

For communications professionals in southern Africa

# SOUTHERN AFRICAN WIRELESS COMMUNICATIONS

JANUARY/FEBRUARY 2023

Volume 27 Number 4

- How are MNOs helping bridge the digital divide?
- Connecting the unconnected - backhaul solutions
- Monetising 5G FWA: the need to innovate

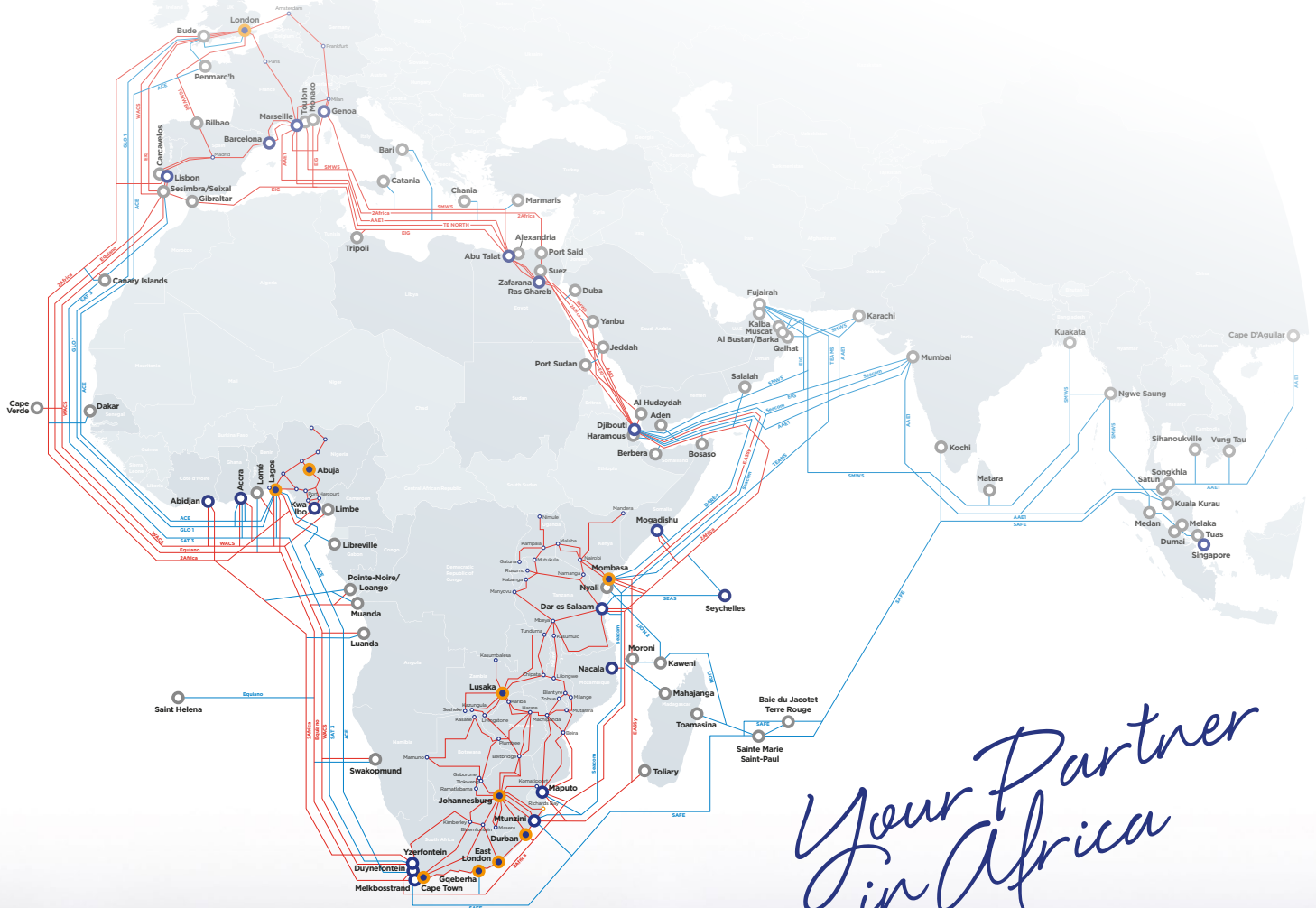


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**JAN/FEB 2023**  
**Volume 27**  
**Number 4**

**WIOCC Group company Open Access Data Centres (OADC)** has been established to transform the provision of data centre services for Africa. OADC has committed to invest over \$500m into deploying and operating a unique open-access, core-to-edge, pan-African data centre ecosystem delivering a combination of hyperscale core and edge data centres across the continent.

During its first 12 months of operation, OADC constructed 5 core data centres and over 30 edge facilities, and created a strongly differentiated brand and client proposition, winning the Best Data Centre / Edge Service Innovation award at the Global Carrier Awards 2022.

OADC is deploying its open-access, Tier III hyperscale data centres at major cable landing locations and in key business hubs throughout Africa. In parallel, it is rolling out OADC EDGE data centres to support service providers in cost-effectively extending network reach and to meet rapidly growing demand for content storage, processing and delivery at the network edge.

OADC prides itself on delivering an unparalleled client experience, offering expert assistance and tailoring bespoke solutions to client needs.

OADC is an environmentally responsible company and as such is pursuing a wide range of environmental and sustainability management accreditations.

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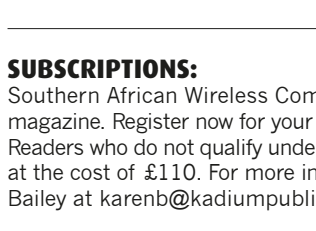
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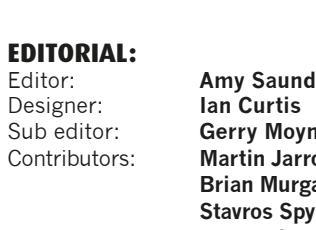
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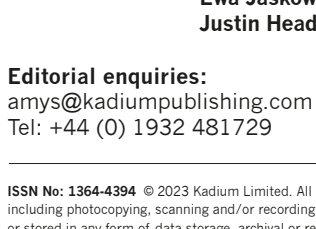
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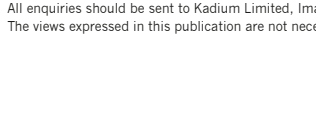
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# MTN deploys EXFO solution for digital transformation

MTN Group has deployed EXFO's Context dynamic topology solution in 14 African countries as part of its digital transformation initiative, targeting improved network inventory, security, and performance functions.

MTN operators across Africa, including early adopters MTN Uganda and South Africa, have reported simplified network management and improved visibility of telecom assets using EXFO's solution, helping them deliver top-quality services to their customers. With EXFO Context, MTN's network management is streamlined, improving inventory data quality, and making planning and assurance processes more robust.

Digital transformation of the network is a top priority for MTN and rolling out EXFO's solution will accelerate innovation and support the adoption of new technologies. EXFO Context has enabled MTN operators to gain visibility of their end-to-end networks across all vendors and technology layers, providing a single, accurate, and up-to-date view.

This is particularly important at a time when delivering reliable service performance is made

more difficult by the increased complexity of the network and related service assurance processes. The introduction of new technologies such as 5G, network virtualization, and programmable networking contribute to greater complexity, increasing the need for better end-to-end visibility.

Leveraging EXFO's automated updates, change audit, and service impact analysis capabilities, MTN operators can quickly grasp the state of their network, assess the impact of faults or planned maintenance activity, and understand whether detected changes have received the necessary approval from a change management process perspective.

EXFO Context uses native graph database technology and a semantic modelling framework to deliver the end-to-end dynamic view of networks, services, and customer dependencies enabling key automation use cases. Automation relieves pressure on network managers, providing them with the right information at the right time to make informed decisions.

"As demands on network infrastructure continue to grow, service assurance has become increasingly important

to streamline and automate the processes that support the network," said Wim te Niet, vice president EMEA, EXFO. "Of critical importance is the ability to map network topology, providing visibility to all the elements within the network and ensuring integrity of data to enable ongoing digital transformation. EXFO is delighted that Context has delivered these capabilities to 14 MTN operating companies including early adopters Uganda and South Africa, and we look forward to seeing operators across the MTN Group enable more automated operational processes with our service assurance solution."

"MTN Group is committed to our digital transformation journey to improve the flexibility and variety of services we're able to efficiently deliver to our customers. That can only be possible by equipping our networks and teams with the best possible solutions. EXFO Context has proven to be an impactful contributor to better manage our networks by tracking our active network assets and ensuring that defined change management processes are adhered to," said Amith Maharaj, MTN Group CTO.

# Malawi launches Diplomatic Data Corridors project

Malawi has launched the Diplomatic Data Corridors project to address the high cost of internet and data services, as well as the country's low internet penetration.

Malawi's government has entered negotiations with Mozambique, Tanzania, and Zambia to consider directing their internet traffic into Malawi.

Daud Suleman, director general of the Malawi Communications Regulatory Authority (Macra), said that the country wants to double the current internet penetration rate to 40% in three years and leverage connections from undersea cables into Malawi to ensure a reduction in the cost of data services.

He cited Malawi's geographical position as a major challenge and said this has resulted in high IP-transit and international bandwidth costs. "We are ready to sign agreements that will give us cheaper data through fibre networks," said Suleman.

In addition to the data corridors, the increase in competition in local telecommunications will help to drive down data costs, and the licensing of StarLink will usher in affordable broadband through satellite services.

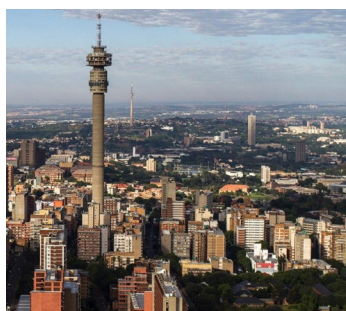
Hansford Chaaba, corporate communications manager at the Zambia Information and Communications Technology Authority (ZICTA), said that "ZICTA welcomes the initiative by Macra and is committed to a continued spirit of mutually beneficial co-operation and collaboration between the two regulators."



# Switchcom Distribution and Tarana to expand next-gen FWA in southern Africa

Switchcom Distribution, a leading South African ICT distributor, and Tarana, manufacturer of the carrier-grade Gigabit 1 (G1) next-generation fixed wireless access (ngFWA) platform, are partnering to bridge the digital divide in southern Africa.

The Tarana G1 platform allows operators to deliver reliable,



high-speed internet, in either 3GHz licensed or 5GHz license-exempt spectrum, resulting in an unparalleled user experience. The G1 platform is known for its exceptional interference cancellation and non-line-of-sight performance, delivering up to 9.6Gbps per site and 800Mbps per link, even in challenging conditions. With world-class sales, support, and service teams, Switchcom Distribution is well-equipped to meet the growing demand for G1 in South African markets.

"As an authorized distributor of Tarana in South Africa, Switchcom is excited to carry the next-generation of fixed wireless technology. G1 puts our wireless

customers truly shoulder-to-shoulder with fibre providers in terms of speed, performance, and scalability. Together we will narrow the digital divide in Africa," said Mandie van Zyl, general manager at Switchcom Distribution.

"We look forward to leveraging Switchcom's robust experience to benefit our joint customers and their end-users in South Africa," said Tarana's vice president of worldwide sales, Mike Calabrese. "Enabling operators to provide fibre-class speeds at a fraction of the cost and time to deploy will bring quality broadband to African communities on significantly shorter timelines and with far superior network economics."



# WIOCC lands 2Africa at OADC Durban

WIOCC has landed 2Africa into its carrier-neutral data centre OADC Durban, owned and operated by WIOCC Group company, Open Access Data Centres (OADC), in KZN, South Africa. This offers the province and country a huge increase in international capacity.

“We are pleased to be working with our partners in the 2Africa project, bringing faster, more reliable internet to local businesses and consumers, and making an enduring contribution to communications in Africa,” said Chris Wood, CEO, WIOCC Group. “The subsea cable system is enabling more communities to access transformative online resources, from education and healthcare to jobs and financial services, and experience the economic and social benefits of

seamless connectivity.”

The arrival of the 45,000km 180Tbps 2Africa cable system in Amanzimtoti, 25km south of Durban, will bring much-needed additional international capacity for internet and other services, support high-speed internet delivery and provide greater diversity, which will benefit businesses and individuals throughout South Africa.

This landing, into OADC’s 4MW open access OADC Durban facility in Amanzimtoti, is 2Africa’s fourth on the coast of South Africa – two in the Western Cape (Yzerfontein and Dufnefontein) and one in the Eastern Cape (Gqeberha).

Landing 2Africa into carrier-neutral OADC Durban ensures that service providers can access international

capacity and onward, domestic and intra-Africa connectivity on a fair and equitable basis, which will encourage and support the development of a healthy internet ecosystem. Once the system has been fully deployed, businesses and consumers will benefit from improved quality, reliability, and lower latency for internet services, including telecommuting, high-definition video streaming and advanced multimedia and mobile video applications.

“As a fibre pair investor in the 2Africa systems, we are greatly expanding and diversifying WIOCC’s capacity inventory to ensure that we continue to serve the evolving needs of our content provider and cloud operator clients, as well as those of the wider wholesale community,” said Wood.

# Rwanda to connect 3,000 schools by 2024

The Rwandan government plans to provide internet access to around 3,000 schools by 2024.

Funding from China Exim Bank, worth US\$30 million, will be used to connect at least 1,500 schools to the internet by next year. The rest of the schools will be connected as part of a US\$200 million Rwanda Digital Acceleration Project supported by the World Bank.

This initiative is part of the ‘Smart Education’ project which aims to improve the ICT infrastructure of education in Rwanda by building an educational platform and establishing a system of dedicated networks. It also aims to provide “a solid foundation for digital education, the sharing of educational resources, the innovation of teaching methods and the improvement of the level of education of Rwandan citizens.”

Some 44.4% of Rwandan schools do not yet have internet access, accounting for around 3,000 schools out of the 6,756 schools in the country.

# Dandemutande invests in Zimbabwe fibre

Dandemutande has invested US\$5 million into an alliance with Bandwidth and Cloud Services Group (BCS) to roll out a fibre network expansion project. The project has been organised to

improve the redundancy of the ISP’s network, as well as speed, resilience, and uptime.

Dandemutande will leverage BCS’ current fibre expansion business and will focus on connectivity between

Somabhula and Harare via Gweru, as well as from Bulawayo to Plumtree.

“We will split the project into two phases, the first phase being the 51km of fibre optic from Beitbridge-Somabhula-Bulawayo, which was launched in December 2020 with Victoria Falls leg, and the second phase being Somabhula and Harare by end of February this year,” said Dandemutande CEO, Never Ncube.

The new infrastructure will bring high-speed internet access to rural Zimbabwe, reduce the cost of access to the internet and increase reliability. The company also announced an injection of US\$3 million towards metro fibre networks within the cities their backhaul will pass through thereby ensuring presence in new regions.



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## TCRA disconnecting almost 1 million unregistered SIM cards

The Tanzania Communications Regulatory Authority (TCRA) has started disconnecting the 970,046 mobile phone lines that had not yet been identified.

At midnight on 13 February, the



telecom subscriber identification campaign ended with 60.47 million SIM cards verified out of 61.44 million. MNOs immediately began to suspend telecom services for all lines that had not yet been identified in accordance with TCRA guidelines. Suspended lines will be stored for 90 days to allow users to consult or even verify them.

The Tanzanian government's efforts to verify the SIM cards of telecom subscribers are justified by the increase in mobile fraud in the country. According to the

TCRA, Tanzania recorded a total of 12,613 fraudulent practices using SIM cards between October and the end of December 2022. These include SIM box fraud, identity theft, and financial scams.

The verification of telecom subscribers should help to combat expanding cybercrime in the Tanzanian digital space. It is also expected to update databases of active SIM cards to improve reporting on the performance of the Tanzanian telecommunications sector.

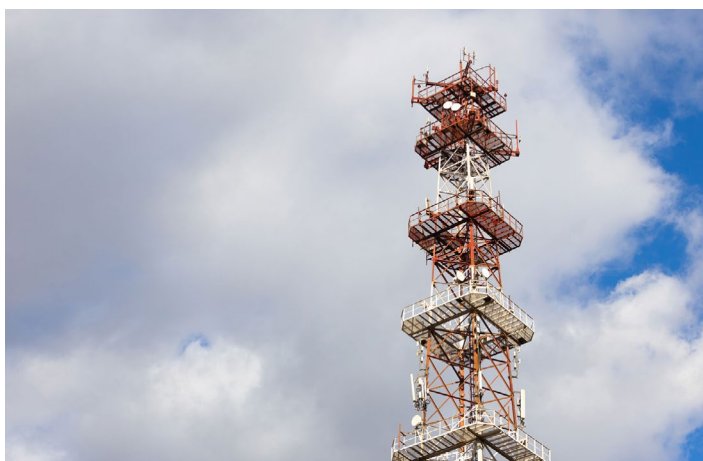
## Orange Madagascar and AMN to build 500 base stations under NaaS

Orange Madagascar has signed an agreement with Africa Mobile Networks (AMN) to further extend its network coverage in rural areas of the country. The partners plan to deploy 500 base stations under the network-as-a-service (NaaS) model over the next ten years.

The sites that will be built as part of the project will support 2G and 3G. The deployment of the sites has already begun, and some should be operational before the end of the year.

This partnership comes about a month after Orange Madagascar signed a similar agreement with NuRAN Wireless to deploy 500 telecom sites on the east coast of Madagascar. These investments are part of the company's goal to establish itself as the leading provider of digital services in the country.

Investment in rural areas should make it possible to accelerate the



achievement of Orange Madagascar's ambition, because these areas have a high concentration of unconnected people. The project should allow the MNO to reach more than one million new subscribers. According to the Communication Technology Regulatory Authority (ARTEC), only

46.38% of the Malagasy population has access to mobile services.

The project will also support AMN's ambition to contribute to extending the mobile network in rural areas of sub-Saharan Africa with the deployment of 10,000 towers by 2025.

## Safaricom Ethiopia nears M-Pesa launch

Safaricom is finalizing its technical and commercial preparation to launch its digital payment service M-Pesa on the Ethiopian market. Safaricom Ethiopia is expected to launch M-Pesa operations in its next fiscal year, which begins in April.

The announcement comes four months after Safaricom Ethiopia secured approval from the Ethiopian government to operate its mobile money platform in Ethiopia. With the approval of Addis Ababa, the company could take steps to obtain the mobile payment service provider license from the National Bank of Ethiopia (NBE). The latter recently proposed licensing fees of \$150 million for private telecom operators' mobile money services.

The launch of M-Pesa is expected to introduce competition to the mobile money segment of the Ethiopian telecoms market, currently dominated by Ethio Telecom's Telebirr. Launched in May 2021, the platform attracted four million users within weeks and currently has over 28.2 million users. The launch of M-Pesa is also expected to accelerate Safaricom's growth in Ethiopia.

"Our growth trajectory is even more exciting for us as we look forward to offering financial services through M-Pesa. With a population of around 120 million people and financial inclusion of around 35%, mobile penetration of 57% and annual inbound remittances of around \$4.2 billion, Ethiopia offers great opportunity to grow the business to Kenyan level in 10 years," said Anwar Soussa, CEO of Safaricom Telecommunications Ethiopia (STE).

## Namibia cracks down on SIM registration

Namibians have until 31 December 2023 to register their mobile SIM cards with their identity documents.

According to the Communications Regulatory Authority of Namibia (CRAN), it is now mandatory for mobile service providers to register all their customers' SIM cards and obtain all relevant information before the sale and activation of SIM cards.

"Mobile service providers will have a period of 12 months to conclude

the registration of all existing customers until 31 December 2023. The information of new customers must be registered within three months (from the date of sale) as unregistered SIM cards will be deactivated after 31 December 2023," said Katrina Siken, CRAN's head of corporate communication.

CRAN added that Namibia joins 157 other countries from across the globe that have already implemented

the mandatory SIM card registration process. SIM card registration is in line with international best practices and will facilitate the investigation of crimes committed with the aid of mobile devices.

Customers can register their SIM cards at the service provider they subscribe to by providing their full name, proof of residential address and identity number as a copy of their Identity Document (ID) or passport.

"There are other benefits derived by consumers that are a direct result of having a digital identity. Moreover, there has been an increase in the use of digital and/or online services, providing opportunities for Namibians to embrace virtual teaching and learning, mobile banking, and online shopping," said Siken. "The SIM Registration Conditions apply to Namibian nationals and foreigners for the duration of their stay in Namibia."



## ICASA names new CEO

The Council of the Independent Communications Authority of South Africa (ICASA) has announced the appointment of Tshiamo Maluleka-Disemelo as its chief executive officer, effective as of 1 February 2023, for a contract period of five years.

Prior to her appointment as CEO, Maluleka-Disemelo served as the chief audit executive (CAE) of ICASA, a position she has held since 2020.

In addition to her other qualifications, Maluleka-Disemelo holds a Master of Business Administration Degree from Milpark Business School. She brings nearly two decades of governance, audit, and risk management experience, as well as advanced skills in spearheading executive efforts. In her position as CAE, she has collaborated with Council to develop, amongst others, ICASA's strategic plan, annual and operational performance plans, policies and procedures for managing organisational risks, and as such contributed to the effective management of the organization.

"We congratulate the incoming CEO on her appointment and wish her everything of the best in the new role," said Charley Lewis, acting chairperson, ICASA. "Both Council and management commit to supporting and working with her in fulfilling the Authority's mandate to regulate the telecommunications, postal and broadcasting sectors in the public interest."

Maluleka-Disemelo's appointment comes five months after the interim appointment of Adv Nkhetheleni Gidi as acting CEO.

"I have enjoyed working and interacting with Adv Gidi over the recent period. I am further grateful that, as he resumes his role as Executive: Policy, Research, and Analysis, his skills and institutional knowledge will remain an asset to the team at the Authority," said Lewis.



## Rwanda to cut KTRN 25-year exclusive rights to 4G spectrum

Rwanda has moved to cut short Korea Telecom Rwanda Networks' (KTRN) 25-year exclusive rights over the country's 4G spectrum, to enable other operators to roll out their own 4G services and provide competition.

The Rwanda Utilities Regulatory Authority (RURA) notified KTRN of its decision to modify its license for

network service provision in October, as the government wants to remove regulatory hurdles preventing other operators from launching services.

KTRN is the dominant organisation in Rwanda when it was awarded all spectrum for LTE and the role as a single network operator to resell capacity to rivals, in 2013.

RURA detailed the move as part of

Rwanda's National Broadband Policy and Strategy which was unveiled last year with three key targets: increase market competition to accelerate adoption of broadband mobile services; making spectrum and technologies available to facilitate operator rollouts; and rallying more competition in the fibre backhaul market.

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# Liquid and Nokia to deploy transport network technology

Liquid Intelligent Technologies has partnered with Nokia to deploy its innovative transport network technology in the new terrestrial fibre route connecting Mombasa, Kenya to Johannesburg, South Africa.

This announcement comes considering the imminent launch of the new terrestrial data superhighway built by Liquid. The technology has allowed Liquid to build its first terrestrial route that will provide 12Tb of capacity for carriers and service providers in South Africa, Kenya, Uganda, Rwanda, Zambia, Zimbabwe, and the DRC. The route, which measures 16,576km, has been designed to cater to the demand for more capacity from Liquid's hyperscale customers.

"As a business of Cassava Technologies, Liquid is committed to enabling a digitally connected

future for every business and individual in Africa. We are proud to partner with Nokia as we expand our high-speed fibre backbone on the continent. This investment further demonstrates our commitment towards Africa's inclusive digital transformation," said Hardy Pemhiwa, group president and CEO of Cassava Technologies.

The route will provide thousands of businesses and millions of households in many of Africa's landlocked cities, towns and villages with more resilient connectivity and access to numerous data centres and cloud resources.

"Nokia's next-generation optical network will enable Liquid Intelligent Technologies to maintain its leadership position and emerge as a preferred partner of organizations requiring massive capacity. We are

delighted that our technology and expertise will help Liquid Intelligent Technologies provide the best-in-class digital infrastructure to Africa's enterprises and will play a role in strengthening the digital infrastructure of the continent," said Rajiv Aggarwal, head of Central East and West Africa (CEWA) market unit at Nokia.

"Internet giants, established cloud service providers and other mega-organisations are demanding hyperscale data centres that can support high levels of performance, spikes in demand, and redundancy while enabling massive availability. Our new terrestrial fibre corridor is the first of its kind in Africa in terms of distance and capacity," said Shahzad Manzoor Khan, group chief technology officer, Liquid Intelligent Technologies.

## Madagascar to link with 2Africa

Telma has partnered with Vodafone to link the island nation to the 2Africa cable system and strengthen its international connectivity. The system will be ready for service by the fourth quarter of 2023.

2Africa's seamless connectivity will be a game-changer for numerous economic sectors by allowing access to the highest-speed internet network, says Patrick Pisal Hamida, CEO of Telma Madagascar. "Beyond the business scope, we aim to offer every Malagasy the opportunity and means to become a citizen of the digital world. 2Africa will also be an asset to meet many of the UN Sustainable Development Goals related to internet connectivity and a major step in the realisation of the Malagasy state vision 'Initiative for the Emergence of Madagascar'."

The company asserts that its investments in the national fibre optic backbone (10,000km), the main telecommunication pylon parc (1,600 sites), and the three existing international subsea cables (EASSy, LION, METISS) gave the country a competitive advantage to attract foreign Business Process Outsourcing (BPO) companies. EASSy, LION, METISS, and 2Africa connect the Island to the world through Telma's national backbone, which is the only fibre optic infrastructure serving the country's major cities.

## Congo: MoMo service integration planned

The Congolese government has signed a partnership agreement with Mediasoft Lafayette, which specializes in electronic banking. The agreement aims to make the MTN Mobile Money and Airtel Money digital financial services platforms interoperable with merchant accounts.

Mediasoft Lafayette will rely on the Congo-Pay platform, an AI-based payment platform developed by TerraPay for the Congolese

government. Its function is to aggregate all the payment methods existing at the national level and to standardize them. The platform could also serve as a base for setting up electronic money.

This initiative is part of the ambition of the head of state, Denis Sassou N'Guesso, who has made the digital economy one of the six pillars of the National Development Plan (PND) 2020-2026.

Once finalized, the interoperability

of mobile payment services should facilitate mobile financial transactions while reducing costs, contributing to greater financial inclusion of the Congolese people. According to data from ARPCE, the Congolese mobile money market had approximately 2.8 million active subscribers as of June 2022. This figure represents a penetration rate of 50.6%, compared to 49.5% in the same period of 2021.

## Teraco raises 11.8 billion rand for growth

Teraco has raised 11.8 billion rand to continue its continued growth in South Africa and increase its energy capacities. This financing is the result of a syndicated loan led by the Absa bank based in Johannesburg.

"As a leading provider of carrier-neutral data centre and interconnect solutions, Teraco is dedicated to protecting, connecting, and growing the businesses and ecosystems that shape the digital future of Africa in a sustainable and responsible way," said Samuel Erwin, chief financial officer, Teraco.

Teraco will use 5.7 billion rand

for the extension of its main interconnection centres on the campuses of Isando, Bredell and Cape Town. The company also plans to implement a renewable energy generation program consistent with its long-term environmental, social and governance (ESG) goals. The remaining 6.1 billion rand will be used to refinance and extend the average maturity profile of Teraco's existing debt.

This financing is part of Teraco's commitment in 2020 to increase its investments in South Africa to meet the demand for cloud services that is

currently growing in the country and in sub-Saharan Africa.



## South Africa: 5 years to rollout 5G

South African telecom operators have five years to finalize the rollout of 4G and 5G mobile networks in the country, including rural areas, according to directive from Khumbudzo Ntshavheni, minister of communications and digital technologies.

This initiative is part of the measures taken by the South African government to accelerate the migration to broadband. In March 2022, the executive organized the auction of the broadband telecom frequency spectrum to operators. He also laid out a roadmap to shut down the country's 2G and 3G mobile networks by March 2025 to free up spectrum for 5G and 4G services.



# TNM and Mama Money join forces

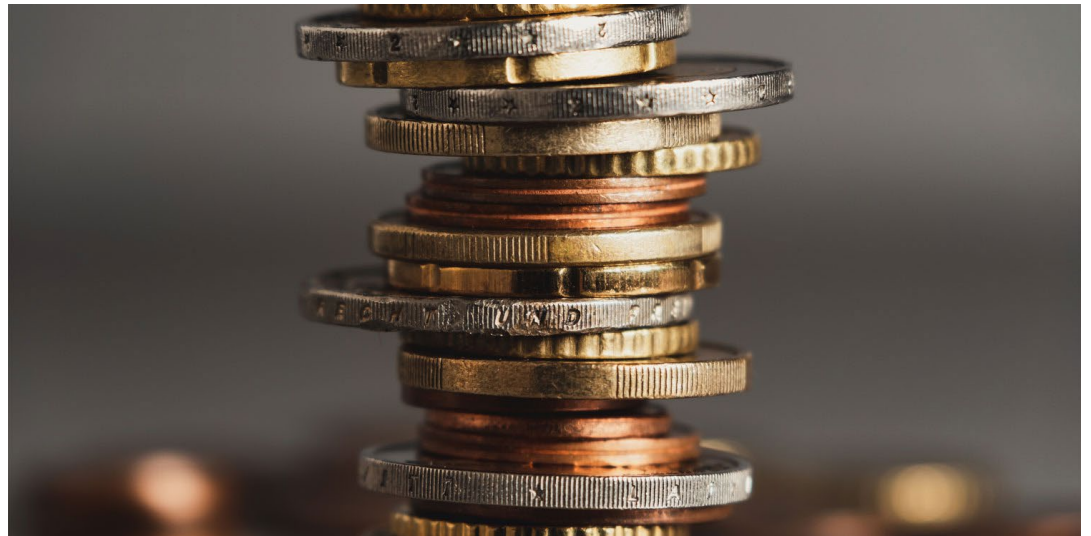
Mama Money, a fintech offering cross-border money transfers and banking services has joined forces with TNM.

This partnership allows Mama Money customers to easily send money to any TNM Mpamba account for cash collection at over 40,000 locations across Malawi, with no cashout fee for the recipient.

It's estimated that the monthly remittance flows from South Africa to Malawi are over US\$20 million through both formal and informal channels, according to research by Finmark Trust.

Beyond the impact on economic growth, remittances are crucial for supporting fundamental needs such as healthcare, housing, and education. Yet South Africa is one of the most expensive countries to send money from. In 2015 the average cost of sending money from South Africa was 14%. Today, the average cost of sending money from South Africa is 7%, which is much closer to the worldwide average of 6%.

"We have made a lot of progress



in bringing down the cost of money transfers, but there is still more we can do to support the Malawian community in South Africa," said Nicolas Vonthron, CEO at Mama Money. "We want to reduce the cost even further and offer a super reliable service. Our partnership with TNM will help us achieve this and we're extremely excited to see

the impact this will have for people who need an easier way to send money to Malawi."

"With our Mpamba network covering over 90% of Malawi, it makes it extremely easy and convenient for people to collect their cash no matter where they are in the country, and we are continuously expanding our network and agent

coverage," said Christopher Sukasuka, general manager at TNM Mpamba Limited.

Together, Mama Money and TNM are improving access to critical financial services in underserved communities in both South Africa and Malawi by making it easier, faster, and more affordable to send and receive money.

# Paratus Zambia acquires last data gateway license for exclusive import and export activity

Paratus Zambia has acquired the last available data gateway license in Zambia, which means it – along with five other data gateway licensees – holds exclusive rights to import and export internet data capacity.

This service was previously limited to mobile network and carrier providers only. Only data licence holders can deploy international gateways, cross-border communications services and import internet data traffic into the country.

"We started the process in April 2022. We were awarded the ZICTA tender because Paratus meets the necessary infrastructure requirements. For example, our network is connected and spans the southern African region," said Chama Chinyanta, general manager of infrastructure at Paratus Zambia. "This means we can deliver what is needed:

international data connections to neighbouring countries. We are now one of six providers with this type of license and can import/export data into and out of Zambia."

"Being awarded the last gateway license is a major achievement for us," said Marius van Vuuren, the Managing Director of Paratus Zambia. "With this license, we can leverage our terrestrial and cross-border fibre network and satellite communications to provide high-quality internet services and import/export internet data capacity to other ISPs in Zambia. This presents a great business opportunity for us, and it's important to note that many ISPs may not be aware of the regulations surrounding internet capacity delivery. We are looking forward to working with them to offer seamless and high-quality services in Zambia."

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Going further in critical communications





## MTN Congo and Airtel Congo sign roaming agreement

MTN Congo and Airtel Congo have signed a national roaming agreement under the sponsorship of the Post and Electronic Communications Regulatory Agency (ARPCE). Each of the operators will now be able to provide its services by relying on the active infrastructure of its competitor in areas not covered by its own network.

As part of the first phase of this agreement, MTN will open its network to Airtel subscribers at eight sites, including Malélé, Kissila, Kintamou, and Liouesso. Airtel Congo will do so in 12 localities including Kayes, Tchicanou, Boulankio and Ketta.

National roaming is governed by Law No. 09-2009 of 25 November 2009 regulating the electronic communications sector, as well as by the related decision made public by the ARPCE. This enabled the regulator to set the pricing and technical conditions, as well as considerations relating to national roaming contracts, in consultation with market players.

The growth of the number of telecom subscribers in the Republic of Congo is declining despite a high penetration rate (102.8%). According to data from ARPCE, the country had more than 5.7 million telecom subscribers in the third quarter of 2022, a decrease of 0.6% compared to the previous quarter and a decrease of 2.6% compared in the third quarter of 2021.

This agreement should revive the growth of the sector, extend the reach of telecom services, reduce investments for telecom operators, introduce more competition on the market.

According to the ARPCE, the national roaming agreement is "an important leap in terms of, on the one hand, the promotion of consumer rights in the sense that it should allow everyone to benefit full electronic communications services and, on the other hand, the possibility for one operator to take advantage of the facilities of the other in order to serve its customers."



## Talking critical

### Securing critical infrastructures against cyber quantum attacks

With the world facing growing challenges including the war in Europe and a global energy crisis, it is essential that the mission and business critical communications networks used by the public safety, critical infrastructure, and utilities sectors (including transportation, electricity, natural gas and water plants) are secured against third-party attacks, to protect communications and sensitive data.

With more than 120 countries using dedicated TETRA (Terrestrial Trunked Radio) networks for these critical services, work has been undertaken to ensure the ETSI TETRA technology standard remains robust in the face of evolving threats. Demand for TETRA technology will continue to increase at a CAGR of 4.7% in the 2021-2026 forecast period, according to Omdia.

To adapt to technology innovations and potential cybersecurity attacks, including from quantum computers, the ETSI technical committee TCCE has completed work on new algorithms designed to secure TETRA networks for at least the next 20 years. These new specifications have been developed in close collaboration with quantum safe cryptography experts from ETSI. This work was carried out with the support of TCCA, the global representative organisation responsible for the enhancement of the TETRA standard.

TETRA is widely used by public safety agencies around the world as, in addition to secure and resilient network communications, it also offers direct peer-to-peer critical communications without the need for a supporting network in situations such as natural disasters and emergencies.

Professional users generally need features to enable them to work effectively. These include secure encrypted networks, calls, and two-way radio messaging, assured coverage and call quality, the ability to send voice, data and images, direct mode operation as mentioned, which allows rapid communications between groups of workers (such as an emergency service response team at a major incident), and managed

fall-back for additional resilience. TETRA has characteristics in common with the mobile networks with which we are all familiar but offers the additional features which are required to meet these needs.

By far the largest market for TETRA is that of public safety, where the trend is for the deployment of nationwide networks shared by all public safety organisations for reasons of economics, autonomy of operation for routine communications and the ability to fully interoperate with other services during emergency situations and disasters. TETRA networks are also operational worldwide in many vertical markets including transportation, utilities, oil and gas, mining, government, and the military, commercial and industry, and are deployed for major events such as the Olympic Games.

Communication security is an essential prerequisite for the success of mission critical operations. The protection against eavesdropping and manipulation of voice and data as well as the exclusion of third-party use are therefore indispensable requirements for mission critical communication systems. This is particularly true against the background of increasing cybercrime. TETRA's security features, developed by mission critical communication experts, are modular and complement each other to meet the security requirements of mission critical applications. They are an integral part of the standard and thus guarantee security even when using devices and infrastructure from different manufacturers.

The TETRA standard supports powerful mutual authentication of a device on the one hand and the network on the other. This makes it possible for a TETRA system to control the access to it and for a device to check if a network can be trusted. In addition, applications enable authentication down to the user level. If a device is lost or stolen it is fundamental in a mission critical environment to exclude this device from using the network. TETRA supports different options for secure disabling over the air. The disabling can be either temporary, which leaves the possibility to enable again or permanent, which is irreversible.

As all air interfaces are vulnerable to eavesdropping, TETRA provides

air interface encryption where user and signalling information is encrypted over the path between mobile devices and infrastructure, both for individual and group communications. The air interface encryption mechanism is available for voice and data and direct mode operation. The use of several encryption algorithms, both standard and proprietary, is also supported, and in addition, a user organisation may easily add an end-to-end encryption system to its own requirements. This flexibility is essential and unique in TETRA, which can be implemented in many forms for different user groups.

TETRA networks can operate either completely standalone, i.e., disconnected from the network, or integrated into the user organisation's communication and IT environment, which enables the use of the protection mechanism of the organisation against cyberattacks and other threats.

The work carried out by ETSI is vital to keep the TETRA cryptography updated with the latest cybersecurity algorithms. This is critical to the variety of sensitive organisations and applications served by TETRA systems. Maintaining TETRA's outstanding and unrivalled level of security is essential, especially in a continuously evolving and challenging context where new cyber threats are coming not only from isolated cybercrime actors, but from organised hostile countries.

These new air interface encryption algorithms will support TETRA into the foreseeable future. They are designed to withstand brute force attack beyond the year 2040 even if quantum computing becomes a viable means of attack, with new over-the-air key management algorithms and authentication keys to further strengthen the security of the standard.

TETRA is essential to the organisations using it. Its use is tightly integrated in the operational procedures and when organisations want to evolve to critical broadband services those operational procedures will also need to evolve. Simply switching TETRA off and switching critical broadband on in one go will not be possible, so TETRA and broadband will co-exist for quite some time.

Brian Murgatroyd,  
chair of ETSI's TCCE committee



### 45% stake in Ethio Telecom up for grabs

The Ethiopian government is offering to sell a bigger portion of Ethio Telecom as it relaunches the partial privatization of the state-owned telco, upping the stake offered from 40% to 45%.

“Over the last decade, Ethiopia has become one of the fastest growing economies in Africa. Its young population, high gross domestic product growth rate, and increased private sector investment offers valuable growth opportunities. Further, low tele density in Ethiopia highlights

the huge untapped potential in Ethiopia’s telecommunication sector,” said the Ethiopia Ministry of Finance in a statement. “The company’s robust infrastructure coupled with its strong financial performance will offer significant competitive advantage to any investor.”

In November 2022, the government revived its plans to sell the stake and announced a strategy to issue another private telecommunications license in the country.

### Zimbabwe aims for 300 more base stations in 2023

Zimbabwe’s government plans to deploy more than 300 base stations across the country this year to address connectivity issues, especially in rural areas. Installation and operation will be entrusted to NetOne.

“We have sent our team to do mapping and scoping, and we want to make sure that we are connecting the unconnected people,” said Jenfan Muswere, minister of information, communication, technology and postal services and messaging.

The initiative is part of the Smart Zimbabwe 2030 master plan which aims to improve connectivity within communities. The government recently unveiled the national broadband program for the period 2023-2030, which provides for investments by the state and the private sector to guarantee broadband for all.

This initiative gives a helping hand to telecommunications operators in Zimbabwe, some of whom find it difficult to invest in infrastructure, due to the local operational context. They face rising operating costs, high inflation, load shedding, etc.

The deployment of 300 base stations should make it possible to improve not only the coverage, but also the quality of the telecom services provided to the populations. According to the telecoms regulator’s latest statistics for the third quarter of 2022, Zimbabwe has 14.5 million mobile phone subscribers, representing a penetration rate of 95.9%.

### Vodacom Group increases group revenue by 14.8%

Vodacom Group has announced its financial results for the quarter that ended 31 December 2022.

During the quarter, group revenue increased 14.8% (4.7%) to R30.7 billion, positively impacted by the acquisition of Vodafone Egypt and rand depreciation against its basket of international currencies. Group service revenue was up 16.1%, with normalised growth of 3.5%, supported by growth in data revenue and financial services. South Africa service revenue grew 3.0%, underpinned by a strong performance in mobile prepaid. Financial services revenue increased 30.6% (16.5%) to R2.6 billion, with VodaPay super-app downloads reaching 4.5 million.

“The third quarter of our current financial year is the first set of results that includes revenues from what Vodacom expected will be a transformative transaction for the Group – its acquisition of a 55% stake in Vodafone Egypt,” said Shameel Joosub, CEO, Vodacom Group. “In December last year we announced the finalisation of the R43.6 billion deal, the largest in Vodacom Group’s history, and one that cements our position as a leading pan-African technology company in addition to diversifying and accelerating our growth profile. It also means that our population reach exceeds 500 million people across Africa, providing a clear growth path for Vodacom.”

### Sierra Leone: MNOs and ISPs owe significant debt to UADF

MNOs and ISPs owe over 33 trillion Leones to the Universal Access Development Fund (UADF) in fees for the financial years 2020 and 2021. This is reported in the UADF 2021 audit report.

MNOs and ISPs are supposed to pay royalties of 0.75% of total income chargeable to income tax as of 1 January of the previous year, according to the law on universal access 2019. Sections 3(a) and 3(b) of the text state that MNOs and ISPs that do not comply with the law will pay a penalty not exceeding 25% of the fee and interest of 5% on this one. In addition, they will not be eligible for renewal of their licenses under Section 28 of the Act.

Non-payment of fees could affect UADF’s ability to maintain service and implement its programs as part of its vision to ensure universal access and use of basic ICT and broadband by all people living in Sierra Leone.

### Telkom to sell minority Openserve stake

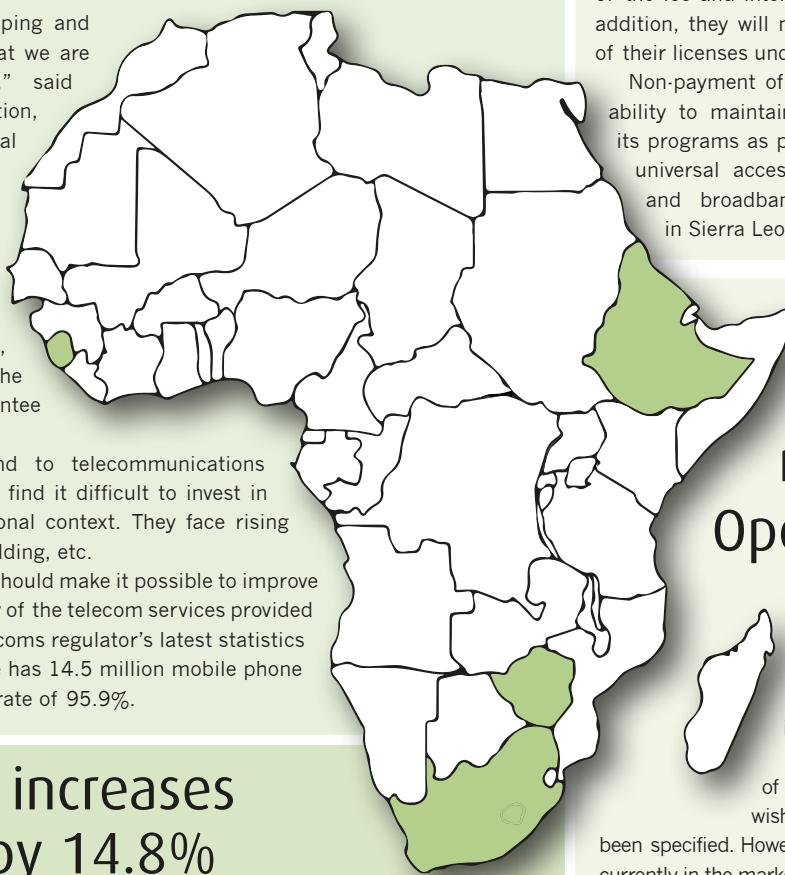
Telkom plans to sell a minority stake in Openserve, its fibre optic unit.

The part of the capital of Openserve that Telkom wishes to put up for sale has not been specified. However, the company said it is currently in the market to gauge buyer interest.

This initiative is part of a series of measures aiming to unlock value and consolidate profits while Telkom’s revenues are down. In the third quarter of 2022/2023, Telkom saw its earnings before interest, tax, depreciation, and amortization (EBITDA) fall by 13.5% to reach 2.5 billion rand, although turnover increased by 2.3% to R11 billion.

Other measures include an extensive cost reduction campaign over the next 6-18 months; raising R1 billion before the end of financial year 2023; the sale of its telecom tower unit; and the dismissal of 15% of its employees.

Openserve’s fibre optic network spans more than 169,000km and reaches 1 million homes.





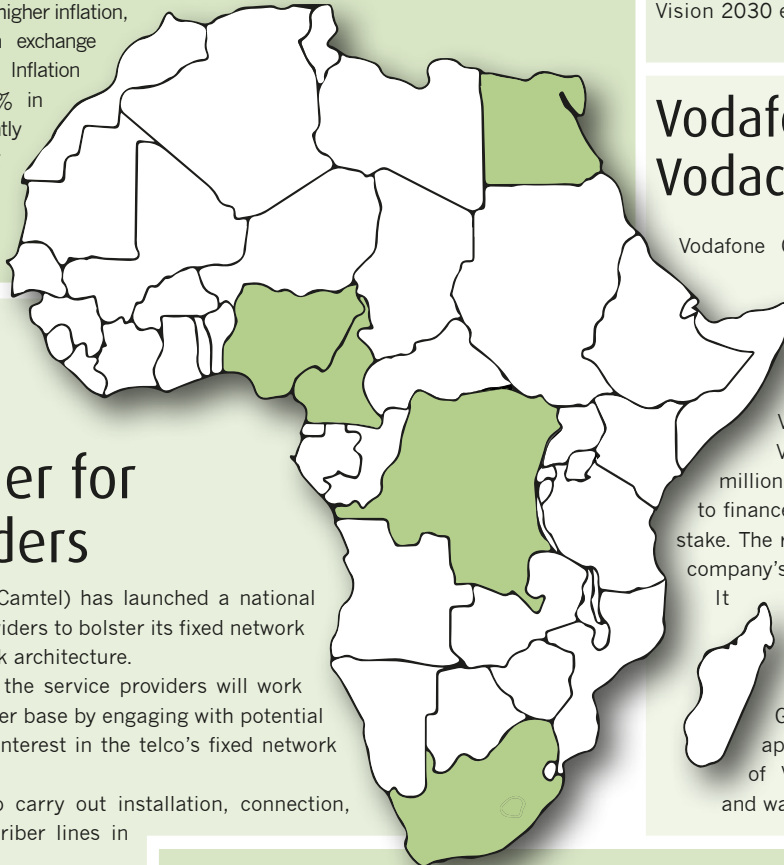
## MTN Nigeria announces strong 2022

MTN Nigeria Communications Plc has announced its audited results for the financial year that ended on 31 December 2022.

During the year, mobile subscribers increased by 10.5% to 75.6 million, active data users increased by 15.3% to 39.5 million, and service revenue increased by 21.5% to N2.0 trillion. MTN Nigeria added 7.2 million subscribers and 5.2 million active users in 2022, while active fintech subscribers rose by 57.5% to 14.9 million. Earnings before interest, tax, depreciation, and amortisation (EBITDA) grew by 22.0% to N1.1 trillion, EBITDA margin increased by 0.2 percentage points (pp) to 53.2%, profit before tax (PBT) grew by 22.3% to N534.0 billion, profit for the year grew by 21.1% to N361.5 billion (excluding non-controlling interest), and capital expenditure (Capex) rose by 23.5% to N504.3 billion (up 18.6% to N361.0 billion, excluding the right-of-use assets).

"2022 was challenging due to global macroeconomic and geopolitical volatility, resulting in higher inflation, supply chain uncertainties, foreign exchange volatility and availability. In Nigeria, Inflation reached a 17-year high of 21.5% in November before moderating slightly to 21.3% in December, bringing the average for the year to 18.8% and putting pressure on consumer spending. To curb rising inflation,

the Central Bank of Nigeria increased interest rates four times in 2022, bringing the Monetary Policy Rate to 16.5% – up by 5pp during the year. This was further raised by 1pp in January 2023 to 17.5%," said Karl Toriola, CEO, MTN Nigeria. "We continued to manage and invest in the resilience of our business and networks, expanding coverage and capacity with a focus on expense efficiencies and disciplined capital allocation. We became the first mobile network operator to launch a 5G network in Nigeria, providing coverage in key cities in the six geopolitical regions. Since its commercial launch in September 2022, we have rolled out 588 sites and brought the 5G network to 5G-enabled smartphones, starting with iPhone users. In this regard, we made good progress towards the execution of Ambition 2025 while delivering commercial and financial performance in line with our medium-term guidance."



## Camtel launches national tender for service providers

Cameroon Telecommunications (Camtel) has launched a national tender to recruit local service providers to bolster its fixed network services via its broadband network architecture.

Through the outsourcing deal, the service providers will work towards growing Camtel's customer base by engaging with potential new subscribers and generating interest in the telco's fixed network open to the public.

The service providers will also carry out installation, connection, and maintenance of FTTx subscriber lines in Camtel's fixed network.

Companies looking to bid must also have sufficient capital of at least 100 million francs CFA, and only local companies with proven skills, as well as administrative, technical, and financial capacities to deliver the required services, will be considered.

The bid has been divided into 20 lots - covering some key localities of the country - and each company is expected to select only one lot. Bidders for the retainer covering installation, connection, and maintenance must have an installer approval for electronic communications equipment and infrastructure issued by the Telecommunications Regulatory Board.

## Etisalat Egypt gains EGP4 billion for expansion

Etisalat Egypt has signed a EGP4 billion financing agreement with Commercial International Bank, with the operator set to use the cash to expand infrastructure and push digital services.

The cash will help efforts to meet the changing needs of consumers in the market, including growing data usage alongside creating so-called innovative digital services.

It also cited a wider aim to support the Digital Egypt project, a state-promoted initiative to push digital transformation and promote related skills in the country's population. It is broadly aligned with Egypt's Vision 2030 economic ambitions.

## Vodafone increases Vodacom stake

Vodafone Group Plc now owns 65.1% of Vodacom Group Ltd's capital, up from 60.5% previously. Vodacom issued 241.9 million new shares to Vodafone for the acquisition of 55% in Vodafone Egypt.

Vodafone Group issued the 241.9 million shares at a unit price of R135.75 to finance 80% of the cost of acquiring the stake. The remaining 20% was taken from the company's cash.

It was in November 2021 that Vodafone first announced its intention to transfer its shares in Vodafone Egypt to Vodacom Group. The transaction obtained the approval of the minority shareholders of Vodacom Group in January 2022 and was finalized in December.

## New telco regulator proposed for DRC

Augustin Kibassa, minister in charge of Telecommunications in the DRC, has submitted to the Council of Ministers a draft decree on the creation, composition and functioning of the Regulatory Authority for Posts, Telecommunications and Information and Communication Technologies (ARPTIC). It will replace the current Post and Telecommunications Regulatory Authority of Congo (ARPTC).

The decree submitted for the approval of the Council of Ministers specifies the missions of the new regulator, its supervision, its legal form, and the resources necessary for the pursuit of its mission.

The ICT sector is continually advancing, necessitating more appropriate regulation that goes beyond post and telecommunications. The creation of the new regulatory authority can also be seen as part of the actions undertaken since 2020 by the Congolese government to accelerate the country's digital transformation.

Better regulation of the postal, telecommunications and ICT sector should make it possible to guarantee healthy and fair competition between the various players in the sector and to accelerate its growth. It should also make it possible to improve consumer protection and guarantee them a better quality of service.

### Airtel reports double-digit gains

Bharti Airtel recorded a consistent performance across its portfolio in fiscal Q3 2023, which ended on 31 December 2022, with double-digit gains in its domestic, Africa, mobile and enterprise businesses.

Net profit rose 91% year-on-year to INR15.9 billion, aided by an exceptional gain of INR5.1 billion and revenue grew 19.9% to INR358 billion. Mobile service revenue in India rose 21% to INR193.5 billion, with ARPU up 19% to INR193. The company added 4.4 million mobile subscribers for a total of 332.2 million. Its LTE user base increased 10.8% to 216.7 million, accounting for 65% of its total. Average data usage per customer increased 11% to 20.8GB.

Capex increased 120% to INR63.8 billion,

with the operator launching 5G service in more than 20 cities at end-2022. In its earnings statement, MD Gopal Vittal said that its 5G rollout is on track to cover all towns and key rural areas by March 2024. Enterprise revenue increased 16% to INR47.8 billion; home service sales 30% to INR10.3 billion; and TV services 30% to INR7.4 billion.

Its operation in Africa posted 18% revenue growth to \$1.4 billion. Mobile subscribers grew 10.1% to 138.5 million and ARPU increased 5.8% to \$3.10. Average data consumption per month was up 32.2% to 4.7Gb. Revenue from Mobile Money grew 30.2% to \$189 million, with active user numbers increasing 22.2% to 31.4 million.

### South Sudan to appeal US\$1 billion Vivacell ruling

The South Sudanese government has decided to appeal the judgment from the International Court of Arbitration of the International Chamber of Commerce in a case between it and Vivacell, whose activities it has suspended.

In March 2018 the South Sudanese government suspended the activities of Vivacell for non-compliance with national regulations. The executive demanded tax arrears of US\$60 million, as well as the renewal of its license in accordance with the texts in force in the country.

Vivacell had acquired its license in 2007 from the Civil Authority of New Sudan, before the independence of South Sudan. The licence, valid for ten years, exempted Vivacell from all taxes.

After the failure of negotiations between the two parties, the Al Fattouch group, parent company of Vivacell, took the government to the International Court of Arbitration and demanded US\$3.5 billion in compensation. The court ordered the South Sudanese government to pay US\$1 billion.

The case will be re-examined by a Swiss court, as the South Sudanese government believes that the International Court of Arbitration does not have jurisdiction to do so.

"We are an entity, we are a country with its laws and therefore our law should apply in this particular case," said Michael Makuei Lueth, minister of Information, Communication, Technology and Services.

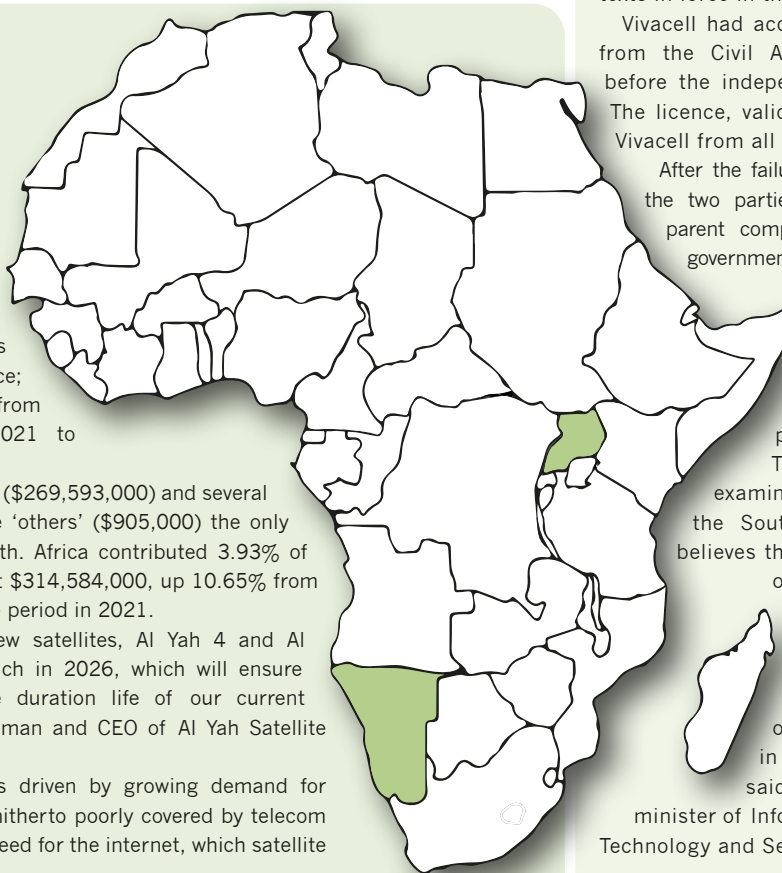
### Yahsat reports strong growth in Africa

Al Yah Satellite Communications Company (Yahsat) has presented its financial results. Of the five regions where the company operates, Africa is achieving a good financial performance; income in the region increased from \$8,347,000 as of 30 September 2021 to \$12,374,000 as of 30 September 2022.

Africa is with the United Arab Emirates (\$269,593,000) and several small markets grouped under the name 'others' (\$905,000) the only markets in which Yahsat recorded growth. Africa contributed 3.93% of Yahsat's total revenue which stabilized at \$314,584,000, up 10.65% from the \$284,294,000 recorded for the same period in 2021.

"The potential acquisition of two new satellites, Al Yah 4 and Al Yah 5, remains under study for a launch in 2026, which will ensure continuity of service well beyond the duration life of our current fleet," said Ali Al Hashemi, group chairman and CEO of Al Yah Satellite Communications Company.

Yahsat's financial growth in Africa is driven by growing demand for broadband connectivity. Remote areas, hitherto poorly covered by telecom networks, are increasingly expressing a need for the internet, which satellite operators are hastening to satisfy.



### CRAN starts Namibia's spectrum auction

The Communications Regulatory Authority of Namibia (CRAN) has begun the auctioning process for radio frequency spectrum in the 700MHz (684MHz-790MHz) and 800MHz (790MHz-862MHz) bands to be used for the roll out of 4G and 5G.

These spectrum bands will be utilized by telecommunications service licensees to provide 4G and/or 5G mobile services in Namibia and to fulfil specific rollout obligations.

"All bidders are required to submit a detailed business case, inclusive of rollout plans for the next three years aimed at expanding broadband connectivity in regions with less than 80% 4G population coverage to meet the national objective of 80% population coverage," said CRAN acting CEO Katrina Siken.

Expanding broadband services by licensees will improve the quality of telecommunications services and inclusivity for Namibians living in

unserved and underserved areas at prescribed broadband speeds and quality of service minimum parameters.

"The spectrum to be assigned will be utilized for mobile services, providing broadband services with a download speed of not less than 20Mbps to ensure meaningful connectivity," said Siken. "This will enable schools to have sufficient network connectivity, to provide online teaching lessons," she added.



# Zimbabwe: 50% price hike approved

The Zimbabwe Postal and Telecommunications Regulatory Authority (Potraz) has given telecommunications companies approval for a 50% tariff increase, ahead of a further 50% price hike in April 2023. The increase has been justified by telecommunications operating below profitable thresholds, despite the apparent dollarisation of mobile money transactions.

Gift Machengete, director-general of Potraz, said that the increases were necessary to prevent excessive pricing by operators, and "if left on their own, they can charge whatever price they wish to charge."

"As a regulator, we have to fix the tariff so that they cannot just charge whatever they want. In order to do so, we need to then use a scientific method of coming up with tariffs, and a method that will also satisfy the operators that the tariffs are fair on their part," said Machengete.

Liquid Intelligent Technologies said that the hikes were long overdue because telcos were operating "under desperate and untenable conditions which have resulted in the business costs surging in line with exchange rate fluctuations."

Operators complained that network expansion plans have had to be stalled and, along with electricity supply challenges, have resulted in dropped calls and lower levels of network availability.

Liquid released a statement confirming the 50% industry-wide tariff increase with immediate effect and another 50% effective 1 April 2023, for products and services. The statement added: "for us to continue providing you with the best possible quality of service, there is a need for constant upgrading and improvement of the network infrastructure."

Econet Zimbabwe has also welcomed the increase and said that it would help to cushion the operating costs linked to the country's rampant inflation. Prior to the increase, telecommunications tariffs were below regional benchmarks and resulted in underinvestment in the sector. "We will continue to press for tariff revisions that maintain the value of our service offering," said Econet Zimbabwe.



## Talking satellite

Martin Jarrold, vice president international programme development, GVF



## How effective is satellite for connecting Africa?

Phrasing questions in terms of 'connecting Africa' suggests a certain uniformity; not addressing the complexities and variety of connectivity requirements and variability of the potential of satellite in meeting those needs. Two things that can be stated, however, are that Africa has specific requirements that differ from those of developed markets outside the continent, and that effectiveness can be assessed using different parameters, with three - interconnected - examples of such parameters being connectivity objective, cost, and applications focus/reach.

When discussing connectivity in Africa the focused objective for satellite has been bridging the (generalised) digital divide. This divide is not uniform continent-wide, and there are huge differences between different regions of the continent and between different countries within the continent. According to Statista, within Africa internet access varies greatly, with nearly 70% of the population living in the southern region connected in 2022, whereas the online penetration rate was less than 30% in both East and Central Africa. Additionally, connectivity differs between countries. Morocco had an internet penetration of approximately 84.1% in 2022, the highest among African nations, whereas only 7% of the population in Eritrea had access to an internet connection.

The predominant adoption of mobile devices has characterised internet use in Africa, with MNOs positioning themselves as the leading connectivity option. In 2021, nearly 70% of the web traffic on the continent took place via mobile, and whilst African nation MNOs and telcos are major customers for satellite services, this is very different from adding, promoting and selling a satellite service as part of a business to consumer product.

Of course, in African nations - just like in those parts of more developed country markets which suffer their own variations on the digital divide - mobile does not reach everywhere, failing to cover areas where either the business

financials do not tally, or where the degree of geographical remoteness or topographical complexity prevents mobile tower deployment, and where access to reliable power supplies is uncertain. Delivering broadband services to meet the task of bridging the digital divide in these remote areas is satellites' mass-market (albeit a numerically much smaller one than the urban/suburban/high population density mass-market with access to mobile services) penetration forte, addressing the internet access needs of schools, health centres, SMEs, and government, as well as WiFi backhaul.

Connecting remote and rural schools is a satellite imperative because it not only allows children to access online learning, but schools can become a community's communications 'hub.' For medical clinicians in many African nations it was the COVID-19 pandemic which highlighted weaknesses in healthcare infrastructures for populations in rural areas located far from clinical facilities. It is only smart satellite services which can offer the necessary speed and bandwidth to support seamless video and voice calls while offering other forms of specialist communication required for the clinicians to be able to interact with, and diagnose, patients.

The proportion of the Africa population living within areas covered by mobile broadband networks is about 85%, but nearly 50% of the population remain offline due to the high relative cost of mobile data. Solutions to close the digital divide must meet the challenge of falling within local consumer affordability parameters. For satellite to reduce the divide across all the communities of the nations of the African continent its broadband service offerings must meet something like the 'affordability threshold' suggested

by the Alliance for Affordable Internet (A4AI).

This parameter varies across the continent and within nations, but sometimes an overall aggregated view can help to simplify the scale of a complex issue. The A4AI and the ITU conducted a study in 2020 which revealed that only 14 African nations met this 'affordability threshold' - i.e., 1Gb costing less than 2% of average monthly household income. According to the study, the actual continent-wide average cost for 1Gb in 2020 was almost three-times that at 5.7% of the average monthly income.

In terms of effectiveness measured by applications focus/reach it is useful to look at how satellite readily meets various user markets' end-to-end applications requirements. Satellite services offer ubiquitous signal coverage, very high network reliability, and whilst service delivery can be entirely independent of terrestrial infrastructure, delivery of end-to-end application-focused service solutions may beneficially be achieved via in-country integration with terrestrial networks and via specialised niche in-country providers. Taking the example of the retail market, end-to-end retail solutions require that satellite services be integrated with the customer enterprise core networks and being seamlessly integrated with enterprise architectures such as SD-WAN.

N.B. I am grateful to the 'Space in Africa' research report (commissioned by 'Via Satellite') 'The State and Future of LEO Satellite Internet Connectivity in Africa' which explores the connectivity landscape in Africa, and how LEO providers may change it in the future, for information and data points covered in the above answer.





# *Transforming digital Africa*





# Next steps to net zero for African data centres

Stavros Spyropoulos, business development manager Africa region,  
Subzero Engineering

We all know that the data centre industry, with high energy-intensive users, is looking to meet net zero goals. To achieve this, they need reliable and replicable solutions around greener energy. As the landscape in Africa is very different to Western Europe, with its increased external heat temperatures, makes it significantly harder to keep data centres cool. The industry must look towards technology that allows balance from both energy-efficiency, along with the data centre's operational needs.

It is not unusual to walk into a data centre in Africa and find not only the chillers working at 100% but also within the hall itself A/C units working full time to make the working environment more bearable. As costs increase, this is becoming more and more unsustainable. Plus, as more global companies continue to invest in Africa, their commitments to net zero also need to be taken into consideration putting more pressure on the data centre.

## Data centres for Africa's MNOS

The African region is complex and does not have a one size fits all with its 54 countries; there are nearly 2,000 languages spoken and over 80% of the population does not currently have access to electricity. This same population is starting to mature in its need for digital services, be it consumer or enterprise. Over 70% of the population in many African countries is under 35, so the demand for all things digital is growing at a fast rate.

Underlying all this data centre market activity is, of course, the unstoppable momentum of digital transformation. Consumers demand ever higher levels of digital performance, and this means that the data centre industry is having to respond to meet this demand. In practical terms, this means more data centre capacity, faster connectivity options and higher compute densities.

Mobile network operators (MNOs) are fast adopting local data centre capacity to meet the growing data deluge. At the same time, environmental pressures, with net zero as the end target, are adding a layer of expectation to data centre owners, operators and users, including Africa's MNOs.

## Renewable energy

An ageing energy infrastructure in some countries means there is an overreliance on oil generators meaning operators need to look at more reliable sources. If you take Kenya as an example, it hosts the largest wind farm in Africa, Turkana Wind Farm. The wind

farm covers 160 square kilometres and has a capacity of 310MW, enough to supply one million homes. 90% of all of Kenya's electricity being generated from renewable sources, such as wind and geothermal. However, in South Africa there is still a reliance on thermal power meaning currently it has a large carbon footprint.

Another thing to consider is the abundance of solar. As you can imagine Africa is currently seeing a fast-growing solar energy infrastructure. Morocco is currently home to Africa's biggest solar project and South Africa now hosts eight of the largest solar plants in the world. Once you take into account this and future projects across the continent it is not hard to see how green energy is the answer to achieving net zero whilst maybe significantly reducing energy costs.

## Climate neutral data centres

There's a very real opportunity to go back to the drawing board and decide what a data centre should look like in terms of location, energy supply, connectivity options, design and construction, power, and cooling – virtually every aspect of the supply chain. With the obvious caveat that there are significant business challenges in the region.

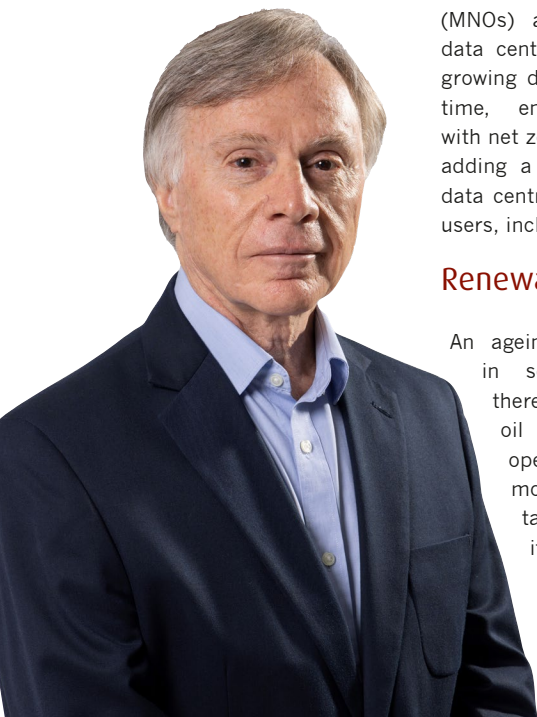
Financing projects is the first obstacle to be overcome – although market entrants with a track record (and finances to match) in established markets are less exposed to this issue. There's also the question of sourcing the appropriate level and quantity of skilled labour at all stages of a data centre project. Supply chain logistics across the continent can be challenging and we can't avoid mentioning the geopolitical

instabilities which can cast a shadow over the data centre opportunity. However, set against these possible drawbacks, the sheer size and scale of the African data centre market is so enormous, that it's inevitable that the increasing trickle of activity will become more of a torrent over the next few years.

Whilst there is an enormous push towards new build projects, there are still several legacy data centres that need to be taken into account. As these have grown over time, a lot from telco providers for example, it has created a very complex environment where not only are they inefficient, but the buildings and infrastructure have not always been designed with these things taken into consideration. These facilities are then being repurposed for enterprise/hyperscale clients and as such needs to be upgraded to be able to serve these markets. This is where services such as CFD evaluations can become crucial for data centres. Data centre operators can learn how to optimize their facilities by discovering how to improve their airflow mix, how to reduce the use of their chillers and through specially designed containment how they can become overall more energy efficient.

## Good news ahead

The good news is that the industry is responding successfully to this twin digital and sustainability challenge, with operational agility and technology innovation very much to the fore. Add in the burgeoning secondary/regional/edge market and there is, perhaps, no better example of how all of these factors are shaping the global data centre industry than in Africa right now. ■





# Mind the gap – bridging the digital divide

In an increasingly connected world, those regions with connectivity gaps are missing out on significant socioeconomic benefits. Amy Saunders asks, what are the key challenges in bridging the divide?

**T**he digital divide remains a pressing concern across the globe. The chasm between those who are connected and those who are not is staggering, with more than 2.7 billion people – many residing in developing and least developed countries (LDCs) – still offline today. As per the UN, some 60% of the African population is unconnected.

This is a problem because “digital connectivity is not just the glue holding together the economy; it’s crucial to social cohesion too. And that is why commercial viability alone can no longer be the gating criterion for broadband rollout,” explains Jan Liebenberg, customer chief technology officer for Southern Africa, Nokia.

### Usage gap tops priorities

Most connected Africans utilise mobile ahead of all other access technologies, primarily due to ease of access, affordability, and electricity requirements. Accordingly, MNOs play a vital role in bridging the digital divide.

“South African MNOs have done a fair bit of work

on this, investing in new mobile network infrastructure in underserved and rural areas,” says Keoikantse Marungwana, senior research and consulting manager, telco & IoT lead, sub-Saharan Africa, International Data Corporation (IDC). “They are also offering low-cost data plans and mobile devices to make internet access more affordable for lower-income individuals and households, and introducing different bonus structures on their data plans, and zero-rating access to various online material for education, health, and other multimedia services.”

It seems that solving the usage gap, rather than coverage, is the key to connecting Africa. As per GSMA, 40% of adults in sub-Saharan Africa are connected to the internet via mobile; however, a further 44% reside in areas with mobile broadband network coverage, but do not utilise that coverage – the usage gap. This gap is greatest in eastern Africa at 55%, followed by sub-Saharan Africa at 44%, southern Africa at 41%, western Africa at 41% and central Africa at 33%.

“Mobile data is like bottled water,” states Mark Goosen, sales director sub-Saharan Africa, Cambium Networks. “Great to have wherever you go but

expensive if your only option at home is to use it for cooking, bathing, and irrigating your garden. A significant source of digital divide gaps is where mobile service is available but not affordable due to the high cost of the data plans, with no other low-cost options. The cost of prepaid mobile data is around 30 times more than fixed broadband. The result is only 10% of the homes in South Africa have WiFi which also lines up with the wealthiest 10%.”

“A range of issues determine whether you can access, understand, and use the available services,” confirms Liebenberg, referencing the ‘seven fault lines of the digital divide. “These include, but are not limited to, level of income, literacy, gender, ethnicity, age, and physical abilities. It’s worth noting that groups experiencing these issues often face multiple barriers, more than one divide; for example, indigenous communities are more likely to live in remote areas and have lower than average incomes.”

Jordan Cox, GSA research executive, agrees: “barriers still exist and will need to be overcome. Some of these challenges include the high investment in infrastructure to bridge the divide combined with



the low ARPU making it not commercially viable, low current coverage, lack of education and skills in the remote areas to implement new technologies," he says. "Even if new technologies such as satellite and FWA are deployed, many people lack the digital skills to make the most of these networks, resulting in a lack of ROI to providers or a reduction of positive benefits for the end-consumer as just some of the potential outcomes."

MNOs remain key in addressing the usage gap: "MNOs are partnering with non-profit organizations, government agencies and other ICT stakeholders and ecosystem players to improve digital literacy and skills training to help people in under-served communities access digital services," explains Marungwana. "Each of the operators have programmes and initiatives across the country on digital skills development."

## We have the technology

A range of technologies are being implemented to increase connectivity since "there is almost no fixed telephony network, so today most Africans in cities are using FWA, or cellular, although fibre-to-the-home is developing very quickly. For rural areas with no access to 3G, TV White Space frequencies could be cost effective versus the connection's low density," says Paul-Francois Cattier, managing director, Africa Data Centres Association. "The real question would be the cost for the user and the business model for the operators to cover rural communities."

FWA, particularly the unlicensed version, can provide cost-effective high-speed internet as an alternative to fibre in suburban or rural areas, shares Marungwana, and can also be used to provide last-mile connectivity to households and businesses in areas where fibre is not yet available.

Goosen asserts that there is no real connectivity gap: "with all the various technologies available today you can get internet access nearly everywhere in Africa. It is really an affordability gap. Fibre, fixed wireless, and WiFi are all helping drive the price down of uncapped data access. WiFi only phones cost less than 10% of mobile enabled devices due to vast economies of scale."

Liebenberg agrees: "sufficient technologies exist to address the digital divide; however the key is in how to combine the different technologies to allow a viable business case and deliver a sustainable solution. Technologies for consideration include mobile radio and fixed-wireless access technologies (5G, 4G, WiFi), satellite broadband, high altitude platforms (HAPS) and low Earth orbit satellites (LEOs) or Non-Terrestrial Networks (NTN). New HAPS and NTN developments are bringing new concepts and business models in bridging the digital divide. The HAPS and NTN allow infrastructure reuse by default, as these assets move around the globe, they are re-assigned to provide access to the country in view, therefore bringing economy of scale."

Meanwhile, Marungwana is a strong proponent of satellite for connecting remote and rural regions: "LEO satellites will be gaining momentum soon in South Africa and will also provide a much higher speed [up to 100Mbps] and affordable [less than R1,000 per month] satellite connectivity alternative

in remote and hard-to-reach areas compared to the traditional satellite internet currently available."

"The affordability gap can be closed, and the total addressable market can be expanded by deploying a range of technology to provide internet service," says Goosen. "With the deployment of low-cost technology on their existing tower infrastructure, operators would be able to profitably serve extremely price sensitive customers, thus growing their market. The result would be a sustainable business today that leads to more internet connectivity, more education, more small business, and a more robust economy tomorrow."

Looking ahead, Cox asserts that "FWA will emerge as a strong player within the African market. According to CCS Insight data, only 1 million consumers are currently subscribed to 5G FWA services across Africa and the Middle East - this is predicted to rise to 6 million by 2026, as more rural areas gain access to the service."

## It starts at the top

Mobile technologies and services contributed 8% of GDP, US\$140 billion, across sub-Saharan Africa in 2021. This is expected to grow to US\$155 billion by 2025, says the GSMA.

"Since 2010 sub-Saharan African countries are showing fast growing GDP performance. What has been the main driver for this? DFI investment? Governments' new economy policy? No - it has been private investment by MNOs to establish mobile networks in Africa that had almost no fixed telephony network and offer a first step to solve the digital divide," says Cattier.

"Some countries are creating rules on pricing and encouraging sharing of infrastructure. A Nokia Bell Labs study shows that a cost benefit of 20-25% can be obtained when towers, backhaul and other ancillary items are shared," says Liebenberg.

"The continued auctioning of spectrum will allow more MNOs to set up multiple networks across Africa. Four spectrum auctions took place across the continent in 2022 in Nigeria, Tanzania, Zambia and South Africa, with Auctions in Namibia and Zambia already planned for 2023 and beyond, according to GSA data. This is the first step into allowing new networks," said Cox. "Alongside this, an increase or continued investment into connectivity infrastructure will both encourage MNOs into the market and give them the vital investment needed to successfully set up networks."

"A new mindset will be required," opines Goosen. "Licensed spectrum which is used to deliver mobile service is a valuable service but is not affordable for most people. Unlicensed spectrum is already being used in Africa to deliver reliable WiFi service at a tiny fraction of the cost of mobile. Regulators can quickly increase available unlicensed, low-cost spectrum by allocating all of 6GHz to WiFi as the USA and Brazil have done. In addition, making 60GHz PtMP available across Africa will allow local fibre and small fixed wireless operators to quickly and economically expand their networks."

Governments should also reduce private-investment risks to attract more capital in digital

infrastructure investments that serve a public need, says Liebenberg, "and where conditions are not commercially viable, they can provide growth capital on those projects to attract private investors."

## A connected future

The GSMA reports that this year, mobile connections in sub-Saharan Africa are forecast to reach 1 billion, and by 2025, mobile subscriber penetration should reach 50%. MNOs are expected to continue to invest heavily in sub-Saharan Africa for the foreseeable, with more than US\$30 billion network capex over 2022-2025.

Cox expects the current rate of spectrum auctions to continue or even increase, encouraging more MNOs into African markets, "however the current economic uncertainty does not help with investment as well as equipment shortages, alongside the strong geopolitical factors that are currently taking place globally, which itself may cause the slowing of decisions or restriction of investment."

The continued development of rural areas is a key priority. "The digital divide between Africa and the rest of the world will be history in five years," asserts Cattier, "but the digital divide within Africa will remain until the governments understand the need to develop rural economies."

Marungwana reports that South Africa's efforts to expand broadband infrastructure, particularly in rural areas, will continue and accelerate: "I expect us to have at least 90% 4G population coverage, and significant fibre broadband availability in rural areas at affordable rates. Fibre pricing as low as R500 per month for 50Mbps has been available for a couple of years in some villages like in the Northwest and Limpopo, and it is growing."

"Most African countries have difficulties bringing infrastructure to rural areas, mainly due to the cost to power the infrastructure when there is no access to electricity," says Cattier. Linking the digital divide and the electricity access divide would help, but it is not the path most governments are following, he says. Developing rural areas economically is necessary to enable entire countries to develop, rather than just the main cities: "to do this you need to develop electricity access, grid expansion, mini grids etc..."

However, Africa's fixed wireless operators are incredibly innovative and dedicated to sustainably delivering low-cost WiFi to homes and small businesses across the continent, says Goosen. "Multiple pay as you go fibre/WiFi deployments are operating across lower income urban Africa. PayGoZo is a prime example of this type of deployment. Ikeja is another operator that profitably delivers pay-as-you-go service in areas where no one else wants to operate. If regulators free up more spectrum, such as allocation of 6GHz to WiFi, this will offer welcome relief to the congested 5GHz fixed wireless. Any network operator could take advantage of the new spectrum to profitably deliver low-cost broadband and WiFi to millions more people across the continent."

The future for connectivity in Africa looks bright, even amongst rural areas, however, progress may be gradual. Ultimately, we might envisage within our lifetimes a future where every African has access to connectivity, even in the most remote regions. ■

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# How is the space domain connecting Africa?

Africa has lagged on the adoption of satellite technologies, however, Amy Saunders notes that today, nations are increasingly expanding their sovereign capabilities

Satellites have long proven effective at delivering reliable, secure communications from anywhere on Earth. While pricing has traditionally been prohibitive for many countries, a recent leap forward in technology has made construction, launch and operation more affordable and accessible than ever before.

Coinciding with a world struck by digital transformation in the wake of the coronavirus pandemic, space-based communications are now becoming a priority for developing nations. As per the 'African Space Industry Annual Report 2022,' the continent's space sector is booming, valued at US\$19.49 billion last year. African countries allocated US\$534.9 million for their space programmes in 2022, up 2.24% on 2021.

While the continent has not been deeply embedded in the space industry historically, African nations have manufactured more than a handful of satellites for a range of applications, mostly beyond traditional communications like IoT and Earth observation (EO), which are expected to translate into improved socioeconomic and environmental outcomes.

"At present, 10 sub-Saharan counties have launched satellites to space, with another five northern African nations also having done so," says Martin Jarrold, vice president international programme development, GVF. "Of the approximately

40 African nation satellites in orbit, only eight are for satcoms with the other 32 divided between EO and technology demonstration."

## Satellite sovereignty

Satellite sovereignty is a topic that comes up again and again, but with large swathes of Africa provided with satellite coverage from international actors, how important is sovereignty to African nations?

Very, according to David Oni, research analyst at NSR, an Analysys Mason Company, who opines that "apart from a sense of national prestige, it can also serve as an avenue for technology transfer, hence boosting indigenous technology which can have a ripple effect across several sectors of the economy."

While satellite sovereignty allows a nation to be independent for their telecommunications needs, it is not always feasible or in the national interest, says Andreas Voigt, senior engineer, EUTELSAT Service Operations; and director, the Satcoms Innovation Group (SIG): "some nations in Africa are able to afford to have a sovereign system by the help of a donor country, like Nigeria or Angola. Some can finance it themselves, like Algeria or Egypt. Other African nations trust third parties more than their own to provide capacity."

Martin Coleman, partner, COLEM Engineering,

believes that right now, satellite sovereignty is not a priority for African nations: "it is not where the money should be spent. Africa needs flexible ground infrastructure now to ensure connectivity access both terrestrially and from space. If it is to be a connected continent, then the ground is where the real investment should be taking place."

National pride may play an important role in decision-making, however, enhanced data security, independent communications capabilities, and custom applications are what bring sovereign satellites into their own: "sovereign communications satellite capabilities for Africa can provide 'tailored' solutions peculiar to the region," says Oni. In Africa, these might include IoT applications for agriculture, mining, utilities, defence, as well as enabling remote and rural communications among a disperse population.

One such example, Nigeria's DELSAT-1, was launched in December 2022 to enhance the operational capacity of the Nigerian armed forces. Chief of Defence Administration, Rear Adm. Nnamdi Muogilim said that the satellite will create a robust indigenous space competence capable of producing and utilising space assets to meet the operational requirements of the military and other security agencies.

"Most African nation-owned satellites are still

designed abroad; and whilst there is a process of transition underway, with the continent joining in with the new 'space race,' so far the transition has been towards EO satellites rather than satcoms," explains Jarrold.

Having reliable and secure access to telecommunications services and internet connectivity is essential for everything from economic and infrastructural development to education and healthcare, shares Voigt. "In countries like in Africa where infrastructure including transport and electric supply is poor, particularly in rural parts, satellite services have a vital role to play in connecting people. Overall, I would say that although a long-term aim of some African nations may be to have sovereign satellite capabilities, in the short to medium term, having reliable and secure telecommunications services is more important," concludes Voigt.

## Challenges remain

One of the limiting factors in the wider adoption of satellite for communications has been cost, which has tended to be prohibitive for most applications. Despite the sharp fall in prices in recent years, "they are still high in Africa relative to the amount of disposable income available to people, when compared to other countries," says Voigt.

However, good news is on the horizon: "the new style VHTS satellites have the potential to bring down the production cost per Gb significantly, making satellite bandwidth much more affordable. This development has the potential to make satcom services a valid alternative to terrestrial fixed services," explains Voigt. "For much of Africa, mobile broadband services are non-existent outside large cities, and while availability of narrowband may improve, mobile broadband with speeds over 10Mbps will most likely not be available ubiquitously in the next 5-10 years, if at all."

Jarrold opines that, for satellite to reduce the digital divide across all of Africa, its broadband service offerings must meet the first challenge of falling within local consumer household affordability parameters. "The Alliance for Affordable Internet (A4AI) and the ITU conducted a study in 2020. It revealed that only 14 African nations met their 'affordability threshold' of 1Gb costing less than 2% of average monthly household income, whereas the actual continent-wide average cost for one gigabyte in 2020 was 5.7% of the average monthly income," says Jarrold.

While terrestrial infrastructure remains less expensive on a cost per bit level in most regions, its deployment is often price prohibitive due to small, dispersed communities, or indeed challenges arising from the natural landscape itself, rendering satellite the only viable option. However, even the build and maintenance of local ground infrastructure for satellite can be challenging due to "the lack of transport infrastructure, because it can be difficult for engineers and equipment to reach the sites in a timely manner," says Voigt. "The lack of availability of a continuous, reliable electricity supply is another major challenge."

Moreover, satellite operators looking to provide

services require a strong local presence. "It is difficult to gain customer trust if the operation is fully run from a country outside of Africa," explains Voigt. "You need to have local knowledge, regional language spoken, and sound relationships with local providers and retailers, also inside their ethnic groups."

## Unlocking opportunities

One possible game-changer for satellite communications in Africa, named by NSR as the 'largest opportunity in satcom's history,' is the direct-satellite-to-device, which has a market forecast of US\$66.8 billion in 10-year revenues versus US\$38.5 billion for wholesale non-geo satellite services.

"Satellite-to-device will unlock extraordinary opportunities for the satellite industry in Africa," says Oni. "Although the adoption rate will depend on several factors, such as: cost, reliability, terrestrial alternatives, policy makers, market dynamics, etc."

Jarrold agrees: "certainly, in terms of people no longer being out of touch or requiring a specialised device to connect, using mobile/cellular spectrum for satellite-to-device services makes sense in countries with large unserved rural and remote populations, such as within the African continent."

As well as providing easy-to-use, reliable connectivity for those who need it the most, "it will enhance MNO access to new customer segments through satellite communications, providing satellite operators the opportunity to secure connectivity for existing mobile customers, when roaming out of range of their terrestrial mobile signal," shares Oni.

Voigt says that MNOs will likely be happy to enable services via satellite for an extra fee as additional upsell for people who roam outside of their original service coverage areas. "However, the percentage of individuals who will be able to pay for that in Africa will be marginal and bodies such as governmental, military or professional services will usually already have connectivity via satellite in the conventional way."

The ability to communicate via satellite through standard consumer mobile phones will reduce barriers to entry and help bridge the digital divide, while MNOs stand to gain by boosting customer satisfaction, reducing costs, and unlocking new revenue opportunities. NSR expects average monthly users to reach 386 million by the end of the decade. While satellite-to-device will not rival terrestrial performance, with low data rates and high latencies than would be required to, the technology comes into its own for applications like voice, messaging, IoT and global coverage – all of which will help connect those in remote and rural communities.

Voigt holds a less optimistic view: "it cannot provide that ever-present connectivity that users expect to have with their phone. Satellite direct to device does not work indoors without something in between like a repeater cell. Nor does it work well where there is an obstruction in between the satellite and phone such as buildings or trees. It will also not work well in a car without radiating the car passengers intensively for the return channel connectivity."

The most prominent of the recently announced satellite-to-device services are typically offering

SOS-type alerts and text messaging only: "this is not enough. Customers want more than basic emergency services," states Jarrold. "The big question is, 'depending on cost in more price sensitive markets, will these functionalities be widely taken up by the end user?' In Africa's developing markets millions cannot necessarily afford high-end Apple and Android smartphones and, therefore, can't access IP messaging."

We need to learn from the experiences and achievements of Iridium, Orbcomm and Globalstar in the early 2000s, says Voigt: "it is possible to improve the physical layer by some dB with software coding and modulation. However, when inside or if close to obstructions, there is several 10s of dBs of attenuation that need to be overcome. A handheld terminal will never be able to achieve that with its fractal antenna, battery capacity and lifetime, etc. so certain conditions will always apply such as needing to be outside, with an unobstructed view to the satellite and to avoid rapid movement changes. These requirements mean that many of the potential commercial use cases are therefore non-applicable."

## A space-based future?

"Satellites will be instrumental in bridging the digital divide across the continent, and the rest of the world," says Oni, so it's no surprise that the African Space Industry report forecasts a growth rate of 16.16% to US\$22.64 billion by 2026.

"Satellite provides a vital layer of communications providing us all with safety, disaster recovery, medical/healthcare, tracking, and, of course, navigation through the various GPS services available. Satellite delivers this totally and is a high reliability network for such cases," says Coleman.

In line with digital transformation efforts, "true broadband internet connections (>10Mbps) will be important to small/medium size business development and working. Users require a stable service, and this means highly available at good throughput rates for the price they can pay," shares Voigt. "In urban areas, in most cases, MNOs will be able to deliver that via 5G and its future developments. However, in remote and underserved regions, satellite services will certainly play an important role in the coming years."

Affordability will continue to increase in leaps and bounds, and "satellite communications will continue to play an important role in connecting Africa, especially in remote and underserved areas where terrestrial options may not be available or may be cost-prohibitive," reports Oni.

"Against the backdrop of the challenges faced by terrestrial wireless systems, for example the MNOs facing static revenue trends, NGSO satellite systems will have the capacity to bring more people online in Africa in the coming years," asserts Jarrold. "These operators have been busy acquiring spectrum rights with various of Africa's national administrations. Connecting the unconnected by 2030 remains the objective, but still there remains the question as to whether the NGSOs will be able to translate new capacity into actual opportunity to be realised through affordability." ■





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# Monetising 5G FWA: automating operations to match local and global connectivity demands

5G fixed wireless access (FWA) technology is revolutionising connectivity options for businesses and homes across the globe. But how best to monetize it? Ewa Jaskowiak, director of strategic business development, Enxoo, reports



**T**he worldwide deployment of 5G in 2019 promised data speeds up to ten times faster than 4G, as well as providing lower latency. However, nearly three years later, 5G still isn't fully supported by digital infrastructure that will enable mobile network operators (MNOs) to fully gain the benefits of its services. 5G is accelerating a revolution in enterprise IT with fixed wireless as a global market being expected to surpass US\$90 billion by 2030 from US\$0.5 billion in 2020 at a compound annual growth rate (CAGR) of 75.4% according to Fatpos Global Pvt.

As the millennial and generation Z populations rapidly increase in the workplace there is a greater demand for fast, seamless internet and stronger 5G fixed wireless access connections. According to Statista, the number of 5G fixed wireless access (FWA) connections is estimated at 71.82 million by 2026 and 5G FWA could ultimately account for 21% of all connections by 2030.

With almost every enterprise undergoing digital transformation, there is a huge opportunity for MNOs as the demands for 5G and fixed wireless services begin to increase. MNOs can achieve a greater return on investment (ROI) if they can begin to address the hurdles 5G fixed wireless has and understand why it is preventing effective monetisation.

## Deploying innovative 5G services

According to a Nokia-commissioned survey, it was found that only 11% of communication service providers (CSPs) around the world had sufficient business support systems (BSS) that would help achieve effective 5G monetisation. It was also found that 70% of the CSPs are now considering deploying cloud-based monetisation systems as they will be able to enable new services, faster and at a scale that can achieve a greater ROI on their network investments.

MNOs are experiencing more operational

complexity as they add 5G to their portfolios. Customers are demanding 5G with almost impossible delivery times as they want procurement and service to be ready quickly so that they can enjoy faster download and upload speeds. However, the challenge with deploying 5G is the support that is necessary for greater service agility, automation, and greater visibility into sales.

Legacy technologies are hindering MNO sales and operational processes as the lack of adoption of innovative technologies take away the ability to move with new speed and agility.

New innovations continue to enable enterprises to renew internal and external processes for decades to reduce costs and deploy emerging technologies. MNOs are now realising that serving the demand for 5G fixed wireless services will require more than just the technology; they will need to create a seamless experience for the customer from start to finish and that begins with the first sales touchpoints.

If MNOs continue to deploy 5G successfully there is a good opportunity for scaling. Sales processes are not currently feasible as they operate manually and offline. This creates a problem for MNOs as current processes are slow and from the past.

Digital transformation is the most valued journey an MNO needs to pick up on for its sales processes to become digital, seamless, and quick.

## Capitalising 5G FWA

As the demand for high-speed internet and lower latency continues to rise, there has been an accelerated expansion in the 5G FWA market. 5G FWA offers scalable, cost-efficient broadband technology with high-speed, wireless connection that goes the extra mile.

The answer to high-speed connectivity and lower latency demands is 5G FWA. Although the service is currently lacking in rural or newly built suburban areas. 5G FWA is meant to be a lower-cost alternative to fibre to the home (FTTH) and still deliver similar speeds. It has a greater advantage as there is no time-consuming process to installing 5G FWA; unlike digging to install fibre across various locations, FWA uses existing towers and antennas located near customers' businesses or homes.

MNOs are currently rapidly seeking to capitalise on the opportunity of 5G FWA, however, to ensure a good customer experience there are things an MNO needs to consider:

- **5G premise equipment** – MNOs have not accounted for fixed terminals as there are rooftop antennas in which indoor fixed terminals and routers may be needed. MNOs need to ensure they have planning tools to determine how many terminals will be required per location and identify the best place to put them.

- **New spectrum challenges** – The usual spectrum for connectivity is mid-band, however other options including millimetre are also available to operators. MNOs need to understand how services can be impacted depending on which spectrum band is used.

- **Customer KPIs** – There are certain KPIs that need to be met when delivering high-speed fixed broadband. An MNO should analyse and view these on a map to predict the user experience and have planning engineers understand certain elements in advance.

5G FWA is unknown territory for MNOs and brings numerous advantages alongside being a disruptive technology. However, to benefit from revenue and business growth, operators must pay close attention to optimisation and planning.

## Switching to automated networks

There is a large opportunity for enterprises to reduce the number of costs and improve sales margins with 5G. Once the opportunity is identified, MNOs can slowly move away from the offline, manual methods and start enhancing their business operations in multiple ways. There are many revenue streams that can be opened by 5G technology and MNOs can begin to offer new services like fixed wireless. Enterprises can drive expenses down with automated network planning and operations for a streamlined approach to sales.

For 5G to be successful, the system should allow for:

- Fast connection speeds
- Automated service creation
- Enablement for IoT/edge platforms
- Support for dedicated networks
- A high level of automation

All these factors will facilitate dynamic network slicing with specific provisioning requirements.

FWA is common in countries where FTTH or FTTB alternatives have become out of date, slow and too low quality for the demographics within the area. MNOs should take this opportunity and capitalise on this and focus on their sales effort where demand for fixed wireless access service is growing to get the best chance of success.

To ensure sales are not wasted, sales reps need great visibility into a variety of different areas including services, pricing, and costs to ensure that the decision they make is right for every customer.

Enterprises that match the needs and demands of local and global customers, using digital processes to enable them to create

more tailored, seamless experiences.

There are currently 12 African countries that are either conducting or rolling out 5G and over 100 million internet users in urban, suburban, and rural areas of Africa that could benefit from 5G FWA. There is a digital divide in Africa as major cities benefit from 5G services at different speeds and other digital products whereas other areas are facing little to no connectivity.

According to ABI Research, 1 in 5 people living in sub-Saharan Africa still do not have mobile broadband coverage, equating to more than 200 million people. To help bridge the gap and provide connectivity, a 5G FWA network can help meet the criteria for affordable broadband connectivity that does not need new equipment and is more cost-friendly.

There is a large opportunity for sub-Saharan Africa as it has a history of poor fixed network coverage and 5G FWA can help solve that gap. It can enable a fibre like experience, especially in remote areas where it would be impractical to deploy. During the pandemic, FWA became a significant growth driver, especially for emerging countries like South Africa.

5G FWA is also a more profitable proposition for operators as the potential ROI is less than three years which makes it a more commercially feasible technology for an investor. 5G fixed wireless access network is the best option for expanding fixed connectivity in the developing world and enabling African markets and beyond in a new era of innovation.

## Better roadmaps with fixed wireless

MNOs who start or continue with their digital transformation journey will slowly add these processes into the sales department. This enables their organisation to create better business-to-user roadmaps.

5G is a great alternative to cable broadband which attracts enterprises as it is much faster than 4G or LTE networks. Both underserved local markets and global markets can benefit from fixed wireless, especially in rural or built-up areas where a fixed-line infrastructure can be difficult to deploy.

MNOs are able to maximise their revenues, reduce costs and enhance their reputation within the enterprise landscape by streamlining their offerings, sales process and overall experience. They need the right digital transformation partner to approach FWA and help support them understand the telecoms industry.

MNOs need to understand that those who leave their legacy manual processes as they are, will find that their ROI from network investments will not come to them. It is time to innovate current manual systems to drive expenses down and maximise margins to match the demands of local and global customers. ■



# Connecting the unconnected with cellular backhaul

**D**emand for connectivity is booming across the world, and in particular in Africa, where an increasingly youthful population is demanding services equal to those found in Western regions.

According to the GSMA, sub-Saharan Africa has significantly reduced its coverage gap for mobile broadband in recent years. The coverage gap fell from 50% in 2014 to 19% in 2020, but this is still more than three times the global average of 6%.

While this is remarkable progress, the coverage gap in sub-Saharan Africa remains the highest globally. The region is home to 67% of the world's population that are not covered by mobile broadband.

A key concern for reducing the gap is that the deployment of new sites in sparsely populated rural and remote areas is a significant economic challenge, as it can cost up to twice as much to deploy new base stations in rural areas than in urban ones and can be three times more expensive to run.

Africa Mobile Networks (AMN) is playing a key role in improving the commercial feasibility of rolling out mobile internet broadband networks and cellular backhaul over satellite is proving to be the ideal solution to expand a cellular network rapidly and efficiently to rural areas, thus helping bridge the digital divide and satisfy the growing demand for connectivity.

## A cellular backhaul solution

AMN's technology is optimized for rural Africa, combining low power and solar BTS transmitters with very small aperture terminal (VSAT) satellite technology directing traffic onto an existing network and using solar panels to power the systems.

AMN operated more than 2,000 base stations in 10 countries in 2021 and continued to launch new operations in additional countries throughout 2022; ultimately the company plans to cover almost every country in sub-Saharan Africa.

At the core of AMN's vision is the use of highly advanced technology to enable services to be delivered more economically and sustainably to smaller communities than has been previously possible. Indeed, AMN is bringing 2G, 3G and 4G voice and data connectivity to towns and villages which have previously been unconnected.

To achieve this goal, AMN selected Gilat Satellite Networks to deliver more than 2,000 SkyEdge II-c-Capricorn VSATS and to participate in plans of site migrations from 2G/3G to 4G, as the requirement for data communication rises.



"AMN selected Gilat due to its superior technology, to further extend Africa's largest satellite cellular backhaul network constructed by AMN and powered by Gilat's VSAT technology," said Michael Darcy, CEO, AMN. "We are pleased to contribute to closing the digital divide by furthering the reach of our network to additional countries reaching more of the population in rural areas."

The SkyEdge II-c-Capricorn family consists of high-performance VSATS ideal for vertical markets that demand high throughput and high-speed services, such as corporate networking, 3G and 4G/LTE cellular backhauling, IP trunking and mobility. Designed to work with high throughput satellites (HTS), Capricorn's adaptive transmission technologies maximize performance, improve service availability, and reduce operational costs.

Gilat's technology and deployment protocols ensure that AMN can deliver a reliable service, unaffected by weather conditions or sabotage. The ruggedized and locked boxes which contain the VSATS are strong enough to withstand natural and human damage so that minimal onsite technical support is needed.

AMN's network is monitored 24x7 by its global

network operations centre (GNOC) based at its headquarters near London, UK. The GNOC manages all changes to the network, under strict change-control procedures.

AMN's network-as-a-service (NaaS) model allows Africa's Tier-1 operators to expand their network coverage deep into rural areas with no CAPEX investment and no OPEX risk. According to AMN, this model is the most efficient way for MNOs to expand their rural coverage; the business model and the satellite technology behind it is both sustainable and profitable.

"Looking ahead to 2023, the partnership between Gilat and AMN will continue to grow," said On Sobol, sales director, Gilat Satellite Networks. "AMN has aggressive

plans to expand their network to include additional countries and join forces with new mobile network operators. In addition, they will be transitioning sites to 4G to enable an enhanced user experience and the ability to connect to even more remote villages. Gilat is extremely proud of our work with AMN in terms of the successful evolution of the project and our strong working relationship. Perhaps more importantly, this project is giving us the opportunity to help achieve our goal of bringing connectivity to everyone, everywhere around the globe." ■





# Backhauling for last mile solutions in South Africa

**T**CS (The Computer Shop) began operations in South Africa more than 20 years ago with a mission to offer the widest range of IT services and support in the country.

TCS Wi-Fi was launched six years ago to meet the needs of those struggling with slow and unreliable internet connectivity and has since then become one of the leading wireless ISPs in South Africa. The unique service offering and attention to customer service has garnered the company a client base of more than 8,000 homes and business links from Caledon to Port Elizabeth, with shops in Plettenberg Bay, Knysna, Sedgefield, George, Mossel Bay, St Francis Bay and, most recently, Greyton. These customers range from the individual homeowner to multiple dwelling unit buildings with advanced surveillance, internet, and VoIP systems. TCS Wi-Fi has also forged partnerships with some of the country's top telecommunication companies.

TCS has its own fibre backbone network and has been deploying wireless networking to create cost-effective backhaul links from customer premises to the backbone. As in other areas of wireless networking or with broadband services in general, the bandwidth requirements for homes and businesses are exploding and previously installed solutions were becoming exhausted or performing poorly under the strain of the increased data traffic, which is as much as 4x some service areas, compared to only six years ago.

## State-of-the-art technology

The state-of-the-art these days for such backhaul applications is the deployment of 10Gb/s links – and TCS Wi-Fi turned to Siklu for advice on

constructing such a link in the Plettenberg Bay service area. The link required was relatively short – approximately 300m – and a fibre connection was considered. However, even with that modest distance, TCS and Siklu determined that the wireless option would still be considerably less expensive and faster to install.

“When running fibre between two points, every metre is a potential failure point for physical damage,” said Wesley McQuillan, CEO, TCS Wi-Fi. “When going with connections based on high-quality wireless from Siklu, there are only two points of potential failure on the radio side. Further, they are 100% controlled by me, the owner of the equipment, and therefore I control the timeframe for replacement and make sure our uptimes are kept in line with customer expectations.”

Another factor that led to the selection of a wireless link is the growing use of the 70 and 80GHz bands in the country. Recognizing the abundant bandwidth available in those bands, which could be used to address several digital divide issues in the country, South Africa's regulator ICASA has made it much easier to operate in those bands. For instance, ICASA has enacted a ‘lightly-licensed’ scheme to use these bands – giving a user up to 30 days in which to register – and has taken other measures to facilitate access to them. It is also much less expensive than other licensed bands at less than R1200 per year for a 10Gb/s link.

As a result, TCS and Siklu concluded that a link incorporating the Siklu EtherHaul™ EH-8010 would provide a highly reliable (consistently in the ‘five 9s’ range) 10Gb/s solution. Siklu's reputation in millimetre-wave engineering and connectivity and its flexible pricing options also



positively influenced the decision. After swapping out units to resolve a minor issue with using the SFP port, the installation proceeded as expected and was completed in less than one week. The small form factor antenna and Siklu's alignment tools also help to speed the deployment process.

“For many years I have pointed out to my network engineers that we do not need to run fibre for anything 5km or less,” said McQuillan. “The performance of the Siklu radios in this project proves that assertion, by installing them between our main breakout and main high sites. The engineers all ended up getting back to me and agreeing with me that anything under 5km no longer requires fibre to be pulled into that area.”

TCS reports that they saved a substantial amount of time and money, as compared to trenching and installing fibre for this route. Given this benefit and the excellent performance to date, TCS plans to expand their 10 Gigabit-speed, mmWave wireless footprint – using Siklu equipment – in the coming years.

Following up on the project, Stef Delpont, chief operating officer, TCS Wi-Fi, told us that “the Siklu 8010FX wireless link has proven to be a highly reliable and high-performing solution for our use case as a wireless internet service provider looking to enhance our wireless network. Its high capacity throughput and quick installation process make it an excellent choice for WISPs of all sizes looking to add that next-gen tech on to their networks. We are currently looking at a few future proof Siklu projects to put the fibre market on the back foot.” ■



Tower  Xchange

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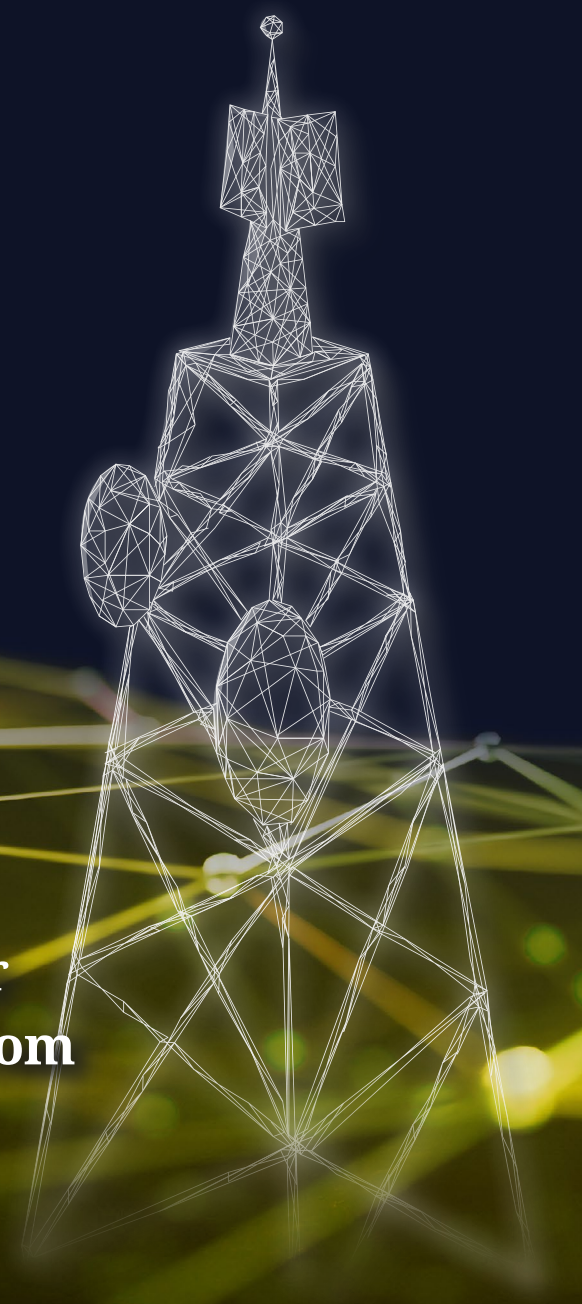
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# Mobile roaming needs to stop disappointing customers

Dario Betti, CEO, Mobile Ecosystem Forum

Roaming requires the complex organisation of mobile operators, phone manufacturers, masts, and regulatory bodies all working seamlessly, making it one of the greatest technical achievements of the mobile sector. But many travellers are finding that their phones do not always work abroad — even in areas that were perfectly covered before — and their bills are far from worry free.

Many mobile operators are in the process of decommissioning their older networks (2G and 3G), in favour of more efficient 4G and 5G networks. These new networks are not yet fully supported for roaming by all operators.

There is plenty to concern customers — we appear to be going backwards, not forwards — and frankly more work from mobile operators is needed to protect one of the true successes of the mobile revolution. Here are a few areas requiring attention.

## Support VoLTE roaming

Not supporting international roaming has multiple effects for high value customers: not receiving an SMS can block a bank transaction or a payment, voice communication is still key for business and private communications. Patchy or non-existent coverage while roaming is unacceptable. Customers rely on mobile devices; both voice calling and SMS are basic and intrinsic services expected from mobile phones. Mobile operators are reducing their value by not providing a consistent connection. Support for 4G and 5G roaming is necessary — or customers will go elsewhere.

## Build services

Operators need to build a robust and reliable network to provide

a universal service and sign commercial deals that will get customers connected overseas. If customers can reliably travel to any country and use their mobile phone for voice and SMS, they will likely be happy to pay the premium.

Alternatively, and this is better suited to low-cost operators, rather than spending time, money, and resources building a universal network, these operators could build packages of OTT services, such as free WhatsApp messaging and voice calling, so that users can use their data allowance (already carried via the 4G network).

Whichever option mobile operators take, pricing strategy will be very important. Pricing these services needs to reflect the market, the competition, and the level of service the customer can expect. Set prices too low and it threatens to bring the market down. Too high and customers will find alternative workarounds.

## Design easy to use international packages

In the age of apps and easier self-service and customer experience, some mobile operators are struggling to share information, and build packages that allow users to feel in control during their international trips. Daily passes, capped spending and many other tools have been created by operators to give customers the level of transparency and worry-free billing that can make roaming easy and enjoyable service. Operators should feel free to copy best practices.

## Roaming is a premium service, but it should not be an exorbitant trap

A few operators are giving roaming a bad name, but it is every operator's

duty to control and manage their roaming prices. Prices are negotiated by two sides: the originating and the visited network — ultimately it is a common goal to get a fair and affordable price for roaming. Operators need to do a lot of additional work and maintenance to ensure roaming services work effectively. If a customer is paying a premium, they better receive the service they expect.

## Make it simple – and communicate

One of the major challenges from the 2000s was the sheer complexity of overlapping technologies consumers had to contend with. They had to have the right handset with the correct signal banding for the destination country, the right mobile operator with the correct services enabled, and the right products to provide the connection. Today, people do not want to deal with such complexity. These issues were ironed out more than 10 years ago, so people do not expect to have to deal with this anymore.

Whatever solution you choose (building roaming networks, or putting together OTT packages for roaming customers), communicate with the customer and let them know what they need to do. For example, allow them to download configuration settings before they set off, tell them exactly what is included in the package or what services work in which countries. For example, some countries, like the UK, are dominated by WhatsApp while others have their own popular equivalent; in Korea most people use KakaoTalk, commonly known as KaTalk.

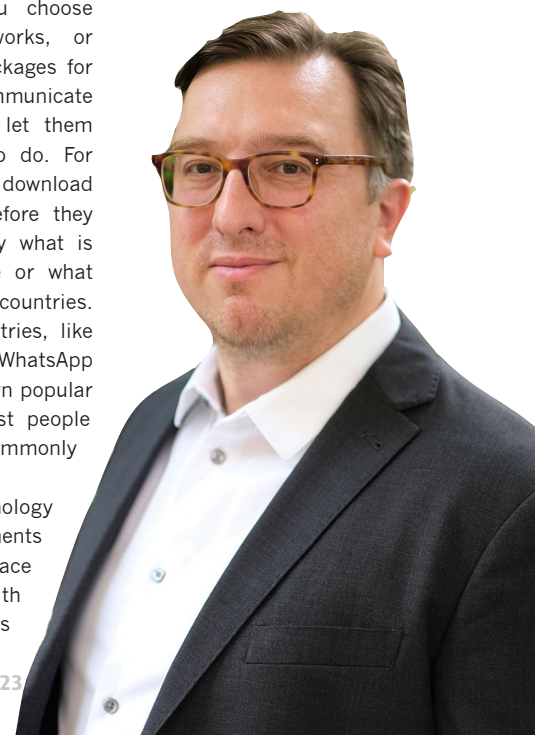
Keeping pace with technology can be tricky and developments move at a different pace around the world. In South Africa, most mobile users



use 3G, with a sizeable percentage still using 2G. In the USA, on the other hand, 3G networks are largely decommissioned.

But technology should not be an excuse for poor service. Customers can easily compare services across different operators to find one that works, is reasonably priced, and helps rather than hinders them while travelling.

It is time for the industry to take a long hard look at roaming and make a serious commitment to 'do better' and create a new 'golden age' of roaming that's good for customers and therefore, by extension, the industry as well. ■





# Cambium Networks launches next generation fixed wireless platform - the ePMP 4600

Cambium Networks has introduced the ePMP 4600, a next generation fixed wireless platform that allows service providers and private network operators to utilize the entire 6GHz spectrum to deliver up to 4Gbps throughput per sector over fixed wireless.

The ePMP 4600 is deployed in days rather than the months it takes to deploy fibre and is dramatically less costly than satellite access technologies, enabling service providers in rural and suburban areas to offer up to 1Gbps service packages with low latency to business and residential customers.

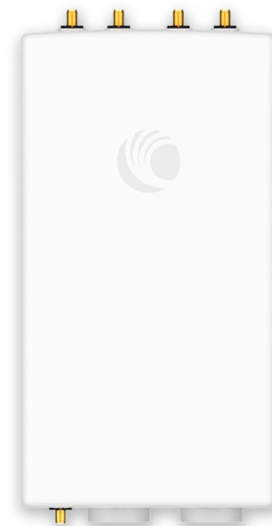
Network operators report field tests showing multigigabit throughput per sector and more

than 1Gbps to subscriber modules at ranges greater than two miles. The new spectrum will especially benefit hard-to-reach rural communities most impacted by the digital divide by providing a rapidly deployable way to deliver high-bandwidth, low-latency services for demanding applications, such as streaming video, videoconferencing, and gaming.

The 4600 is the fourth generation of Cambium Networks' successful ePMP platform with more than 3 million radios deployed and serving customers globally. The ePMP platform offers scalability and interference mitigation based on its unique air interface. The platform takes advantage of the 802.11ax

standard and overlays ePMP features such as TDD synchronization, SmartQoS and frame optimization.

The upcoming 6GHz spectrum will offer 850MHz of new clean, low noise floor channels that will be ideal for the new capabilities offered in the ePMP 4600 such as orthogonal frequency-division multiple access (OFDMA), multi-user multiple-input, multiple-output (MU-MIMO) in both the uplink and downlink directions and TDD synchronization. For point-to-point (PTP) applications such as campus connectivity and business services, the Force 4600C builds on the proven ePMP Force 400C Series to offer multiple Gbps and leverage the unique ePTP protocol for higher network efficiency.



# Ceragon releases new RAON software for reduced energy consumption

Ceragon Networks Ltd.'s new Radio Aware Open Networking (RAON) software is now available for purchase as part of its IP-50FX Disaggregated Cell Site Gateway (DCSG) solution.

The RAON software is designed to increase operational efficiency, simplify radio monitoring and management, and reduce energy

consumption at a time when global energy prices are adversely impacting OPEX. By enabling the cell site gateway to act as a virtual in-door unit with a single IP address, RAON empowers unified monitoring and management capabilities. It informs the cell site router of any changes in connected outdoor

radios, allowing for data-driven decisions such as rerouting for optimal traffic flow.

The RAON-enabled two-in-one configuration combines a cell site router (CSR) and radio indoor unit (IDU) into a single device, increasing operators' flexibility to meet changing capacity demands

while also achieving cost savings. With the new software, the need to power, cool, connect, and provide rack space for two separate devices is eliminated, minimising energy consumption and reducing operational, administration, and maintenance (OAM) complexity, as well as provision complexity.

# URGROUP's tunable DWDM transceivers to simplify 5G network management

URGROUP has announced the general availability of the ATOP family of Tunable DWDM transceivers. Developed to meet increasing customer demand for high performance optical transceivers, the ATOP 25G Tunable DWDM benefits from a high-density form factor with extensive tuning range. The range covers both 25G and 10G rates and a range of 10km to 80km.

Designed to simplify 5G network deployment and support flexible network management too, this product has already been extensively tested and qualified for OEM and

operator clients in a wide range of 5G Radio Access Network (RAN) applications.

Highlights of the ATOP Tunable DWDM transceiver range include multiple data rates, 25.78Gbps, 24.33Gbps, 10.31Gbps, 10.13Gbps, and 9.83Gbps; 48 C-band channels, full band auto-tuning within 4 minutes; 10-80km transmission distance via single-mode fibre; max power consumption less than 2.5W; and extended operation temperature range (-20-85 °C).

Not only does the new range enable flexible network management

by supporting bandwidth changes as needed in enterprise or metro networks, but it also delivers

significant long-term cost savings by reducing on-hand network inventory and simplifying spare parts stocking.



# Field Master MS2080A spectrum analyzer - ideal for emerging wireless networks

Anritsu Company's Field Master MS2080A, a multi-functional spectrum analyzer, integrates nine instruments into a single package for time and cost efficiencies in the most demanding field environments.

Covering 9kHz to 4GHz, the MS2080A has unprecedented performance and features for a compact and portable spectrum analyzer, bringing distinct benefits to interference hunting and 5G/LTE base station installation and maintenance (I&M) applications.

It combines fast sweep speed of 45GHzps, advanced user features like interference source location by triangulation, and best-in-class RF performance, including  $\pm 1$  dB amplitude accuracy. Additionally, it supports a cable and antenna analyzer, power meter, and 5G/LTE analysis to make it an ideal general-purpose instrument that addresses measurement requirements for legacy and emerging wireless networks.

An optional real time spectrum analyzer (RTSA) with 2.5 $\mu$ s probability of intercept (POI) is available. The RTSA has up to 40MHz analysis bandwidth and DANL of

<-150dBm, making it well-suited for capturing intermittent and digitally modulated signals that can be hard to identify. Spectrograms allow irregular and drifting signals to be captured, recorded, and displayed.

The MS2080A supports a full range of measurements for 5G frequency range 1 (FR1) radios to 4GHz, including C-band, to support I&M of 5G New Radio (NR) and LTE base stations. Gated sweep analysis for transmitter quality measurements to accurately verify FR1 carriers is provided. The MS2080A offers full-channel, power-based, and 5G/LTE modulation quality measurement-based coverage mapping for

accurate over-the-air (OTA) testing.

Field Master MS2080A is the only instrument in its class to provide 5W of continuous RF input overload protection, preventing costly damage to the instrument's front-end when used close to high power transmitters or in high signal level environments. A 10-inch 1280x800 display meets the demanding IK08 specification for direct knocks and drops. Common functions are always accessible from the display, and side menus collapse to maximize graphical results. A soft case provides IP52 environmental protection to safeguard the instrument during transport or rain.



## Look out for...

### Coming soon: smarter cities for Egypt

Key stakeholders in Egypt's construction sector are increasingly embracing digitalisation as the country looks towards smart city solutions to solve its housing shortage.

Egypt's population increases in size by more than 1.5 million people annually, resulting in a chronic shortage of housing stock, which is added to by high levels of rural-urban migration. Accordingly, smart cities comprising clusters of smart buildings that use integrated processes and creative design to self-regulate their operations and environment have been planned to ease urban congestion.

The government foresees 37 new smart cities being constructed across Egypt, with several already underway; the New Administrative Capital, 45km from Cairo, which will be home to some 7 million people upon completion; the New Alamein City, on the North Coast, which is set to provide housing for 2 million people; and the New Aswan City, which is expected to provide social housing for over 850,000 people.

Smart cities require smart support. Etisalat Misr and Honeywell have signed a partnership deal that will see them collaborate on developing digital solutions to create safer cities and communities for citizens through areas such as improved citizen engagement, public space monitoring, environmental monitoring, improved navigation and connected health systems.

Honeywell will provide an IoT platform to enable artificial intelligence and machine learning, while Etisalat Misr will be responsible for connectivity, hosting services and software. The collaboration supports Egypt Vision 2030 by helping to enable digital transformation of key industry sectors across the country and creating a more sustainable environment through the deployment of smart solutions to conserve energy and water consumption and manage waste.

# New access points meet WiFi 6 requirements for industrial vehicles

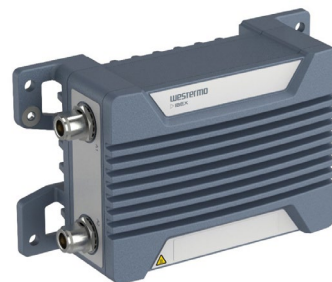
Westermo has added two new access points to its Ibex range of WLAN solutions to provide high-performance data communications onboard trains, industrial vehicles, and outdoor applications.

The Ibex-1310 and Ibex-1510 are concurrent dual band (2.4GHz and 5GHz) access points and clients designed to meet the IEEE 802.11ax standard, WiFi 6. By delivering enhanced performance and speed, especially in device-dense environments, the access points create networks that better support applications such as maintenance access, train data offloading and management systems, and hotspots for passenger WiFi.

The Ibex-1310 is approved for use on industrial vehicles, while the Ibex-1510 has been tested and

certified to meet rail standards EN 50155 and EN 45545-2, allowing deployment both onboard trains and trackside. The devices are designed to withstand the tough environment onboard vehicles, including the exposure to constant vibration, extreme temperatures, humidity and demanding electromagnetic environments. The compact and power efficient design enables easy integration in space-restricted installations.

A range of design and construction features helps to ensure a high degree of reliability over an extended lifecycle, which reduces total cost of ownership. A GORE-TEX® membrane prevents internal condensation, while IP66 protection prevents ingress of water and dust, even at the quick connect QMA connectors available



on the Ibex-1510. A high level of isolation between all interfaces enables direct connectivity to vehicle auxiliary power and protects against overvoltage and surges.

The access points are very easy to install, operate and maintain. The two devices are powered by Westermo's robust and easy to use SW6 operating system, which provides the latest cybersecurity features and updates.

# 5G uptake and revenue growth correlate, says Ericsson

 New research from the Ericsson Mobility Report team provides encouraging evidence for communication service providers (CSPs) worldwide by identifying a correlation between 5G uptake and revenue growth.

Flattening revenues have been a challenge for service providers in all parts of the world, often impacting network investment decisions as part of their business growth strategies. A special Ericsson Mobility Report edition - called the Business Review edition - addresses these monetisation opportunities as they relate to 5G.

The report highlights a positive revenue growth trend since the beginning of 2020 in the top 20 5G markets - accounting for about 85% of all 5G subscriptions globally - that correlates with increasing 5G subscription penetration in these markets.

The report finds that tiered pricing models are key for service providers, both for effectively addressing the individual needs of each customer and for continuing to drive long-term revenue growth; the top 20 5G markets have seen a significant network performance boost following the introduction of 5G services; and after a period of slow or no growth, wireless service revenue curves are again pointing upwards in these leading markets. This correlate with 5G subscription penetration growth.

"Meeting our customers' challenges is at the heart of our R&D efforts and every resulting product we develop," said Fredrik Jejdling, executive vice president and head of networks, Ericsson. "The link between 5G uptake and revenue growth in the top 20 5G markets underlines that not only is 5G a game changer, but that early adopters benefit. What is particularly encouraging about this is that while 5G is still at a relatively early phase, it is growing fast with proven early use cases and a clear path to medium and long-term use cases."

Enhanced Mobile Broadband (eMBB) is the main early use case for 5G, driven by increasing geographical coverage and differentiated offerings. More than one billion 5G subscriptions are currently active across some 230 live commercial networks globally. 5G eMBB offers the fastest revenue opportunities for 5G, as it is an extension of service providers' existing business, relying on the same business models and processes. Even in the top 20 5G markets, about 80% of consumers have yet to move to 5G subscriptions - one pointer to the potential for revenue growth.


As highlighted in the November 2022 Ericsson Mobility Report, fixed wireless access (FWA) is the second biggest early 5G use case, particularly in regions with unserved

or underserved broadband markets. FWA offers attractive revenue growth potential for CSPs as it largely utilizes mobile broadband assets. FWA connections are forecast to top 300 million within six years.

Beyond consumer subscribers, there are growing opportunities in enterprise and public sector applications across the world. 5G enables significant value for enterprises, with private 5G networks and wireless wide area networks being deployed for enterprise and industrial use. Upgrading existing 4G sites to 5G has the potential to realise increases of 10 times in capacity and reduce energy consumption by more than 30%, offering the possibility of growing revenue and lowering costs, while addressing sustainability.

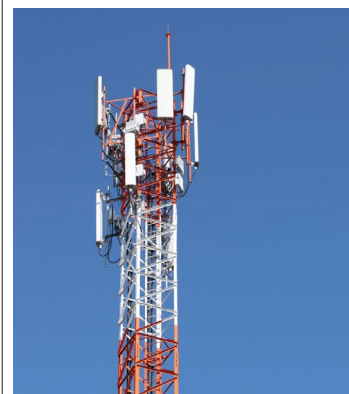
"Revenue growth and sustainability are recurring themes in my discussions with customers," said Jejdling. "In this special Ericsson Mobility Report edition, we have explored how service providers are tapping 5G opportunities. We see initial signs of revenue growth in advanced 5G markets with extensive coverage build-out and differentiated service offerings. An equally crucial aspect of 5G is that it brings cost advantages and helps service providers handle the data growth needed to drive future revenue. This can make 5G the growth catalyst that the market has been waiting for."

## Globe sells 578 more towers to Phil-Tower

 Globe Telecom received PHP8.6 billion from Phil-Tower Consortium after transferring 578 out of 1,350 towers to the company.

The tower assets are based on the islands of Visayas and Mindanao, composed of 92% ground-based and 8% rooftop towers.

This latest sale brings Globe up to 2,988 tower transfers out of 7,059 from all deals it previously struck with tower companies, which equates to 42% and raising in total PHP39 billion.




Globe's CFO Rizza Maniego-Eala, said that the cash injection provides "needed financial flexibility," particularly against the backdrop of high inflation and interest rates.

"We believe these partnerships with towercos will help us become more efficient in deploying capital and allow us to reach our goal of bringing down capex spending to US\$1 billion by 2024," said Maniego-Eala.

Phil-Tower president David Gunami said the company is eager to take the remaining 772 towers from Globe.

"We are taking advantage of the arrangements we made with the towercos to accelerate our tower builds and ensure fast and reliable connectivity as we roll out core products and services and diversify into new ventures," said Globe CEO Ernest Cu. "Globe and PhilTower will remain committed to supporting the government's initiatives towards establishing a world-class digital infrastructure nationwide."

## 30 million SIM registrations in days

 Operators in the Philippines have signed more than 30 million SIM cards in days since the introduction of the SIM card registration law to combat hackers and fraudulent activity.

The Department of Information and Technology (DICT) detailed the figure is 17.76% of 168.9 million subscribers nationwide.

PLDT subsidiary Smart Communications reported 15.4 million customers registered their SIM cards, some 22.76% of its subscriber base. Globe Telecom recorded 12.2 million SIM cards

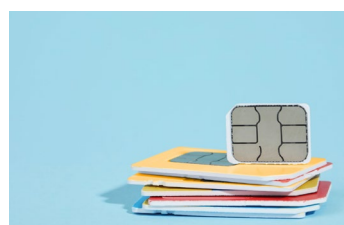
which accounts for 13.89% of its 87.8 million customer base. Meanwhile, DITO Telecommunity reported 2.3 million registered SIM cards, 17.79% of its 13.1 million of its subscribers.

"We are seeing good progress in terms of the registered subscribers, and we look forward to how this will translate to a safer and more secure digital communications in the coming days," said DICT secretary Ivan John Uy.

DICT is also collaborating with the National Telecommunications Commission to register SIM cards

in 15 remote regions.

The Philippines ratified its SIM registration law in February with support from operators due to large scale fraud from scam text messages and phone calls, which prompted operators to beef up security systems.





# Astrocast optimises satellite constellation for IoT



Global satellite IoT network operator Astrocast has successfully optimised its satellite constellation with improved service quality and reliability. Following the launch of four satellites in November 2022, the company efficiently commissioned them and began computing and executing the necessary manoeuvres to re-phase them with the correct angular separation to maximize service performance.

Thanks to the computed and performed manoeuvres, the satellites will be in their final orbital slot by the end of May. Astrocast's complete control of the constellation enables the company to enhance the service and increase the satellite lifetime with maximum propellant usage optimization.

In addition, the satellites are monitored and manoeuvred if required to ensure no collision events occur, thanks to Astrocast's collaboration with OKAPI:Orbits.

"The increased number of satellites in our constellation brings

more redundancy for the Astrocast service, improving reliability, service passes per day, and average latency. In addition, the company's in-house expertise ensures the successful operation of the constellation," said Federico Belloni, CTO, Astrocast.



# ABS and Telespazio Brasil sign five-year satellite deal



ABS and Telespazio Brasil have signed a five-year capacity contract for the satellite ABS-3A, West Hemi C-band beam.

Under the multi-year agreement, Telespazio will use the C-band beam for its offshore services for the oil and gas segment. Serving a wide range of maritime and offshore oil installations, Telespazio delivers critical communication solutions to enable day-to-day operations required to connect users from the most remote locations and waters

across the world. The agreement with ABS strengthens Telespazio's positioning in the oil and gas services market in Latin America.

"Telespazio is an important partner of ABS across the globe, and in particular in Brazil where it operates multiple services on our ABS-3A C-band West Hemi beam," said Amit Somani, CEO of ABS. "Beside our wide coverage, our space segment capacity is commercially and technically ideal when coupled with Telespazio's

advanced value-added solutions, customer service and overall expertise to win major projects in the oil & gas sector."

"ABS has been a trusted long-standing partner and offers reliable cost-effective solutions for our connectivity needs. They understand the critical role that connectivity solutions play in this region and are highly flexible when bandwidth demand is ever increasing," said Marzio Laurenti, CEO of Telespazio Brasil.

# TSST goes big on fibre investment



The CEO of Telecommunication Services of Trinidad and Tobago (TSTT) has announced a major investment in fibre rollout across the nation.

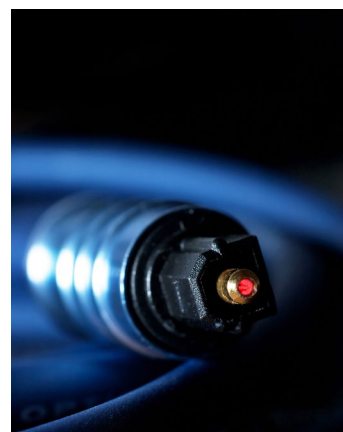
Lisa Agard said that TSTT has recently approved an investment of more than TT\$120 million for an accelerated deployment of fibre infrastructure over the next 18 months throughout Trinidad and Tobago, with fibre passing another 3,000 homes.

In Tobago, 2022 saw TSTT passed more than 3,200 homes, taking the

total to more than 15,000 homes in Tobago with fibre connectivity. The additional build out will take the company's overall investment in fibre in Tobago over the past few years to over TT\$50 million.

Quoted by the Trinidad and Tobago Newsday service she said:

"When this is completed, we will have fibre throughout the length and breadth of Tobago; 95% of the island will have coverage," Agard told local media, which will be unmatched by any other service provider in Tobago.



# Cameroon telco services to improve



MTN Cameroon and Orange Cameroon have undertaken work to optimize the performance of their mobile telephone networks in the country under a directive from the Cameroon Telecommunications Regulatory Authority (ART) to improve the quality of telecom services.

In November 2022, ART sent formal notices to MTN, Orange, Viettel and Camtel for breach of their quality of service obligation following performance checks of their networks. The operators then undertook to take action to remedy the shortcomings identified. They have now planned to invest a total amount of 156 billion CFA francs in 2023 to extend network coverage and improve service quality.

# MTS and MGSI to advance digital solutions



Srbija, which operates as MTS, has partnered with Serbia's Ministry of Construction, Transport and Infrastructure (MGSI) to develop and implement digital solutions in the fields of infrastructure, transport and utilities.

The agreement aims to boost the public's awareness of and access to state-backed infrastructure projects. MGSI chief Goran Vesic said that Serbia was lining up investment worth EUR3.6 billion for such initiatives in 2023.

"With the development of Telekom's infrastructure, domestic industry gets work, and with the development of their smart solutions, our experts, our young people, stay in the country and work here for our country. Already in the coming months, we will come out with applications and common solutions and work together with Telekom on the development of new solutions, so that the infrastructure we are building will be more accessible to citizens," said Vesic.

# Insight Terra and Synspective partner on space-enabled monitoring and mining

 Synspective, a synthetic aperture radar (SAR) satellite data and solutions provider, and Insight Terra have entered a strategic partnership to deliver a new space enabled data and monitoring solution for the mining industry.

The solution uses satellites and Earth observation coupled with ground sensors to monitor mine tailings facilities.

Synspective and Insight Terra will provide an integrated product offering combining Insight Terra's cloud based IoT Insight Platform with Synspective's leading edge analytical models of SAR data for the mining and other related industries. The integrated solution allows for the fusion of near real-time ground truth and Earth observation data for proactive monitoring and alerting.

Insight Terra's leading mining product, Tailings Insight, is currently deployed with several global mining companies for tailings dam monitoring. Synspective develops and operates high-frequency, high-resolution SAR satellites – StriX – to provide high-quality data sets and solution services. The company has already placed three satellites into targeted orbit while planning to establish the constellation of 30 satellites and an analytics platform by late 2020s. The integration of SAR data gathered by Synspective's growing constellation

of StriX series satellites will provide powerful earth observation capabilities to the Tailings Insight application. This cutting-edge technology can be utilized to monitor ground movement and land deformation that are risk indicators for potential failures of tailings facilities, mine walls, and water dams, among others.

The companies will initially focus on the global mining industry. The World Bank estimates that global mining activity will increase by more than 500% over the next decades in response to the global need for metals and minerals to support the global clean energy transition. The Tailings Insight solution including new InSAR capabilities will be a leap forward for mining operators, investors and regulators seeking to monitor and mitigate potential mine related disasters affecting people, communities, and the environment.

The partnership is timely, addressing the urgent call by the Church of England (COE) and others for better monitoring of risks from tailings dams and solutions to prevent environmental hazards. The combined solution is aligned with the Global Industry Standard on Tailings Management (GISTM) promulgated in 2020 by the International Council on Mining and Metals (ICMM), the United Nations Environmental Program (UNEP) and Principles for Responsible




Investment (PRI). The GISTM requires mines with high-risk tailings facilities, both active and closed, to comply by August 2023.

"We are excited to be working with Insight Terra to provide space-enabled monitoring of critical infrastructure such as mining operations and tailings dams," said founder and CEO of Synspective, Motoyuki Arai. "With our third StriX satellite and onsite data acquired by Insight Terra, we will greatly increase the availability of analytical data for real-world applications to help prevent and mitigate potential catastrophes. This is a productive step toward realizing a more resilient and sustainable world with data-driven and collective learning approaches."

"Space has been an important part of Insight Terra's heritage. Inmarsat, the leading global mobile satellite

company, is one of our founding shareholders and key partners, and we have delivered a number of innovative environmental monitoring projects together with Inmarsat and the European Space Agency (ESA)," said Insight Terra co-founder and CEO, Alastair Bovim. "Adding Synspective's earth observation data bolsters our space enabled data and monitoring capabilities and is integral to our mission of protecting people, and the environment, from potential disasters such as the mine tailings facilities collapse in South Africa just this September. The integrated mine monitoring solution that we will deliver in partnership with Synspective including satellite connectivity and Earth observation data, real time IoT, and valuable ground truth sensors and data, will be a huge step toward this goal."

## Marlink adds Starlink to EPS smart hybrid network

 Marlink is adding Starlink LEO connectivity to Eastern Pacific Shipping's (EPS) existing smart hybrid network as the Singapore-based ship manager looks to enhance business operations and seafarer wellbeing services across its fleet.

The Starlink service will initially be trialled onboard selected vessels, integrated into the smart blend of networks fully managed by Marlink, which already serves most of the EPS fleet with VSAT connectivity and multiple L-band backup alternatives.

A Marlink customer since 2016, EPS has progressively adopted digital solutions to support the efficiency and safety of its operations. This includes a strong focus on digitalisation,

sustainability, covering all aspects of environmental protection and programs to enhance crew welfare.

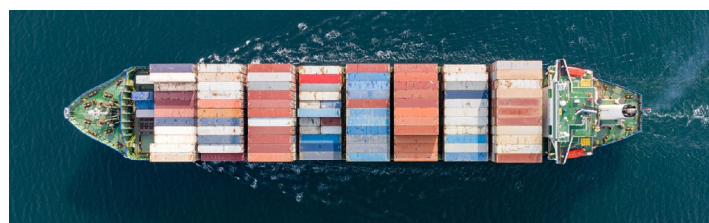
"Marlink is the right partner to help EPS evaluate and potentially adopt new services that can enhance our operational and seafarer wellbeing strategies," said Max Wong, head of IT, Eastern Pacific Shipping. "These trials will provide us with insights into how high throughput and low latency data transfer capabilities will affect business use cases on our vessels. We are optimistic that a successful trial will enable us to accelerate technology adoption, allowing us to do more with less."

EPS is currently undergoing unprecedented growth with an expanding orderbook increasing

the fleet size to 21m DWT under management. To manage this exponential growth in a fast-changing environment, EPS is shifting its culture from managing ships to leading people. Supporting this culture shift is the EPS Life at Sea Programme – a robust initiative designed to improve the long term mental and physical wellbeing of its 6,000 strong workforce.

"The focus on new LEO services

as a component of the Marlink smart hybrid network is increasing rapidly as shipowners focus on new ways to deliver crew welfare and smart connectivity services," said Tore Morten Olsen, president, maritime, Marlink. "Our partnership with Eastern Pacific creates the opportunity to understand and evaluate what Starlink can bring to the table alongside our established hybrid network offering."





## Q&A

**Justin Head,**  
**founder and chief customer officer**  
**PowerX**



are wrong. Apologies show strength in recognising a mistake, not weakness.

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

### Who was your hero growing up?

My Dad was my hero. I carry with me invaluable memories and life lessons: he taught me that success comes with hard work and instilled in me a work ethic that means I will not stop until the job gets done.

At the same time, he taught me to be caring and thoughtful: always encouraging me to try things out and push myself, he never criticised and was always present. He taught me that nothing comes before family and that throughout my life, at work or outside, I must treat people as I expect to be treated myself.

Without knowing, he also passed on his passion for sport: although he was an ardent football lover he encouraged my love for other sports like rugby, always attending fixtures and making jokes about the funny shaped ball. That's why, apart from my Dad, when growing up my hero was whoever was the striker for Liverpool FC.

### What was your big career break?

I was working for a small managed services business in the early days of my career, when we won a large outsourcing opportunity bidding against IBM. The IBM manager who lost the deal approached me and offered me a job. I've never forgotten his line: "come and work for IBM. It is much better than that outfit you are currently employed by." I laughed and I replied: "do you mean that outfit which just won a huge deal out from under your nose?"

He accepted my point and we went on to have an in-depth discussion which ended with me accepting the job. That started a 12-year career in IBM, the best IT business in the world. It has given me fantastic career opportunities and deep domain knowledge

in managed services for large complex network infrastructure and I have seen first-hand the challenges mobile operators have in achieving network infrastructure efficiencies and improving uptime resilience in a sustainable way. It is this incredible experience that led me to found PowerX and bring new technology in this space.

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

I studied physics for my degree and I still love the subject inside out. I would probably pick someone who has had a great effect on the world based on physics.

So I choose the Italian inventor and physicist Guglielmo Marconi

**"In IBM in the early 1990s there was one green screen between about ten people and if anyone received an email the rest of the people would rush to see it as it was such a novelty. In the following years the progress has been immense to the point that mobile internet today is delivering huge benefits on a global basis."**

for turning radio waves into wireless communications – how did he do that in the 1890s? He was credited as the inventor of the radio and in 1909, he shared the Nobel Prize for Physics with Karl Ferdinand Braun for their 'contributions to the development of wireless telegraphy.'

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

Always believe in yourself. If you are confident something is right, don't be put off by doubters. Have the courage of your convictions but don't be afraid to apologise if you

I am passionate about technology and telecommunications and the impact that both have on improving the quality of life for people across the world.

That's why I love what I do. If I had to choose a different industry, I would build on my degree in physics and work in medical physics. The advances in this space in recent years have been amazing and truly life-changing: without medical physics there would be no MRI or CT scans, X-rays would be very dangerous, cancer treatments may not exist and many life changing therapies would remain undiscovered.

I think that there are a huge number of advances still to come with research in medical

physics and whoever contributes to them is a hero for saving or improving people's lives.

**The Rolling Stones or the Beatles?**

As a lover of music this is a very tricky question. I would pick The Rolling Stones by a whisker. Both bands are immortal but the Stones just pip the Beatles.

**What would you do with £1 million?**

I have learned that nothing comes before family – that goes

for winnings too. In all honesty, I would give a quarter to my son, a quarter to my daughter, to help set them up and give them a boost in their early start in life. I would keep a quarter for my wife to thank her for the incredible support she has given me over the years.

I would use the final quarter to invest in a start-up run by a young person or persons. I would offer them my advice along with the money, to help them make a success of their business. Having been the founder of a start-up myself I know how difficult it is to get both money and good solid advice.

**What's the greatest technological advancement in your lifetime?**

Without doubt the invention of the internet. When I started work in 1989 there was no email, no internet, no social media and no continuous connectivity. In IBM in the early 1990s there was one green screen between about ten people and if anyone received an email the rest of the people would rush to see it as it was such a novelty.

It is almost impossible to envisage this situation bearing in mind how reliant the world is today on electronic communications.

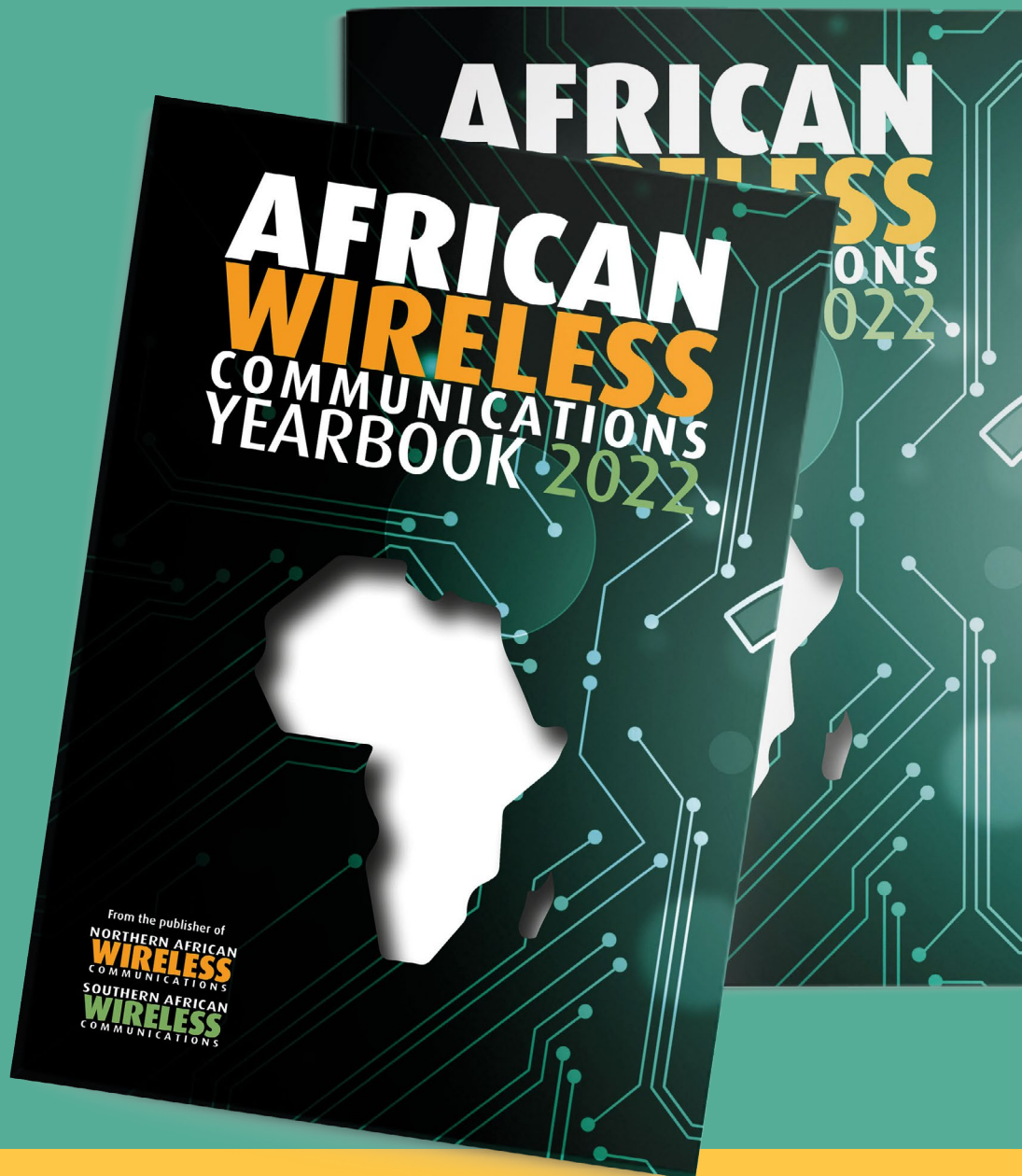
In the following years the progress has been immense to the point that mobile internet today is delivering huge benefits on a global basis.

I am proud to see PowerX leveraging further technological advancements such as AI and machine learning and play a key role enabling resilient mobile connections and coverage to be delivered by efficient and sustainable infrastructure.

We need to continue to bring the internet to everyone on the planet so they can all benefit from the technology and grow economically, education wise, reap the health benefits and embrace the technology. ■

# Do you want to be involved with the 2023 edition of the African Wireless Communications Yearbook?

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