positioning of the WAP locations and antennas for maximum WiFi coverage. This wireless coverage confirmed wireless network parameters and maximised time 'in-range' for IOT.nxt Raptor units to 'offload' telemetry data operating at the face and along designated tramming routes. Stable coverage would allow for a real-time view of asset overall effectiveness, with the opportunity to gain deeper insight by trending historical data computed at the edge and stored in the cloud.

High speed, last mile broadband

Maestro Digital Mine's Plexus PowerNet was successful in providing high speed broadband connectivity into each working panel. This secured a robust and resilient broadband wireless connectivity and communication network to the mine last mile that allowed both human and machine to connect and communicate in arguably the highest risk and cost environment of the mine.

"Dwyka Mining Services has demonstrated it has the capabilities to deliver on its promises and exceed expectation," said Alex Fenn, Sibanye-Stillwater innovation head. "This proof of concept has proven that dependable connectivity is possible in the last mile and we are excited about pushing the technology further to expand its capabilities through the addition of other technologies that enhance our understanding and effective management of our operations."

Real-time network visualisation on IOT.nxt Commander and regular underground network surveys confirmed the quality of wireless coverage and up-time diagnostics of connected TMM assets. This data allowed for workflow and operator analyses that highlighted valuable optimisation opportunities for the company to consider.

"Real-time data from our machines allowed us to unlock considerable asset and operator value. Empowered with this real-time data and ability to trend it historically from our mixed fleet, it is difficult to imagine not having this information at our fingertips going forward, so we see a bright future for this technology augmenting our team's effort as we mine deeper and try to do so more safely," said Carlo van Rensburg, mine manager, Bathopele East Shaft. ∎

Qualcomm QCC730 micro-power WiFi system

Qualcomm Technologies, Inc. has launched the Qualcomm® QCC730, a micro-power WiFi system for IoT connectivity.

This technological breakthrough provides up to 88% lower power than previous generations and can revolutionize products in battery powered industrial, commercial and consumer applications. QCC730 will be complemented with an open-source IDE and SDK that supports cloud connectivity offloading for ease of development. Its versatility empowers developers to implement QCC730 as a high-performance alternative to Bluetooth® IoT applications for flexible design and direct cloud connectivity.

"Complementing high-performance, low-latency wireless connectivity solutions, Qualcomm QCC730 SoC is an industry-leading micro-powered Wi-Fi solution enabling WiFi for the world of battery powered IoT platforms. QCC730 enables devices to support TCP/IP networking capabilities while remaining form-factor and complete wireless constrained, whilst remaining connected to the Cloud platforms," said Rahul Patel, group general manager, connectivity, broadband and networking (CBN), Qualcomm Technologies, Inc. "Along with the rest of the our IoT connectivity portfolio, this new offering places Qualcomm Technologies at the centre of next generation battery-powered smart-home, healthcare, gaming and other consumer electronic devices, and reflects on our commitment to utilize our decades of R&D to pioneer new user consumer experiences."
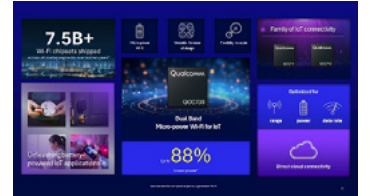
HPE Aruba Networking Enterprise Private 5G simplifies deployment

Hewlett Packard Enterprise has introduced HPE Aruba Networking Enterprise Private 5G to help customers accelerate and simplify the deployment and management of private 5G networks, providing high levels of reliable wireless coverage across large campus and industrial environments and opening new, untapped use cases for private cellular.

With this expansion of its secure edge-to-cloud portfolio, HPE Aruba Networking becomes the only global enterprise infrastructure vendor to provide comprehensive WiFi and private 5G solutions, helping customers in industries such as manufacturing, healthcare, public venues, and education solve complex connectivity challenges across large and remote sites. HPE Aruba Networking Enterprise Private 5G also helps customers make productivity and innovation gains as a complement to the cost-effective, high-capacity connectivity provided by WiFi, in addition to expanding AI data capture and delivery capabilities for building AI data lakes and activating inference solutions.

HPE Aruba Networking Enterprise Private 5G also enables communications service providers (CSPs) to quickly deploy private 5G networks for their customers. This integrated private 5G solution complements existing WiFi-based managed services and will help telco customers service the growing private cellular market and generate new revenue from their existing enterprise customers.

With the debut of HPE Aruba Networking Enterprise Private 5G, enterprises can increase reliable, secure, high-performance connectivity with a fully integrated private 5G network.

Radio-over-fibre for affordable mm-wave networks for Beyond 5G/6G

NEC Corporation has successfully developed and demonstrated a radio-over-fibre system with a 1-bit fibre transmission method making it possible to affordably build stable millimetre-wave communication networks for Beyond 5G/6G.

With this method, high-frequency analogue signals can be transmitted using an inexpensive electrical-to-optical converter for general-purpose digital communications, enabling the realisation of a compact distributed antenna unit at low cost.

As a result, a stable millimetre-wave communication environment can be inexpensively achieved in high-rise buildings, underground malls, factories, railways, indoor facilities, and other obstacle-laden environments.

High-speed wireless communications leveraging millimetre-wave technology are expected to be a key technology for Beyond 5G/6G. Moreover, since 80% of mobile communication traffic occurs indoors, millimetre-wave is being considered as an indoor solution.

However, since there is significant propagation loss and high linearity in the millimeter-wave frequency band, it is imperative to ensure line of sight between base stations and terminals to achieve sufficient quality of service (QoS). While dense installation of distributed antenna units (DA) for direct transmission and reception of data with terminals and avoiding obstacles is known to be effective in resolving these issues, the size, power consumption, and cost of installing the required number of DA have proven to be major issues.

To overcome these issues, NEC developed a radio-over-fiber system (RoF) and a related transmission method which enables inexpensively building stable millimetre-wave communication networks in high-rise buildings, underground malls, factories, railways, indoor facilities, and other obstacle-laden environments. It will therefore promote the uptake of high-speed and large-capacity communications using millimetre waves for Beyond 5G/6G.

Reliable and robust NB-IoT with resilient geolocation from STMicroelectronics

STMicroelectronics has licensed and deployed the Ceva-Waves Dragonfly NB-IoT platform in its recently introduced ST87M01 ultra-compact and low-power modules.
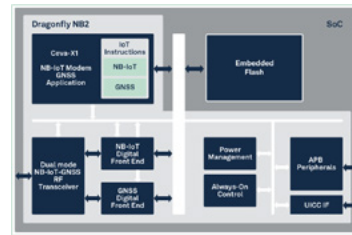
The combination provides highly reliable and robust NB-IoT data communication with accurate and resilient GNSS geo-location capability for IoT devices and assets.

Ceva's Cellular IoT IP platform powers STMicroelectronics' ST87M01 cellular IoT modules that are intended for a wide range of IoT applications including smart meters, smart grid, smart buildings, smart cities and smart infrastructure applications, as well as industrial condition monitoring and factory automation, smart agriculture and environmental monitoring. It is also suited to tracking applications with its accurate and resilient GNSS geo-location capability.

The Ceva-Waves Dragonfly platform integrates a Ceva-BX1 processor, an optimised RF Transceiver, baseband, and a protocol stack to offer a complete Release 15 Cat-NB2 modem IP solution that lowers entry barriers.

"We are proud to collaborate closely with STMicroelectronics and empower them to push the boundaries of cellular IoT performance and power efficiency with our complete Release 15 Cat-NB2 modem IP solution. The very impressive ST87M01 NB-IoT/GNSS module is tailored to the demanding requirements of the industrial market and we look forward to seeing the module successfully deployed in the field," said Tal Shalev, vice president and general manager, wireless IoT business unit at Ceva.

The Ceva-Waves Dragonfly is a complete eNB-IoT IP platform that can serve a wide range of applications. It is a fully software-configurable solution that can be extended with multi-constellation GNSS and sensor fusion functionality and includes a reference silicon of the complete modem design, including an embedded CMOS RF transceiver, an advanced digital front-end, physical layer firmware, and a protocol stack (MAC, RLC, PDCP, RRC, and NAS).

altGNSSSM GEO SecureTimeSM offer nanoseconds-accurate UTC timing via L and Ku-bands

Viavi Solutions Inc. has launched altGNSSSM GEO SecureTimeSM services that deliver nanoseconds-accurate UTC timing via L-band and Ku-band satellite signals for critical infrastructure including 5G networks, transportation, data centres, smart grid, high-frequency trading, military and first responder communications, and satellite terminals.

Operating completely independently of traditional GPS and GNSS, VIAVI's altGNSS GEO service is extremely difficult to jam or spoof and leads the industry with the broadest global coverage, further improving resistance to attacks on the rise.

SecureTime adds to its portfolio of solutions for resilient PNT, and features Navigation Message Authentication (NMA) which uses encryption to detect spoofing in any of the signals received from all sources – including GPS that does not support NMA. It builds on VIAVI's existing multisource assurance, combining signals from government and commercial constellations across geosynchronous orbit (GEO), low Earth orbit (LEO) and medium Earth orbit (MEO).

These services have been tested and proven in live-sky battlefield scenarios including successfully providing assured PNT in a simulated warzone with complete denial of GPS and GNSS services.

VIAVI will integrate these services in its own products while also providing receivers for third-party solution providers desiring to leverage the altGNSS services in their own systems.

"Critical infrastructure around the globe is increasingly susceptible to PNT disruption, but that is even more apparent in theaters of war," said Doug Russell, senior vice president, AvComm, VIAVI. "Our SecureTime services have steadily built up an unsurpassed capability to protect timing in critical networks, independent of any one source or frequency band."

Sea Tel 370s TV antenna brings TV to the sea

Designed primarily for use on cruise ships and mega yachts, Cobham Satcom's Sea Tel 370s TV 3.7m antenna is a groundbreaking solution designed to expand onboard access to the highest quality programming anywhere in the world, while significantly reducing lifetime technical costs.

Leveraging the newest generation Sea Tel Integrated Marine Electronics (IMA) platform, which is already proven in the world's most flexible and powerful marine VSAT antenna systems, Sea Tel 370s TV helps unlock several advantages for cruise and yacht charter companies by automating the manual processes that have until now been needed to make some of the most popular television channels available globally at sea.

Cobham Satcom's new TVRO antenna features automatic C-band switching between circular and linear polarisation, ensuring uninterrupted viewing and continuous availability of live television such as ESPN, one of the most popular cruise ship channels.

Securing quantum communications

The Paris Region Quantum Communication Infrastructure (QCI) consortium has implemented its first quantum communication network in existing fibre infrastructure.

Equipment related to quantum communications is expensive. To secure a link of less than 100km on a dedicated fibre, it takes approximately €180,000-250,000 just for a quantum key distribution (QKD) system. Accordingly, as part of the project, the consortium started with fibres already deployed by Orange France, some active and others dark.

The partners carried out measurements of optical losses by sending packets of photons into the fibre and characterising their round trips. Then they deployed a quantum communication system, developed by ID Quantique (IDQ), defined a 'seamless' network architecture, added a service layer, and implemented an encryption system that Thales adapted.

Quantum Key Distribution (QKD) was implemented on the infrastructure backbone with relays secured by post-quantum cryptography (PQC) to cover an extended distance range in Orange's fibre network. The solution combines IDQ's commercial Cerberis XG QKD system with embedded Clarion KX software suite (Key Management System), CryptoNext's Quantum Safe Library (C-QSL) and classical symmetric cryptography.

PQC is the next generation of public key cryptography designed to be resistant to quantum computer attacks. In this setup, QKD provides unbreakable key exchange between remote encryption systems, while PQC guarantees relays security in large scale QKD network deployment.

The quantum fibre network has a range of around 80km. It interconnects several quantum nodes which are represented by the project partners, from the Saclay plateau (Thales, Institut d'Optique, Télécom Paris) to the LIP6 Sorbonne Université laboratory in the center of Paris, via the Orange Gardens site in Châtillon.

The consortium has demonstrated that for the application of a QKD technology, using or reusing already deployed commercial fibre infrastructures is possible. This represents a huge step forward in the realisation of secure quantum communications – for both wired and wireless applications.

Telecentro modernises network with cOS broadband platform from Harmonic

Telecentro has selected the cOS broadband platform from Harmonic to modernise its network.

The cOS virtualised core software and versatile edge devices will maximise Telecentro's investment in DOCSIS 3.1 networks, enabling reliable, high-speed internet services for its residential and corporate subscribers.

Telecentro will deploy Harmonic's cOS virtualised software in a distributed access architecture (DAA). Harmonic's Pebble Remote PHY (physical radio frequency layer) device will be deployed with its Ripple modular DAA node, as well as with the Raft adapter that instantly enables DAA capabilities in Telecentro's existing nodes. Harmonic's cOS Central service will also feed Telecentro with real-time and high-volume data to improve network visibility and foster proactive issue resolution.

"With the cOS platform, we will be able to swiftly increase the capacity of our internet services, enhance service reliability, and reduce operational expenses, including power, space and cooling costs. Additionally, it will provide better observability of the network's status," said Juan Luna, chief technology and information officer at Telecentro.

WA Police Force supports domestic violence victims with mobile app

Western Australia Police Force (WA Police Force) is helping its front-line police officers provide better support for victims of family violence through a smart mobile application from Motorola Solutions.

The application, PSCore, has been expanded to enable officers to record a wider variety of incidents from the field and automatically alerts partner agencies and support services when family violence reports are submitted.

"When police officers respond to an incident, they need accurate and relevant information to inform their decisions while keeping themselves and community members safe," said Superintendent Dean Snashall, Technology Portfolio, WA Police Force. "The addition of a new family violence reporting capability is another way this mobile application helps our officers to respond to different kinds of incidents."

By supporting WA Police Force officers with a risk assessment framework and a summary of the family violence history of offences, Motorola Solutions' PSCore application has enabled noteworthy improvements in compliance levels and workflows for all family violence reports.

The application integrates critical operational information from multiple systems, presenting it through a single, intuitive interface. Deployed across WA Police Force's entire fleet of 6,500 mobile devices, the solution represents a key part of its digital policing strategy to leverage technology to improve productivity, incident awareness and safety for officers and the public alike.

"By providing access to critical back-end databases including computer aided dispatch and records systems, our smart mobile applications help front-line personnel to complete key operational tasks from wherever they are, allowing them to work with greater focus, accuracy and speed," said Con Balaskas, managing director for Australia and New Zealand, Motorola Solutions.

China Tower renews new deals with China Telecom and China Unicom

China Tower has renewed multi-year framework deals with China Telecom and China Unicom to prepare for an expected surge in demand for IoT monitoring data and data analysis services related to its Smart Tower business segment.
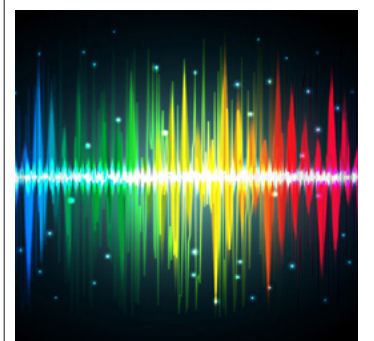
In both deals, the new frameworks are designed to help China Tower handle demand for transmission of monitoring data and related data analysis services for mid and high-point IoT devices – including video cameras, weather, radar and other sensors – in its Two Wings business.

One of the Two Wings is China Tower's Smart Tower business segment, which uses mid and high point digital towers equipped with IoT devices to collect data for government agencies to monitor things like water resources, transportation, environmental protection and emergency response. The other wing is it energy business, which includes battery exchanges and power back-up services.

Both framework deals – which are effective immediately and run to the end of 2026 – come with annual transaction caps. For the China Telecom framework, yearly transactions are capped at CNY150 million, CNY190 million and CNY230 million for 2024, 2025 and 2026, respectively. For Unicom, the caps are set at CNY120 million, CNY150 million and CNY180 million for the same period.

Radiografica Costarricense SA claims first 5G FWA in Costa Rica

Radiografica Costarricense SA (RACSA, a Grupo ICE company) has claimed a 5G first in the country with the launch of 5G fixed wireless access (FWA) services on the market, supported by the country's first and only network designed for this technology.

Using the 3.5GHz band, in which it holds a 100MHz block, RACSA will target its solutions at companies, institutions and SMEs, and, it says, will place Costa Rica among the countries with cutting-edge connections. FWA services on the 5G network offer high speed up to 1Gbps for commercial and corporate segments, from a tower to the customer location without the need for cables. They allow simultaneous connection of devices without interruptions or speed losses.

"RACSA will use the frequency it has been given to deliver the country's first 5G network, designed and built from scratch, to meet the high data demand needs of its customers," said Marco Acuña, president of Grupo ICE.

Singtel launches SE Asia's first National Quantum-Safe Network Plus

Singtel has launched Southeast Asia's first National Quantum-Safe Network Plus (NQSN+), which employs quantum security solutions to protect enterprises against quantum threats, as well as a customised programme for enterprises to trial the technology before adoption.

The Quantum-Safe Network (QSN) supports a range of network and security devices, ensuring easy and seamless integration and enhanced connectivity for enterprises that aim to secure their communications across the island. The NQSN+ extends quantum-safe security to new applications, including identity, mobility, and authentication services. It aims to secure communications and critical data against emerging quantum threats.

"Singtel has always played a central role in our nation's security. Though quantum computing may be in its nascent stages, it's fast gaining velocity across critical information sectors, especially banking, healthcare, and government services. We want to ensure Singapore is ready for it," said Singtel in a statement. "That's why we specially curated this program to equip enterprises with the relevant skills and knowledge so they can take the necessary steps to future-proof their critical networks against potential quantum threats."

Singtel was appointed by the Infocomm Media Development Authority last year to develop Singapore's first NQSN+ to fortify the nation's resilience against quantum threats in the next decade, the official release said.

Singtel is launching a three-phase pilot program to guide enterprises through the adoption of quantum-safe technologies. This includes workshops, integration testbeds, and live trials, ensuring risk-free and seamless implementation. The program aims to build awareness, validate interoperability, and develop tailored quantum-safe use cases for various industries.

Petronas gains private 5G network for LNG complex

Telekom Malaysia (TM) and energy company Petronas have deployed and launched a private 5G network at Petronas' LNG Complex in Bintulu, Sarawak.

Petronas claims its LNG Complex is one of the world's largest liquefied natural gas (LNG) plants in a single location, with a production capacity of 29.8 million tonnes annually.

Abang Yusuf Abang Puteh, Senior VP of LNG assets at Petronas, said that the private 5G network will improve productivity and increase operational efficiency across critical production processes.

"The integration of 5G with the Internet of Things, artificial intelligence and automation will streamline workflows, increase productivity by automating data collection, while enhancing safety across all levels," said Yusuf Abang Puteh.

"Leveraging on advanced technologies like AI, the enterprise 5G application is expected to yield optimum operational efficiencies for its highly secure reliable connection, real-time monitoring and analytics as well as remote maintenance," said TM group CEO Amar Huzaimi Md Deris.

TM and Petronas will look to explore further opportunities to expand distribution of private 5G networks to newer sites. The LNG Complex site marks the fourth private 5G network that Petronas has deployed at its sites since the first one – for its Regasification Terminal Sungai Udang (RGTSU) – was launched in 2022. The company has been using private 4G networks since 2019.

Petronas is also working with CelcomDigi on private 5G. In April, the two companies kicked off a two-year strategic collaboration plan to explore potential use cases in which 5G and digital technologies could improve Petronas' operations.

The Malaysian government has been keen to promote development of private 5G as a key growth area for 5G as it makes plans to roll out the country's second 5G network. Malaysia's Digital Ministry has been working with the Malaysian Communications and Multimedia Commission (MCMC) since May 2024 to create a policy that encourages private 5G rollouts for industrial use cases in sectors such as health, manufacturing, agriculture and aquaculture.

Kiribati to gain satellite direct-to-mobile phone services

Lynk Global and Vodafone Kiribati have announced the start of initial satellite direct-to-mobile phone services to subscribers using Lynk's 'cell-towers-in-space' system.

Kiribati is an island country in Micronesia in the central Pacific Ocean with a population of 131,232.

Vodafone Kiribati has made significant investments in expanding its network coverage across the islands of the country. The deployment of both 3G and 4G towers has enhanced connectivity and played a crucial role in improving communication and internet services for both urban and remote areas.

The partnership with Lynk will allows Vodafone Kiribati to extend its geographic mobile coverage with the eventual aim of expanding this coverage to the entire nation. With extended mobile coverage, individuals can access emergency services, stay connected with loved ones, and receive vital information.

DigitalBridge to buyout and privatise JTower

DigitalBridge Group has agreed to acquire Japan's infrastructure-sharing company JTower, with the aim of taking the company private. The board of JTower has expressed support for the offer and recommended that shareholders tender their shares.

This acquisition comes as Japan's telecommunications industry faces increasing challenges, including the deployment of Beyond 5G and 6G technologies, expanding coverage to remote and disaster-prone areas, and maintaining infrastructure with limited resources amid a declining population. JTower, which specialises in indoor and outdoor infrastructure sharing, views this partne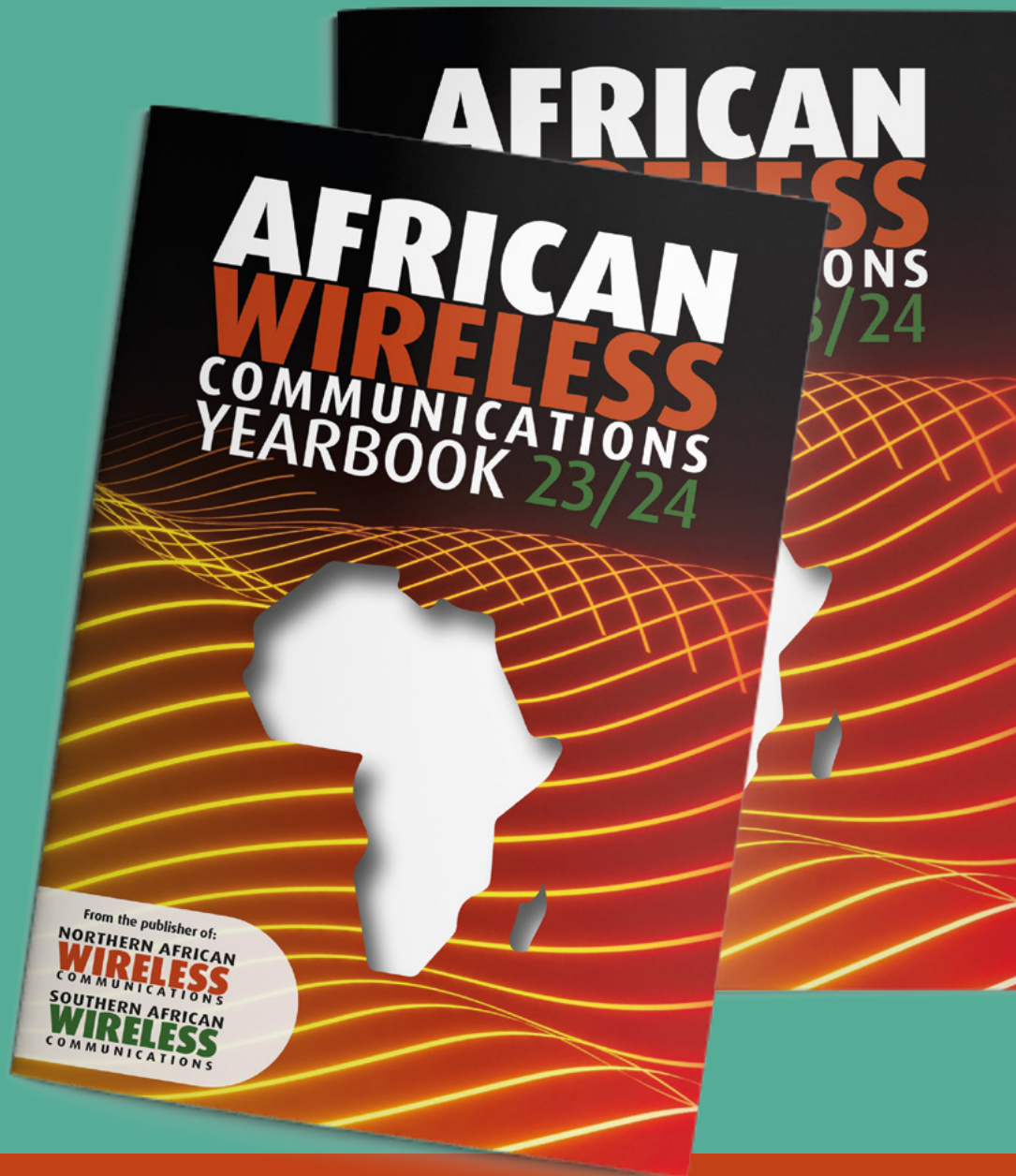rship as crucial for its long-term growth, which is also essential for the development of the telecommunications industry.

By going private under DigitalBridge, JTower aims to secure the capital needed for future investments without the constraints of the public market. DigitalBridge has committed to providing the necessary equity to support JTower's expansion, allowing the company to respond flexibly to funding needs and accelerate its growth in the infrastructure-sharing market, the tower company said.

JTower also confirmed that it will continue to maintain its business relationships with existing capital and business alliance partners Nippon Telegraph and Telephone Corporation, NTT Docomo, and KDDI.