

For communications professionals in north, west, east & central Africa

NORTHERN AFRICAN WIRELESS COMMUNICATIONS

OCTOBER / NOVEMBER 2023

Volume 22 Number 2

- Digging towards a smarter future
- LEO systems for humanitarian relief
- Towercos: seizing opportunities



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Nimrod Kapon, CEO, OASIS Networks

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Parallel Wireless to deploy 2G & 4G across East Africa

Parallel Wireless, Inc. will be deploying 2G and 4G networks for a large national operator.

Parallel Wireless was awarded with several projects to build sites across rural Africa supporting 2G and 4G connectivity. This also includes sites ready for Parallel Wireless 5G software upgrades. The tender includes full delivery and

deployment of end-to-end network solutions, including tower, power, transmission, and Radio Access Network (RAN). It will focus on rural and suburban areas, deploying and delivering cellular connectivity under the Universal Communications Service Access Fund (UCSAF) in East Africa.

“As a field-proven preferred cellular

network technology partner, we look forward to connecting people across East Africa with cellular coverage in the rural and suburban African market,” said Yisrael Nov, EVP sales, Parallel Wireless. “Deploying 2G and 4G networks will allow operators to ensure efficient technology even in places with low population density.

In Eastern Africa, 2G connections

still constitute about half of the total mobile subscriptions, while the adoption of 4G has accelerated, and now amounts to 20%. Delivering rural coverage and proper telecommunication infrastructure is crucial, as more people are becoming dependent on voice and data to communicate in their everyday lives.

Tunisie Telecom targets modern pricing system

Tunisie Telecom has partnered with Telepin for the modernization of its pricing system. Telepin will be responsible for unifying the telecoms operator's pricing system, currently distributed between several suppliers.

Lassaad Ben Dhiab, chairman and CEO of Tunisie Telecom, reported that the initiative is part of the realization of the public company's strategic vision of digital transformation. Last September the company migrated from IPv4 (Internet Protocol version 4) to the latest Internet protocol standard, IPv6. In November 2022, it tested 5G with technical support from Ericsson. It also said it wanted to get rid of 3G to focus on 4G.

Tunisie Telecom believes that the unification of the pricing system will guarantee a better customer experience by offering a consolidated and more secure solution for mobile and landline phone recharges.

“This migration will increase our efficiency, optimize our operations and open new avenues for the growth of Tunisie Telecom,” said Dhiab.



Ethiopia cans third telco licence auction

The Ethiopian government has failed to attract any bidders for its third telecoms licence, according to Bloomberg, as investors are put off by the current political instability.

Auction for the third licence is likely to be put on hold, as unrest

is reported in several regions of country, which only ceased a civil war between the government and the Tigray People's Liberation Front a year ago. A United Nations panel reported Ethiopia is at a high risk of seeing more war atrocities as

tensions boil.

Ethiopia announced plans to auction a third telecoms licence in July 2023 to spur competition in the telecoms sector, opening its doors to international companies, and accepted Safaricom Ethiopia in 2021.

Orange to offer African music via mobile

Orange has partnered with music streaming platform Spotify to offer all mobile customers on the continent an exciting music experience.

By offering complimentary data bonuses to access Spotify's service, Orange strengthens its position as an all-in-one entertainment service provider.

With a worldwide community of over 551 million monthly active listeners, including 220 million subscribers, Spotify provides a wide range of African and international artists with a library including over 82 million tracks.

“We are excited to partner with Orange Middle East & Africa to offer data bonuses to our customers in Democratic Republic of Congo, Guinea, Madagascar, and Mali, allowing them to enjoy our vast music library of over 100 million songs, without worrying about data,” said Jocelyne Muhutu-Remy, managing

director for Spotify in sub-Saharan Africa. “We are aware that data costs continue to be a hindrance for people who would like to stream music, that's why we are actively working at Spotify SSA on partnerships like this one.”

“We are pleased to partner with Spotify to bring a new experience to our customers in Africa and the Middle East. As a multi-service operator on the continent, we want to provide our customers with easier access to the rich musical culture in Africa and to the promotion of local talents. The deployment of this service in the countries where we are present will greatly facilitate access to an incomparable musical experience for all communities and thus contribute to the acceleration of digital inclusion on the continent,” said Brelotte Ba, deputy CEO of Orange Middle East and Africa.

Music stands as the primary source of entertainment across



the African continent. The vast community of Orange mobile users in several countries will enable Spotify to promote local talents and introduce them to a larger audience. This strategic partnership will constitute for Orange a substantial progression towards enhancing the musical experience across the African landscape, fostering a deeper connection to cultural and entertainment elements. Orange is exploring opportunities to expand the offer in other countries.

Starlink launches satcoms in Benin

SpaceX's Starlink satellite service has launched in Benin, making it the seventh African country where the company is offering its service.

Benin consumers will pay 30,000 West African CFA francs monthly, with a one-time equipment cost of CFA400,000 and shipping and handling fees of CFA15,000. Additionally, users in Benin will also need to pay CFA3,125

per month to the regulator Autorité de Régulation des Communications Electroniques et des Postes (ARCEP) to access the spectrum necessary for service provision. Starlink offers a 30-day trial with no contracts or data caps and said shipping times are currently estimated to be two to three weeks.

Benin now joins the expanding list of African nations that have access

to Starlink, including Kenya, Malawi, Mozambique, Nigeria, Rwanda, and Zambia, with more countries expected to join the list in due course. According to Starlink, 20 countries including Ghana, Senegal, Uganda, Tanzania, Botswana, Zimbabwe, Tunisia, and Egypt have planned launches in 2024. South Africa, Ethiopia, Algeria, Mali, and Sudan still have unconfirmed launch dates.

Telecom operators to lose \$3 billion in SMS revenues to OTT channels over 2023-2028

Telecom operators globally are going to lose \$3 billion of SMS revenue from enterprises in the coming years according to a new study by Juniper Research.

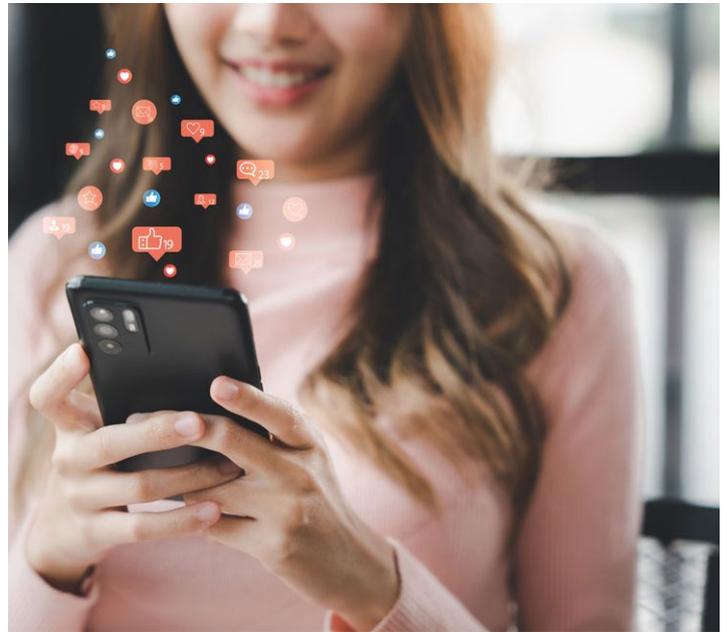
OTT business messaging traffic will increase to 375 billion messages in 2028 from 100 billion messages in 2023. The rise of OTT business messaging will be fuelled by enterprises that will be left dissatisfied with the diminishing quality of SMS networks. Thus, the report suggests that in the next five years, the telcos will lose out on about \$3 billion in SMS business messaging revenue globally to OTT channels.

Large enterprises and small businesses have already started to leverage OTT platforms such as WhatsApp to communicate more

personally with their customers and that too at a lower cost. If the OTT app vendors deploy pricing strategies that attract high-spending enterprises, then they can be swayed away from established business channels.

The quality of the SMS networks is reducing, the cost is increasing each year, as are levels of fraud. These factors will push enterprises to try out alternative methods or channels of communicating with their customers. Thus, OTT app vendors must have a great pricing model to attract the enterprises their way.

The report forecasts that there will be a large increase in OTT business messaging spending for retail. The figure is expected to go up from \$790 million globally in 2023 to over \$2.6 billion by 2028.



6 more African countries added to Project Giga

Project Giga, which aims to connect all the world's schools to the internet, has extended its reach to 12 new countries, including six African countries: Benin, Botswana, Guinea, Namibia, South Africa and Zimbabwe.

Led by the United Nations Children's Fund (UNICEF) and the International Telecommunications Union (ITU), the initiative is now present in 30 countries.

The main activities of Project Giga include solutions for school mapping; infrastructure planning; real-time connectivity monitoring; financing and improving market access and procurement processes. National steering committees are also set up in each country.

It was in June 2019 that UNICEF and the ITU set up the Giga project

in order to connect all the world's schools to the Internet by 2030. The initiative and its partners claim nearly 6,000 schools and 2.4 million students connected to the Internet. It targets 25,000 schools and 10 million students in the next 18 months. It has also mobilized more than \$1.7 billion to fund school connectivity in eight countries, with a particular focus on the world's most remote and underserved areas.

"We've reached 30 countries not only to connect schools, but also to give governments the tools and solutions they need to achieve universal school connectivity. We are empowering each country to tailor solutions to their specific needs, so that no child is left behind in the digital age," said Doreen Bogdan-Martin, ITU secretary-general.



MTN prioritises sustainability

American Tower Corporation's Africa operations, ATC Africa, and MTN Nigeria have entered into a new agreement to enhance wireless connectivity across Nigeria while prioritising sustainability.

ATC Africa will facilitate new tenancies for MTN Nigeria over a multi-year period, commencing in the second half of 2024. The company expects to fulfil MTN Nigeria's site requirements by leveraging ATC Africa's portfolio of over 8,000 sites in Nigeria, a substantial portion of which already incorporates green energy solutions. Additionally, new sites will be deployed in accordance with ATC Africa's green site specifications.

"We're thrilled to further

strengthen our partnership with MTN Nigeria. We believe this agreement, which secures incremental lease-up on our existing portfolio and a strong development pipeline, clearly demonstrates the differentiated value ATC Africa can provide its customers through our quality of assets, leading build-to-suit capabilities, and best-in-class Power-as-a-Service and green site offerings," said ATC in a statement.

"Through its partnership with ATC Africa, it is setting the stage for a new era of connectivity in Nigeria - one that not only meets the growing demands of customers' connectivity needs but also aligns with sustainability goals and environmental responsibility," said MTN Nigeria.

East African Community targets satcoms

The authorities of the East African Community plan to establish a common satellite to ensure internet provision to the entire sub-region.

A regionally owned communications satellite will provide high-quality, reliable broadband internet services and broadcasting capabilities at a cost

of \$300 million.

Internet connection needs in Africa are constantly growing in the era of digital transformation. However, according to DataReportal, the internet penetration rate in East Africa was 23.1% as of January 2023. The sub-region lags behind other parts of the continent.

Intelsat and AMN to deploy 1,340 rural satellite antennas in DRC, Rwanda and Madagascar

Intelsat and Africa Mobile Networks (AMN) have deployed more than 3,000 rural base satellite antennas across several countries in Africa since 2018, providing new telecommunication services to more than 8 million people.

AMN's largest network is in Nigeria and now features more than 1,350 sites. With more than 450 sites added just since June 2023, the collaboration now provides phone and internet services to more than 3.5 million people in previously unconnected Nigerian communities.

"Through this commitment to bridging the digital divide, we've made a significant impact and we look forward to furthering our mission of connectivity, ensuring that more communities can access the benefits of telecommunication services," said Jean Philippe

Gillet, SVP of global sales for networks and Media at Intelsat. "Together with AMN, we aim to make a lasting difference in Africa's digital landscape."

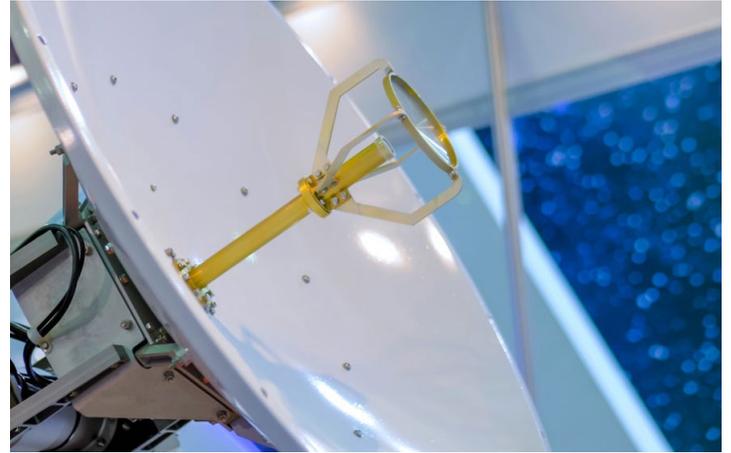
Intelsat and AMN are planning additional operations in Madagascar, Rwanda, and DRC. AMN expects to build more than 1,340 rural base stations across the three new markets.

Combining Intelsat's multi-satellite African coverage with AMN's solar-powered tower solution means that citizens and businesses in virtually any community can now have access to the education, social and economic benefits of telecommunication services.

AMN specializes in connecting communities, reducing upfront and ongoing equipment costs while allowing cell services to be extended into areas where traditionally it was

not economically viable to do so. The use of satellite to provide backhaul connectivity to remote cell towers is integral to this business model. The location and terrain of these towers often do not allow backhaul solutions like fiber-optic cable and microwave to be used.

"Intelsat is a very important partner to AMN. Our strategic partnership has provided essential telecommunication services to 8 million people across Africa, and we look forward to growing that number over the coming years," said AMN CEO Mike Darcy.



Tizeti secures loan for last mile infrastructure

Tizeti has secured a loan of an undisclosed amount from the Nigeria Infrastructure Debt Fund (NIDF) to finance the project to extend its network to 10 new states in Nigeria, bringing its total geographical coverage to 15 states.

Tizeti plans to build new 'last mile' internet infrastructure and purchase additional equipment in the states of Delta, Akwa Ibom, Cross River, Abia, Anambra, Imo, Enugu, Abuja, Kano, and Kaduna.

Last February Tizeti unveiled the project to extend its internet network to Nigeria as part of its commitment to expanding digital inclusion in Africa with affordable broadband connectivity, particularly in underserved areas.

According to Kendall Ananyi, founder and chief executive of Tizeti, the network expansion will catalyze sustainable development, value creation, improved connectivity and a deeper and broader digital inclusion network.

Medusa Submarine Cable System to be extended to Libyan coast

Medusa Submarine Cable System and Libyan United International for Telecommunication and Technology (LUIC) have signed an agreement to extend Medusa to the Libyan coast.

The 8,760km long submarine cable will have two landing points in Libya, connecting the coastal cities of Tripoli and Benghazi. The Libyan branches of the Medusa cable strengthen the connection between North African countries and, consequently, their connection with Southern Europe. With this new agreement, Medusa will connect 11 countries through its landing points

in Portugal, Morocco, Spain, France, Algeria, Tunisia, Italy, Greece, Cyprus, Egypt, and now Libya.

"The company is working on developing and connecting Libya to the world by enhancing connectivity and achieving geographic diversity of the international submarine cables infrastructure level. This would be done by establishing new landing stations, new routes for crossing subsea cables, using state-of-the-art technology and digital innovation to benefit the country's socio-economic development," said Libyan United International

Company for Telecommunication and Technology (LUIC).

The submarine cable system, which has segments housing up to 24 fibre pairs capable of transmitting 20Tbps per fibre pair, is set to land in Libya by the end of 2025. Libya has 13 cable landing stations along the country's north coast, but only four subsea cables connect them. The installation of the Medusa submarine cable system in Libya is expected to significantly improve the country's connectivity and communication infrastructure.

Ethiopia to introduce digital identity cards

Ethiopia intends to give digital identity cards to 9 million citizens and residents during the next three years as part of the effort to increase access to critical services.

By 2026, the Prime Minister's Office's National Identification Programme (NIDP) would produce these IDs, including for migrant returnees, internally displaced people, and other vulnerable groups.

The NIDP has an agreement with the International Organisation for Migration (IOM) to expand access to digital IDs for vulnerable migrant returnees, displaced individuals, and other affected communities.

Access to these IDs is essential for global mobility and development. IOM and NIDP will collaborate on identity governance, data protection, verification, and

authentication processes.

According to IOM Ethiopia chief of mission Abibatou Wane, vulnerable people suffer barriers to basic socioeconomic rights and necessities due to a lack of legal identification.

"This partnership enhances access to national digital ID for migrants, and other affected communities," said Wane.



Somalia prioritises emergency communications amidst recent flood activity

The Somali government has launched the National Emergency Telecommunications Plan (NETP) with technical assistance from the International Telecommunications Union (ITU), which aims to establish a unified and effective communications framework to

streamline communication and disaster response efforts.

The launch of the NETP comes as Somalia has been facing, since October a flood episode of a magnitude that, statistically, is only likely to occur once in 100 years, according to the Bureau of the

United Nations Coordination of Humanitarian Affairs (OCHA). The floods have already caused around 30 deaths, as well as the displacement of nearly half a million people. In total, this disaster disrupted the lives of more than 1.2 million people.

“In the face of unpredictable

emergencies, our collaboration on the National Emergency Telecommunications Plan strengthens Somalia’s resilience. Together, we are building a safer and better connected nation,” said Jama Hassan Khalif, minister of communications and technology.

TCIL pitches Indian 5G/6G equipment to Africa

Telecommunications Consultants India Limited (TCIL) is reportedly making moves to convince operators in Angola, Gambia, and Mauritius to buy telecoms equipment from Indian companies.

TCIL has conducted market surveys for Angola, Gambia, and Mauritius, and aims to pitch Indian equipment from C-DoT and Tejas as viable upgrade alternatives.

India has been keen to build itself up as a major exporter of telecoms equipment, particularly for 5G and 6G. The Department of Telecommunication’s R&D arm, Centre for Development of Telematics (C-DoT) has been developing indigenous solutions for 4G and 5G networks.

Bharat Sanchar Nigam Limited (BSNL) has deployed C-DoT’s 4G core, as well as radio equipment from Tejas Networks. It’s planning to deploy C-DoT’s standalone 5G equipment next year, including a 5G SA radio, core and IP Multimedia System.

Mauritius Telecom has already agreed to a proof of concept on one of its islands, starting with three 4G base stations and a hybrid optical line terminal (OLT) from Tejas with a converged core from C-DoT, plus a one E-band radio from Astra. Gamtel and its wireless arm Gamcel are also keen on the idea and have recommended that the government adopt TCIL’s proposal.

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GSOA releases sustainability code of conduct

The Global Satellite Operators Association (GSOA) has released its Code of Conduct on Space Sustainability, calling on operators to implement responsible practices that mitigate the risk of in-orbit collision, minimize the threat of non-trackable debris, protect humans in space and limit effects on optical astronomy.

Satellite communications provide essential connectivity that complements terrestrial networks and contributes to the delivery of universal service and coverage. Satellite connectivity can significantly help reduce the digital divide, as the number of satellite broadband users is set to double to at least 500 million people by 2030.

“Satellites in all orbits deliver vital satellite connectivity and high throughput broadband services. While they offer great promises

in bridging the digital divide, they must be launched, deployed, operated and disposed of in a responsible manner,” said Isabelle Mauro, director general of GSOA.

“The satellite industry has proven vital to helping bridge the digital divide and connect the unconnected, whether they are on land, at sea or in the air. These vital services depend on protecting and preserving access to space,” said GSOA chairman Dan Goldberg, CEO of Telesat Corporation. “The development and industry-wide approval of the Code of Conduct is an important step in identifying best practices and mitigations to preserve access to space for future generations.”

“As the satellite industry continues to grow and is expected to bring socio-economic benefits worth more than US\$250 billion globally, it is important that

the industry works together to implement key sustainability practices that enable the world to continue benefitting from satellites,” said GSOA vice-chair, Ali Alhashemi, Group CEO of Yahsat.

“The Code of Conduct is a significant first step in safeguarding space resources. GSOA will continue to analyse additional matters and progress its work and efforts in this important area,” said Eva Berneke, GSOA vice-chair, CEO of Eutelsat Group.

The Code of Conduct endorses, and recommends that operators comply with practices in four space sustainability areas:

- **Mitigating the risk of in-orbit collision:** Operators should take all reasonable steps to share information with other operators about trackable debris that they may have or may not have generated

through the operation of their spacecraft.

- **Minimize the threat of non-trackable debris:** Operators should take steps in the design, launch, orbit raising, operational and de-orbit phases of the spacecraft mission – to ensure that their satellites do not become debris.
- **Preserving human life in space:** Human life should be protected and operators should ensure that astronauts are not put at risk.
- **Limiting impact on optical astronomy:** Operators and astronomers should work together to minimise negative impacts on ground-based optical astronomy, while allowing observation at optical wavelengths and ensuring the delivery of satellite services.

Uganda and China governments join forces for nationwide internet delivery

The Ugandan government is working with China to establish the basic infrastructure needed to ensure internet access for the entire population, according to Chris Baryomunsi, Minister of Information, Communication Technology and National Guidance.

“We are connecting urban and rural areas using Chinese

companies to make sure no one is left behind, and we want everyone to have internet connectivity. We are building towers to ensure complete coverage of the internet,” said Baryomunsi.

This initiative is part of the Ugandan government’s ambition to accelerate digital transformation to support economic recovery, create

unlimited opportunities for youth and achieve ‘Vision 2040.’ This partnership is expected to not only improve the quality and coverage of internet connectivity in Uganda, but also reduce the costs of these services and make them more affordable to the entire population, particularly communities living in rural areas.

Senegal and Mauritania to share spectrum

Senegal and Mauritania have committed to collaborate on the coordination and sharing of telecom frequencies, as well as on the management of interference and involuntary roaming at their borders over the next three years.

This is part of the clauses of a cooperation protocol signed between the Telecommunications and Postal Regulatory Authority of Senegal (ARTP) and the Regulatory Authority of Mauritania (ARE).

The strengthened collaboration should also cover the regulation of the electronic and postal communications markets; sharing experiences and regulatory tools; promoting technological innovation and digital transformation.

According to Abdou Karim Sall, general director of ARTP, this cooperation is necessary in order to resolve the ‘practical problems’ which remain despite the spectrum management and control systems of Senegal and Mauritania.

Huawei to modernise Gamtel’s network

The Gambia Telecommunications Company Ltd (Gamtel) has signed a partnership agreement with Huawei for modernizing and extending the backbone of its central network.

This partnership is part of the Gambian government’s desire to strengthen the national telecoms infrastructure to accelerate its digital transformation ambitions. The country is currently preparing to be connected to a second international fibre optic submarine cable and is considering strengthening national connectivity through satellites in partnership with Starlink, among others.

The initiative is expected to enable Gamtel to strengthen its network to better meet the growing demand for services and coverage in the information and communications technology sector. The initiative should also allow it to improve its position as well as that of its mobile subsidiary Gamcel.

“As a partner to the many operators within and outside the borders of The Gambia, Gamtel is a key player in the Gambian government’s digitalization initiatives, we have remained committed to this cause and, as always, we have played a leading

role in the construction of the information technology highway,” said Gamtel in a statement.



DAT and Clipfeed join forces on mobile gaming for Africa's MNOs

Cote d'Ivoire's Digital Afrique Telecom (DAT) has teamed up with e-sports entertainment company Clipfeed to provide mobile gaming solutions for African telecoms operators.

The partners will collaborate on the development of Africa Gaming Box, a white label platform

for mobile carriers to deliver e-sports services to subscribers across the continent.

GlobalData forecasts that the e-sports market would be worth \$1.64 billion in 2023 and will increase at a compound annual growth rate of 16.7% until 2030. e-sports acceptance in Africa will be

supported by increased mobile and PC gaming usage, high accessibility and inclusiveness, and the growth of 5G connectivity.

"The continent has a young and growing population, with more than half of Africans under the age of 25. This is the group most likely to be interested in e-sports," said DAT and Clipfeed in a joint statement. "Over 500 million Africans had internet connection in 2022, and this figure is predicted to rise to over one billion by 2025."

"This partnership will allow us to reach a wider audience and help to grow the e-sports community in Africa," said Michael Whelan, CEO and founder, Clipfeed.

"E-sports remains a very large opportunity in Africa, and we are extremely pleased to partner with Clipfeed to open the doors for the continent's mobile operators to reap the benefits of this booming industry," said Simplice Anoh, CEO, DAT.



Togocom to leverage Google's Equiano submarine fibre optic cable

Togocom will leverage the capabilities of Google's Equiano submarine fibre optic cable to improve its high-speed connectivity services. The company signed a partnership agreement with CsquaredWoezon SA, a joint venture formed by Csquared and the Togolese government for the management of this cable.

With 30Gbps capacity, the Equiano cable grows the number of submarine cables supplying bandwidth to Togocom to 3, which now has a total capacity of 130Gbps. The company is already connected to WACS (West AfricaCable System) and ACE (AfricaCoast to Europe) cables.

"This new commitment strengthens our technical

resources, allowing us to better meet expectations and ensure the redundancy of our international connectivity. As a global operator, our constant commitment is to provide high quality services to maintain our leading position and effectively meet the challenges of digitalization," said Pierre Antoine Legagneur, general manager of Togocom.

Safaricom asks for government assistance with vandalism

Safaricom has approached the government for help in classifying telecommunications equipment as critical infrastructure amidst an uptick in vandalism. CEO Peter Ndegwa said that the sector has collectively invested in modern infrastructure that is prevalent across the country.

Vandalism to fibre cables has been one of the primary reasons of frequent internet and telephony disruptions in some locations around the country.



"We seek your help in categorising telecommunications infrastructure as vital infrastructure to support your government's aim of building 10,000km of fibre optic cable across the country," said Ndegwa. "This will allow for further investment to speed up the roll-out of fibre cable across the country."

The proposal comes at a time when Kenya's Information, Communications, and Digital Economy Minister Eliud Owalo is pressing for the passage of a critical infrastructure bill to protect the country's ICT systems and networks. The bill, which has been in the works since 2015, aims to defend critical infrastructure from threats like terrorism, espionage, and sabotage. It recommends severe penalties and prison sentences of up to ten years for anybody caught destroying essential infrastructure. Power lines, fibre optic cables, highways, and data centres are all part of this infrastructure.

Senegal's first satellite to launch in Q1 2024

GaindeSat, Senegal's first satellite, will be put into orbit during the first quarter of 2024, says the Ministry of Higher Education, Research and Innovation. The satellite was delivered on November 10.

The nanosatellite was built over three years by Senegalese engineers and technicians trained by the Montpellier University Space Center (CSUM) as part of a partnership with the Senegalese government. The construction and launch of

GaindeSat constitutes the first stage of the Senegalese national space program, SenSAT, which aims to make the sector a real lever for the socio-economic development of the country, through the design and operation of tools in space. The goal is to meet national needs for space products and services, and to become a space hub for the sub-region.

Next on the horizon for Senegal is a plan to build and launch larger

satellites, with other applications such as telecommunications.



Nigeria needs 95,000km more fibre for QoS

Nigeria's minister of communications, innovation, and digital economy, Bosun Tijani, said that the country requires new and increased investments in fibre optics cables of around 95,000km to improve the quality of telephony services.

According to Tijani, the quality of services has recently deteriorated as a result of a variety of factors, including vandalism and theft, necessitating increased expenditure.

"So many times, these cables are destroyed by those constructing roads or doing other things on the road," said Tijani. "The robbers have also vandalised some of the cables. And this is happening all around the country. Anytime this happens, it puts pressure on the network, it takes away the backbone that supports the network, so people are moved to another infrastructure, which many times becomes congested and piles pressure on the network, which eventually results in poor services."

The ministry is working to guarantee that the president designates telecoms infrastructure to be key national infrastructure. Once declared, anyone who tampers illegally with telecoms infrastructure would face jail time. The National Communications Commission is also working on increasing investment in the sector.

"Right now, we need approximately 95,000km of these cables across the country. So far, the private sector has laid around 35,000km. Part of our mandate in this government is to complete 70% of the 95,000km of fibre as quickly as possible. In fact, we will be tracking this development virtually quarterly to see how we are progressing, and as we improve that number, services in the country will improve," said Tijani. "In the meantime, we are working with telcos to ensure that they do the right thing and once that is done, they will improve customer services among others."



Talking critical

Harald Ludwig, chair, TCCA Technical Forum; and Asif Hamidullah, head of certification IoT & verticals, GCF



How broadband mission critical device certification is being led by GCF and TCCA

Mission critical services (MCS) and critical communications must be available when needed, reliably providing voice and data connectivity to first responders, public safety services, transportation sectors, and more.

These services and devices must also support the sectors' unique needs and operational protocols and provide ubiquitous coverage that can handle high peak usage levels. Demand for broadband data services is increasing, as images and video become a central part of critical communications. Reliable voice communication, however, is still the core function that must be maintained at all times.

While TETRA remains the dominant mission critical standard for now, the next generation of MCS are being delivered over LTE cellular networks and evolving towards 5G. These newer technologies, based on standards maintained by 3GPP, deliver the bandwidth needed for effective emergency responses.

To provide reliable communications, mission critical devices and networks must be interoperable. The Global Certification Forum (GCF) and The Critical Communications Association (TCCA) have been working together over the past few years to deliver a certification programme for devices supporting 3GPP standards-based mission critical services. This is based on prioritising industry requirements and undertaking a gap analysis of required frequency bands and mission-critical functionalities against currently available functions and processes within GCF.

The programme will ensure that devices and applications are interoperable with mission critical networks and are compliant with the relevant standards and specifications.

The certification programme

To help deliver the certification programme, TCCA and GCF have created the Mission Critical Services Work Stream¹ (MCSWS), open to all TCCA and GCF members, and invited experts from industry. GCF and TCCA are working to include all the relevant industry players in the discussion about this new MCS landscape and its

certification programmes.

The workstream is tasked with the development of a certification programme with launch targeted for the end of 2023. The current scope of the certification focuses on Mission Critical Push-to-Talk (MCPTT), Mission Critical Video (MCVideo) and Mission Critical Data (MCData). In each case, the scope covers the relevant 3GPP Rel 14 and Rel 15 standards.

Certification of MCX products will include both conformance and field trials testing. Conformance testing ensures that the appropriate 3GPP standards are being complied with and is mandatory for certification. Field trials testing is used to ensure interoperability between the device and commercial network, and is currently optional, given special authorisations required to access and test on commercial MCX networks.

To complete the certification programme, and to ensure a successful launch, GCF is responsible for validating conformance test platforms, while a TCCA sub-working group is progressing on development and verification of live network testing for field trials. An initial set of field trials test cases has already been developed, with finalisation and verification targeted for end of 2023.

To ensure the appropriate set of tests cases are targeted for validation, a survey to the MCS community has been undertaken, to understand the importance of MCX features required by the operators and the corresponding support from the supplier community. The feedback from this survey has been used to reprioritise certain test cases, to ensure the best targeting of the features required by industry.

How can agencies and companies engage and support this process?

Mission critical operators and authorities are invited to join the MCSWS to help develop standards-driven MCS, and to share their requirements regarding MCX products. They can also contribute to the ongoing technical development of the certification scheme and future roadmap planning, consider having field trials performed in their live networks, and help grow the certification scheme by requesting GCF certification for devices or clients in their commercial tenders.

Mission critical product suppliers are also invited to join the MCSWS. Device manufacturers and client vendors can work together in defining the scope of

the GCF Certification program to ensure interoperability on key MCS functionalities, and to support test platform validation activities in GCF with devices and clients implementing the latest specifications.

By working together, the mission critical industry can help build a certification programme that benefits all stakeholders and ensures the seamless interoperability of mission critical devices and networks.

Reliable and innovative communications

Mission critical services are constantly evolving, adding support for new technologies, and adapting to developments in the fast-moving communications industry. With huge advances reaching the market in LTE and 5G, the next generation of critical communications will bring revolutionary changes and will move from existing technologies to be delivered over these newer, 3GPP-based networks and devices.

As the 3GPP standards continue to develop, we can see new features and enhancements coming up, that will improve critical communications in the years ahead. Coverage will be improved, interoperability with other types of communications solutions, such as with satellite connectivity, will become more accessible, and the shift from narrowband to broadband will enable better working practices based on intelligent data, more accurate positioning services, and enhanced support for images and video.

But we must not abandon our industry's commitment to standardisation and interoperability, which is the bedrock of providing reliable communications. Balancing progress with guaranteed conformance is a delicate task, and everyone's input must be heard. GCF and TCCA are keen to ensure that all parties interested in ensuring the seamless interoperability of devices and networks in this new MCS world can contribute to the discussion and, in doing so, help to build a certification programme that benefits everyone.

Working together, TCCA and GCF are delivering the certification programme needed by the critical communications industry. By combining their experience, they are creating a practical, focussed programme, that is relevant to the industry's needs, while also guaranteeing the highest levels of interoperability – and thus ensuring that new generations of mission critical services and devices deliver the reliability and performance needed.

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Sierra Leone: prices on the up

Sierra Leone's MNOs have agreed with the government to increase prices for voice and internet data services, which came into effect earlier in November.

Now, the floor price for mobile voice calls is set at 1.63 NLe compared to 0.95 NLe previously, while the ceiling price for mobile voice calls is 1.86 NLe against 1.1 NLe previously. Additionally, the fixed price for mobile data services increased from 15 to 20 NLe.

This new price list was the subject of negotiations between MNOs, the National

Telecommunications Authority (NATCOM) and the Ministry of Communications, Technology and Innovation. Operators had initially requested a 100% increase to address a number of factors that have a significant impact on their operational costs. These include inflation, increases in fuel and electricity prices, etc.

In return for increasing their prices, operators have made certain commitments to the government, notably the reinstatement of bonuses and promotions as well as the improvement of the quality of services.

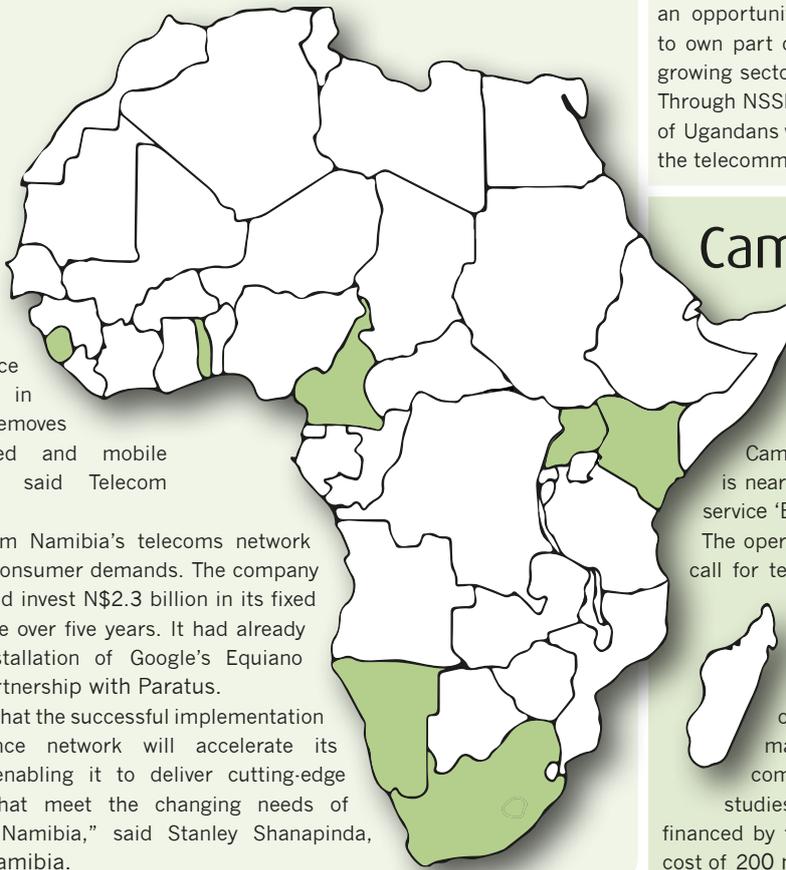
Telecom Namibia to pay 100 million Namibian dollars for fixed-mobile convergence network

Telecom Namibia (TN) has signed a partnership agreement with Huawei for the establishment of a central fixed-mobile convergence network. The cost of this upgrade is estimated at 100 million Namibian dollars.

"Fixed-mobile convergence is a major advancement in telecommunications that removes the distinctions between fixed and mobile telecommunications networks," said Telecom Namibia in a statement.

The project is part of Telecom Namibia's telecoms network modernization strategy to meet consumer demands. The company revealed in July 2022 that it would invest N\$2.3 billion in its fixed and mobile network infrastructure over five years. It had already invested \$5 million for the installation of Google's Equiano submarine fibre optic cable in partnership with Paratus.

"Telecom Namibia is confident that the successful implementation of the fixed-mobile convergence network will accelerate its digital transformation efforts, enabling it to deliver cutting-edge telecommunications solutions that meet the changing needs of businesses and consumers in Namibia," said Stanley Shanapinda, managing director of Telecom Namibia.



NSSF plans to buy 10.55% of Airtel Uganda shares

The National Social Security Fund (NSSF) Uganda has submitted an application to acquire at least 10.55% of the shares of Airtel Uganda, securing more than half of the shares put up for sale as part of its IPO process. The fund plans to invest 199 billion Ugandan shillings.

Airtel Uganda has put eight billion existing ordinary shares up for sale and hopes to raise up to Sh800 billion, at Sh100 per share. While the IPO closing was initially scheduled for 13 October, it was pushed back by two weeks. Airtel also decided on 25 October to double the number of bonus shares to attract more investors.

"The fund's investment in Airtel provides an opportunity for millions of NSSF members to own part of a successful business in a fast-growing sector known for its innovative services. Through NSSF, the largest local investor, millions of Ugandans will also participate in the growth of the telecommunications company," said NSSF.

Camtel's 'Blue Money' on the horizon

Camtel (Cameroon Telecommunications) is nearing the launch of its mobile money service 'Blue Money.'

The operator has launched an international call for tenders to recruit a firm which will carry out the feasibility study of the mobile financial system. This firm must carry out all the studies necessary to ensure the feasibility of the service, more precisely marketing, technical, financial, commercial, and organizational studies. The three-month delivery will be financed by the 2023 budget for an estimated cost of 200 million FCFA.

Visionary leader sought for Communications Authority of Kenya

The Communications Authority of Kenya (CA) is seeking a 'dynamic and visionary' leader to fill the position of director general (DG). Its mission will be to ensure the implementation of strategic plans with a view to promoting of the ICT sector.

Candidates interested in the position of DG of the CA must hold a bachelor's degree in telecommunications or a related

field; have at least ten years of relevant professional experience, including at least five years in a senior management position; have solid experience in the regulatory, telecommunications, ICT, or broadcasting sector; master computer applications.

The search for a new general director for the CA comes following the resignation of Ezra Chiloba, who held the position since

September 2021. He was suspended from his functions in September for having granted himself a mortgage loan of 25 million Kenyan shillings without first submitting it to the review and approval of a higher authority as required by procedure. Since then, the interim role has been taken over by Christopher Wambua, director of communications and public affairs.

WIOCC Group launches OATS for network infrastructure management

OATS (Open Access Technical Services), a WIOCC Group company, has been launched to enable carriers, operators, hyperscalers, major enterprises and governments to outsource the building, management, operation and support of their digital network and infrastructure in Africa to a company with the experience, expertise, and local licenced entities to meet their requirements, allowing them to focus on their own core services.

“With our experience and expertise, OATS offers a multitude of technical services to meet the unique requirements of businesses in all locations, and you do not need to be an existing client of WIOCC or Open Access Data Centres,” said OATS VP Jason Tutty.

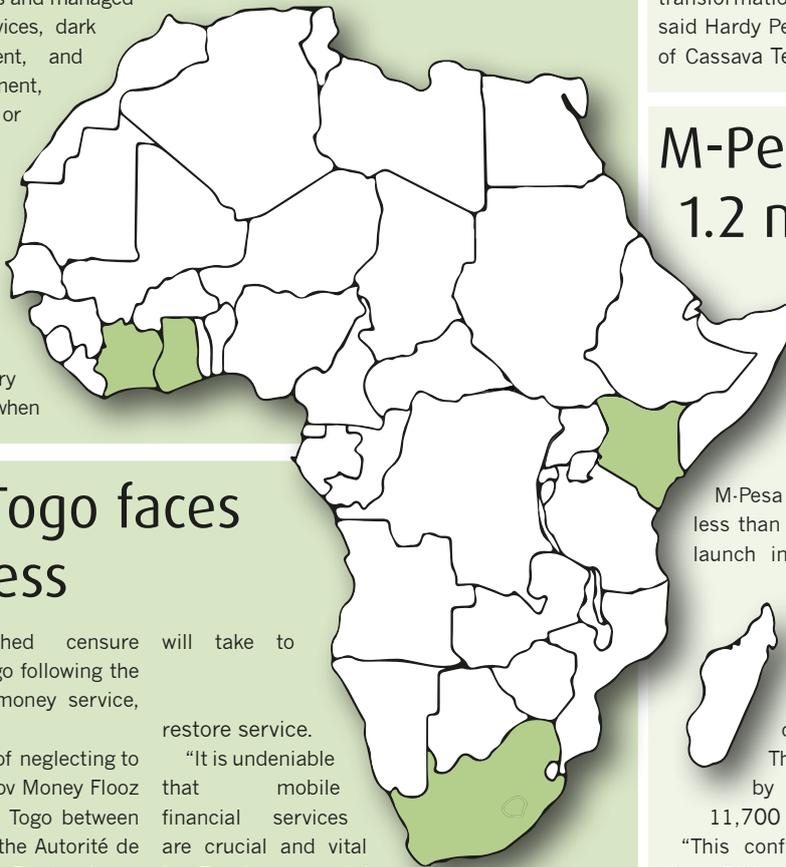
From network equipment logistics and managed capacity termination, to field services, dark fibre and spectrum management, and network operations centre management, organisations can now outsource any or all these technical services to OATS.

OATS can provide expert support for CDNs (Content Delivery Network operators) and multinationals wanting to establish or expand their footprint in Africa, including ensuring they adhere to the appropriate customs and regulatory framework requirements when

importing equipment to enable them to expand into a new African country or region.

For CDNs, carriers and hyperscalers that require connectivity or fibre pairs, OATS can terminate capacity and manage the infrastructure at the Cable Landing Station (CLS), Power Feeding Equipment (PFE) hub or in a carrier-neutral data centre – irrespective of whether or not the chosen location is a WIOCC or Open Access Data Centre facility.

OATS can support services such as backhaul and licence termination, as well as providing comprehensive, expert field service support covering tasks including equipment termination, racking and stacking, trouble-shooting, maintenance, compliance and auditing.



Moov Africa Togo faces censure process

Togo’s regulator has launched censure processes against Moov Africa Togo following the excessive outage of its mobile money service, Moov Money Flooz.

The operator has been accused of neglecting to notify its subscribers on time. Moov Money Flooz services were inaccessible across Togo between 19 and 24 October, according to the Autorité de Régulation des Communications Electroniques and des Postes (ARCEP).

During the outage, Moov Money Flooz users were unable to transact, affecting deposits, withdrawals, prepaid power metre recharge, airtime purchase and international money transfers.

ARCEP said that Moov Africa Togo is expected by law to ‘ensure the permanent, continuous, and regular availability of authorised services.’

According to ARCEP, Moov Africa Togo failed to follow regulations that require mobile operators to notify customers of the cause of the disruption or interruption and the approximate time it

will take to

restore service.

“It is undeniable that mobile financial services are crucial and vital in Togolese people’s daily lives. This is why their absence for such an extended period of time, compounded by a lack of information on how long it would take to restore service, is likely to cause substantial harm to the people,” said ARCEP in a statement.

Moov Africa reported on 20 October that it was experiencing a ‘technical incident’ that was interrupting its numerous services and apologised to its clients but provided no further specifics.

Five days later, it said that its mobile money service will be progressively restored, and it urged consumers to reset their security codes.

Liquid C2 appoints Oswald Jumira as incoming CEO

Liquid Intelligent Technologies has appointed Oswald Jumira as the CEO of Liquid C2, its cloud and cyber security business, following the departure of David Behr, who moved to MTN Group as chief executive of its ICT Centre of Excellence.

Jumira was CEO of Vaya Technologies, one of the business units of Cassava Technologies, which also owns Liquid.

“He has deep industry relationships, is well respected for his ability to execute business plans and is the right person to drive Liquid C2’s growth and securely enabling the digital transformation journeys of our customers,” said Hardy Pemhiwa, president and Group CEO of Cassava Technologies.

M-Pesa achieves 1.2 million subscribers in less than 3 months

M-Pesa recorded 1.2 million subscribers less than three months after its commercial launch in Ethiopia. This was revealed by Safaricom in its financial results for the first half of 2023/2024.

According to Safaricom, the transaction volume rose to 2 million with a total value of 43.7 billion Kenyan shillings. These transactions were facilitated by a network of 22,700 agents and 11,700 merchants.

“This confirms what we have been saying about Ethiopia, that it will significantly support our growth in the future. We hope to maintain this momentum in the second half of the year,” said Peter Ndegwa, CEO of Safaricom.

M-Pesa commercial services on the Ethiopian telecoms market in August, where it had been present since October 2022.



Paratus secures US\$31 million for expansion in underserved regions

Paratus Group has secured funding of US\$31 million to help realise its ambitious infrastructure expansion plans.

The capital injection will significantly boost connectivity across key and currently underserved regions and contribute to the group's goal of doubling revenue within the next five years. The transaction was facilitated by Cirrus Capital, a 100% Namibian-owned, broad-scoped financial services company, which acted as the financial advisor and lead arranger on the transaction for Paratus Group.

The funding – from Emerging Africa Infrastructure Fund (EAIF), a Private Infrastructure Development Group (PIDG) and fund manager, Ninety One – will be used over the next three years to create additional fibre routes connecting Angola, Democratic Republic of Congo (DRC), Botswana, Namibia, South Africa, Mozambique and Zambia.

The investment will also be used to finance the completion of Paratus first Tier IV data center (DC) in Angola. The state-of-the-art 10MW facility will be the largest Paratus DC in Angola. It is designed to stimulate the digital economy, capitalise on the opportunities created by subsea cable systems in the region, and consolidate the Group's strategy to create a regional hub in Angola. The facility will be Paratus's fifth carrier neutral DC in southern Africa and complements two other Tier-III (by design) DCs in Luanda, Angola.

Ninety One, a global asset manager, mobilised capital from two of its funds, EAIF and Ninety One Africa Credit Opportunities, to enhance last mile connectivity and to introduce more reliable internet services across three sub-regions in Africa, including Angola, Botswana, the Democratic Republic of Congo, Mozambique, Namibia, South Africa, and Zambia. The transaction will help strengthen the continent's core digital infrastructure, which is fundamental to building more advanced economies in Africa.

"This investment is a significant sign of our intent to greatly enhance cross border fiber connectivity and facilitate economic development in the region," said chief executive officer of Paratus Group, Schalk Erasmus. "It is good news for African businesses, entrepreneurs, and consumers throughout the continent. It is also a great leap forward on our journey and mission to transform Africa through exceptional digital infrastructure and customer service."

"We conducted an extensive process to secure Paratus Group the best possible funding for its needs, specifically long-duration and cashflow friendly debt that supports its long-term infrastructure roll out across the continent. Through this process, we negotiated and completed this capital raising with Ninety-One,



in part through their Emerging Africa Infrastructure Fund. While numerous competitive proposals were received, the Ninety-One offering stood out in terms of suitability for Paratus Group's specific requirements," said Chastin Bassingthwaight, corporate finance associate at Cirrus Capital. "This is the sixth capital raising we have done for the Paratus group, and the seventh transaction, since 2017. Capital raisings include equity raisings in Namibia and at Group level, a debt programme on the Namibian Stock Exchange, and now debt at Group level. We are proud of our association with this inspiring team, and of the instrumental role that we have played in securing capital for the group. These capital raises have supported the group's growth and helped to derive broad stakeholder benefits for founders, investors, employees, service providers, and clients. We thank Paratus for the continued trust placed in us."



NEC XON and Eutelsat OneWeb to bring LEO connectivity to SSA

Eutelsat OneWeb and NEC XON have signed a multi-year master distribution agreement to bring high-quality LEO connectivity to sub-Saharan Africa. The agreement encompasses services, equipment, installation, and comprehensive training across sub-Saharan Africa.

Eutelsat OneWeb's LEO satellite-based network will provide high throughput, low latency connectivity to support rapid digital economy growth. This move supports the pressing need for seamless connectivity without borders, in applications such as cellular backhaul, oil and gas, agriculture, government and mining. The integration with NEC XON's high quality ICT services will enable cutting-edge connectivity designed for the demands of the African continent. The agreement also provides for a bandwidth-and SLA guarantee to ensure that customers get the speed and QoS they expect.

"As a global leader in ICT we are embracing Eutelsat OneWeb's satellite technology, where the collaboration signifies a pivotal leap towards a more connected sub-Saharan Africa. This is in line with our commitment to equipping businesses across the continent with solutions that drive growth and innovation," said Wally Beelders, executive communications solutions at NEC XON.

"By teaming up with NEC XON, Eutelsat OneWeb is positioning its satellite prowess with regional expertise to reshape connectivity in sub-Saharan Africa," said Cyril Dujardin, general manager connectivity at Eutelsat OneWeb. "This partnership demonstrates the LEO's power to transcend geographical constraints and unlock new applications such as connected agriculture, connected mine sites, connected enterprise and local government e-services."

By leveraging NEC's global expertise in information and communications technology (ICT) and combining it with NEC XON's deep understanding of the African market, this agreement will support the various needs of enterprise customers and ensure one-stop delivery of device terminals and customer support while keeping costs and energy consumption minimal. This is especially true for remote regions, where terrestrial and mobile networks, have posed a natural and historical challenge and where traditional VSAT has its limitations.

Mixed results for Airtel

Airtel Africa has reported a profit of US\$115 million for the quarter ending in September 2023, a 13.53% decline from the US\$133 million earned in the same quarter the previous year.

The company also revealed a 4.7% year-on-year decrease in revenue for the quarter, with earnings totalling US\$1,246 million, down from US\$1,308 million in the previous year.

Airtel Africa reported robust growth in key performance indicators (KPIs) for the first half of the year, with a 9.7% increase in the total customer base, reaching 147.7 million. Data customers grew by 23.0%, reaching 59.8 million, and mobile money customers increased by 23.1% to 36.5 million. The mobile money transaction value experienced a 45.3% growth in constant currency, with a Q2'24 annualised transaction value of US\$116 billion in reported currency.

In terms of revenue, Airtel reported a 19.7% growth in constant currency, with reported currency revenues slightly increasing by 2.3% to US\$2,623 million. However, in Q2'24, reported currency revenues saw a 4.7% decline, reflecting the full-quarter impact of the Nigerian naira devaluation in June 2023. Q2'24 constant currency revenues increased by 19.0%. EBITDA increased by 21.2% in constant currency and 3.7% in reported currency, reaching US\$1,302 million, with an EBITDA margin of 49.6%. This margin reflected a 70bps margin improvement over the previous period, despite inflationary cost pressures and foreign exchange headwinds. Reported currency EBITDA declined by 3.3% in Q2'24 due to the full impact of the Nigerian naira devaluation in June 2023.

Olusegun Ogunsanya, group chief executive officer, expressed satisfaction with the group's strong operating performance, emphasizing the resilience of voice, data, and mobile money services, which continue to experience significant growth. The company's six-pillar 'win-with' strategy focuses on expanding the customer base and facilitating increased usage across the network. Ogunsanya also acknowledged the challenges posed by changes to the FX market in Nigeria, particularly the naira devaluation. Despite these challenges and rising diesel prices in Nigeria, Airtel Africa aims to limit their impact through operational leverage and cost efficiencies, ultimately working toward an improved EBITDA margin in FY'24 compared to FY'23.



Talking satellite

Annet Wanjiru, engineer, Access Partnership



How a satellite-IMT solution can break barriers

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

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

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

Unlocking new opportunities

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

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

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

Breaking barriers for satellite and IMT integration

Integrating satellite and IMT networks requires a collaborative and comprehensive approach from all stakeholders. This necessitates the development of a regulatory framework that supports the integration of these networks while fostering cooperation

and coordination among industry players, regulatory authorities, and government bodies. The regulatory framework should be designed with a keen understanding of the technological requirements of satellite and IMT networks. This requires close consultation with industry experts and a thorough assessment of the technical and regulatory challenges that may arise during the integration process.

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

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

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

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

Local Knowledge, Global Response

By Nimrod Kapon, CEO, OASIS Networks

Imagine a world with no connectivity. It's almost impossible.

As species, we rely completely on communications. It's an essential part of our everyday existence. Our wired and cellular world is spectacularly interconnected. However, this isn't the case everywhere and, according to the ITU, 37 percent of the world's population still have no internet access. This is where satellite technology is a lifeline, reaching the more remote areas of the globe where terrestrial connectivity is lacking or doesn't exist.

The beauty of VSAT

Very small aperture terminals or VSAT networks connect people, businesses and organizations. VSATs can be used for a plethora of applications across many markets. A hugely versatile solution, they are easy to deploy, cost-effective and don't require any prior infrastructure, so they can literally be used anywhere. They are also effective in the case of any loss of connectivity as they are independent to local networks and therefore unaffected by failures. As long as the terminal has line of sight with the satellite, the service is maintained.

This kind of versatility makes satellite technology popular for any use from connecting remote mines

and construction sites with their HQs, providing back-up services and instant networks when terrestrial ones have been knocked out due to natural and manmade disasters. In disaster situations, VSATs can be used in the short and medium term to provide connectivity whilst terrestrial networks are being restored.

When working with VSAT networks, or in the wider satellite space, it's important to take some key factors into consideration.

Maintenance

The fact that VSAT solutions are so effective for remote areas does raise challenges of its own. Reaching these locations to install, maintain and trouble-shoot can be very challenging. For VSAT network operators it is also costly to send dedicated engineers out to sites to carry out these tasks. Some areas are difficult to access due to poor infrastructure, adverse weather conditions and other technical issues. These factors can all impact on the performance and reliability of the network.

Boots on the ground

Offering installation and maintenance services from local teams who know the area, the culture and appreciate the nuances is a sure way to improve your network reliability. With teams located in close proximity to sites, to clean the antenna, check and replace cables and carry out repairs, any issues can be either prevented or mitigated rapidly. If local engineers are well trained and fully supported, with an excellent quality assurance system that facilitates continuous improvement, high standards can be maintained across all locations and regions. These local teams also have a positive impact on their communities, empowering them to improve community wide access to information and communication technologies, and helping to close the so-called digital divide.



Considering local nuances

It is essential to be sensitive to and observe the cultural differences between regions and countries which vary significantly. The location of VSAT sites and their access can rely upon the knowledge of locals who speak the language and know and respect the area and its culture. It's also important to note that regulations differ from region to region. Engineers that are equipped with this knowledge can work much more effectively and know the best channels to work through to get the job done.

When we were working on a project installing a repeater in South Angola, we used a map to identify a mountain location that looked to be a good place for the installation. That particular mountain also happened to be a holy place for the Mocabashi community, so we had to seek their approval before progressing with the installation. We also had to rely on the Mocabashi people to help us hike up to the summit of the mountain so that we could test coverage. What's more, to ascend the mountain, we had to work with the Mocabashi people and use machetes to cut our way through the spined trees. This is a great illustration of how working with local people makes things happen quickly.

Moving with the times

In the satellite business, it's also extremely important to keep in touch with new trends and innovations. The in-orbit environment is in the midst of a significant shift which has been reflected in the ground segment this year. Many customers are considering

LEO offerings, with some already utilising the low latency offered by new LEO operators. However, despite the LEO rollout, we have seen a continued strong demand for VSAT networks within the majority of regions. The reliable nature of VSAT technology in comparison with the largely unproven LEO constellations means that it is still the go-to connectivity solution for those working and living in remote areas.

We still don't know how the new LEO platforms will behave in the future and there are lots of questions that remain to be answered.

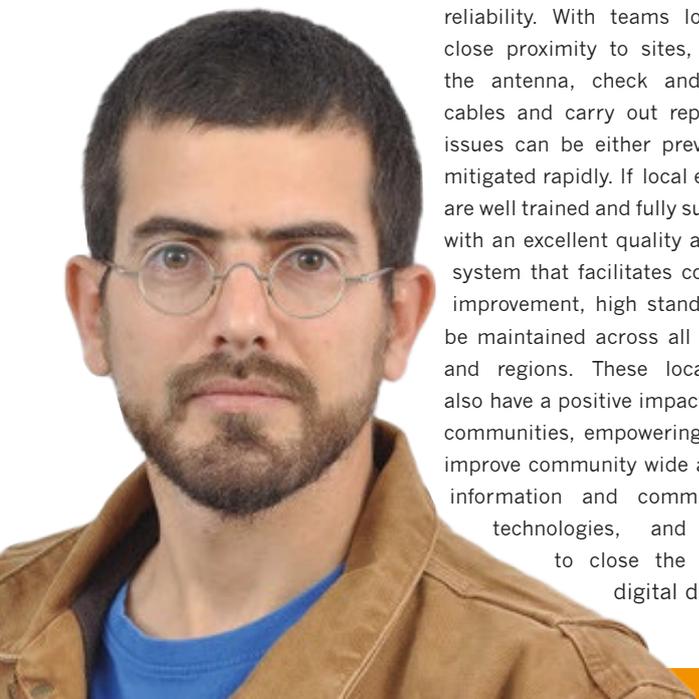
Customers may be attracted to LEO and feel that they are getting a good service today, but they could feel much less satisfied if the service degrades as networks become more contested and make a return to VSAT. In these cases, we need to be prepared with higher bandwidth packages than are being purchased today.

Trust OASIS

We have worked for many years to build strong relationships with our global network of local engineers and our fast-deploy solutions provide connectivity for a huge range of applications. Our knowledge of the industry and commitment to quality make us the trusted one-stop-shop for tailored, reliable, affordable satellite solutions. ■

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



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

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

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

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

Modern digital applications are being constantly developed to serve humanitarian operations

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

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

Today, LEO technologies enable

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

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

vehicular missions.

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

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





Digging toward a smarter future

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

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

Overcoming challenges

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

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

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

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

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

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

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

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

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

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

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

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

Terrestrial vs orbital

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

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

powered,” says Lambert.

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

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

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

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

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

being launched are making available massive amounts of new bandwidth at much lower prices.”

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

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

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

Safety first

As with all heavy industries, connectivity has become crucial to the safe, secure, and efficient operation of the modern mine.

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

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

Keeping employees safe is paramount to

successful mining operations, helping to retain the best staff and reduce the increased costs related with staff churn.

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

Mining ‘costs a fortune every minute’

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

Kapon describes his experience of a communications failure: “I’ve visited a mine myself that had to stop its production for almost one full week because they could not communicate and plan the production, schedule the loading at the port and movement of trucks. As the sites are usually remote, dispatching someone might take several, expensive days.”

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

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



Linda Clark



Louis Lambert



Nimrod Kapon

and fostering innovation,” agrees Trevor.

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

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

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

Connecting the future

As the mining sector in Africa continues to modernise, digitalise, and take advantage of all high-speed connectivity has to offer, communications service providers (CSPs) have a crucial role to play.

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

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

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

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

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

Saving lives with tyre monitoring

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

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

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

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

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

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How is IoT driving wireless communications?

IoT is enabling fantastic new applications that deliver huge benefits to businesses and consumers across the globe. In support of widespread IoT rollout, wireless connectivity coverage is evolving in turn - Amy Saunders asks the experts to elaborate

The Internet of Things (IoT) is taking the world by storm. According to Statista, industrial IoT (IIoT) revenues in Africa alone are expected to expand at a compound annual growth rate of 17.5% to US\$16.81 billion over 2023-2028. With such hefty revenues being generated, where and how is IoT being utilised across Africa today?

IoT in Africa

IoT is being widely utilised across Africa to support the continent's unique opportunities and needs.

Its use has increased drastically in Africa over the last 5+ years, particularly as mobile networks become more robust and 4G and similar technologies are rolled out more widely,

opines Christopher Baker-Brian, CTO and co-founder, Bboxx. "IoT is being used in remote sensor applications, in vehicle tracking and to help monitor and control pay as you go applications, from solar home systems to water pumps and other devices where remote location, tracking and switch on/off of the device based on payment status is important."

While in some cases there are just a handful of communities acting as test cases, IoT can enable people to live their lives in closer proximity to the natural world. In agriculture, for example, sensors can be used to monitor disease within crops, temperature, water supply and soil quality, ultimately helping farmers to make informed decisions about harvest and reduce food waste.

Because modern mobile connectivity is the

'default' connectivity method across many African countries with good coverage, it has enabled many IoT opportunities, shares Hein Koen, director, SIMcontrol.

Transportation is one: "most goods transport in Africa is by road, due to poor rail networks. Coupled with security risks in many countries, IoT solutions are leveraged for fleet management, vehicle tracking, and logistics optimisation. Real-time data from tracking devices and sensors enable businesses to track vehicle location, monitor fuel consumption, and ensure the safety of cargo loads," says Koen.

Continuing, Koen adds security as another key application for IoT. "Many African countries experience high crime rates. IoT security technology has seen wide adoption and many

such security solutions are being developed in Africa, such as cash handling, ATM monitoring, smart alarms, cable theft sensors and other smart security solutions.”

Water scarcity is another example of a problem that IoT is helping to solve. Some 780 million people worldwide don't have access to an improved water source according to the Centres for Disease Control and Prevention. Water systems are continuously installed but 65% break within the first two years, which adds to the mounting problem in the most remote and disadvantaged communities.

The adoption and implementation of IoT across Africa varies in different regions due to factors including infrastructure availability, technological readiness, policy, and financial resources. Nonetheless, IoT is gradually making its way across the continent – in some regions more than others.

Transforming the face of a continent

The African continent is experiencing rapid urbanisation, population growth, and increasing connectivity, creating a favourable environment for the adoption of IoT.

While it's true that, in terms of current actual volumes, IoT in Africa is much smaller than on any other continent, the explosion of pay as you go financing and the need to manage expensive assets in remote areas of the continent mean growth rates are very exciting over the next decade, with tens of millions of devices set to be deployed, according to Baker-Brian. “We have seen year-on-year increases in our portfolio of remotely managed IoT solar home systems since we first started deploying them in 2015.”

Indeed, given the challenges faced across the continent - limited infrastructure, access to services, and resource constraints – IoT offers opportunities to improve various aspects of life and business operations.

“From improving agricultural productivity to enhancing healthcare access, IoT solutions have the potential to make a significant impact in Africa,” says Koen. “Additionally, the growth

of reliable mobile connectivity where fixed infrastructure did not exist, and the increasing availability of affordable devices contribute to the rising demand for IoT solutions. Especially in the specialist security sector, many IoT solutions are being developed in Africa.”

From solar power and wind farms to smart cities fuelled by renewable resources, IoT is changing the face of Africa for the better. By providing decentralised access to energy, financial services, and healthcare, IoT provides Africans with the option of maintaining rural lifestyles without suffering as a result.

Balancing application requirements

A range of connectivity options is available to empower IoT – cellular, Low Power Wide Area Networks (LPWAN), satellite, and WiFi – however, the choice of technology varies based on the specific requirements of IoT applications, such as range, data rate, power consumption, and deployment costs.

“Due to the lack of fixed line infrastructure and associated WiFi connections, GSM, 3G, and 4G connections are the main connection types that we see growing across the African continent,” says Baker-Brian. “Over the last 5+ years, mobile coverage has improved dramatically, driven by the growth in mobile money payment systems and the widening adoption of smartphones on the continent, which has pushed operators to improve coverage rates and connection reliability, especially in more rural areas — although in some markets high speed data connections (3G+) remain a challenge. Bboxx uses 2G connectivity solutions, working with MNOs.”

Koen agrees that the most utilised connectivity technologies for IoT are either cellular: “GSM mobile networks provide wide coverage and are already established across the continent. They are used for applications that require low to high data transfer rates, such as basic sensor monitoring up to remote CCTV monitoring. Most IoT devices in Africa use 2G, 3G or 4G mobile network data connectivity,” or narrowband IoT (NB-IoT); “NB-IoT is a LPWAN technology that

enables long-range communication with low power consumption. It is suitable for applications that require low data rates, long battery life, and deep indoor penetration, such as smart metering and asset tracking.”

These connectivity technologies are utilised because they offer a balance between coverage, power consumption, data rates, and cost-effectiveness, making them suitable for various IoT applications in Africa, adds Koen.

In support of IoT

IoT is changing the face of connectivity in Africa, pushing the boundaries of network optimisation, security, and data management. Indeed, with millions of IoT devices now connecting with African networks, MNOs are placing a larger importance on providing reliable services for these devices.

“Investment into network reliability is increasing, especially in larger cities, which has a knock-on impact on wireless communication provision,” says Baker-Brian.

IoT is driving the need for more robust and scalable wireless communication networks. Demand for bandwidth is set to skyrocket alongside the proliferation of IoT devices and applications across the continent. Accordingly, network optimisation has become increasingly paramount for service providers to ensure quality of service (QoS).

“IoT applications often require reliable connectivity with low latency and high network availability,” says Koen. “To meet these requirements, wireless communication providers are optimising their networks to accommodate the specific needs of IoT devices. This includes deploying small cells, enhancing coverage in remote areas, and improving network capacity to handle the increased device density.”

As we've seen in the latest Nokia Threat Intelligence Report, IoT botnet Distributed Denial of Service (DDoS) traffic, originating from many insecure IoT devices with the aim of disrupting telecom network services for millions of users, increased fivefold over the past year. As such, ensuring the security and privacy of IoT networks and data becomes paramount.

“Connectivity service providers offer secure managed private APN services on top of local mobile network infrastructure to ensure robust security measures including encryption, authentication protocols, and continuous monitoring for potential vulnerabilities,” says Koen.

As IoT continues to evolve, wireless communication providers will play a crucial role in enabling the seamless integration and connectivity of IoT devices, supporting the growth of connected ecosystems. These expanded, upgraded, and secured networks also provide knock-on benefits to other applications in the wireless communications sphere, and deliver new high-speed services to users in metro and rural areas, helping address the digital divide. ■



SMWG-311

Multiband WIDEBAND
Surface Mount Antenna



3-Elements in ONE FOAM-FILLED RADOME

- SMWG-311: 3-element (4G LTE Cellular, WiFi, & GNSS)
- Measurements: 107 mm diam. x 81 mm tall (4.2" x 3.2")

Efficiently designed WiFi and Cellular antenna connections are essential for reliable coverage. In-house electrical testing facilities, including an in-house anechoic chamber, Mobile Mark engineers verified the antenna's RF characteristics. The in-house mechanical testing ensured the antenna meets the rigorous Shock & Vibration standards. Throughout the process, Mobile Mark's engineers were available for consultation and advice.

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Michelin MEMS 4 Tire Pressure Monitoring System With SMWG-311 Vibration Resistant Multiband Antenna

THE CUSTOMER

Michelin, a French multinational company specializing in the design and distribution of tires, services and solutions best suited to customers' needs. A leader in mobility, it is committed to improving its customers' mobility in a sustainable way; to designing and delivering the tires, services and solutions that best meet customers' needs.

They have invented a variety of tires for applications in multiple industries. Working with well-established customers in the mining community, they chose Mobile Mark's SMWG-311 antenna as the antenna solution for their MEMS 4 tire pressure monitoring system.

The MICHELIN MEMS 4 tire pressure monitoring system is a powerful solution to manage tires and usage conditions. It combines downtime-fighting features, innovative equipment, and seamless connectivity to increase profits and reduce downtime by protecting your people, tires and equipment.

THE CHALLENGES

- Too many antennas; too long to install
- Older wireless technology was still being used
- Coverage was difficult due to mining environment

The previous tyre monitoring system used multiple antennas to cover 3G, WiFi and GPS. The system needed to be consolidated and updated to cover new frequency bands. Data needs to be reliably transmitted both in-close to vehicle and from all corners of the mining field, and in a harsh, high vibration environment.

THE SOLUTIONS

- Multi-band package containing all antennas in one housing
- Upgrade from 3G to 4G Cellular, and from GPS-only to GNSS system
- Use vibration minimizing construction for vehicle antennas
- Identify optimum mounting location for widest RF coverage
- Install new, stronger, mounting bracket for antenna

The new system combined the multiple antennas into a single package covering the additional frequencies used by the upgraded systems. The interior of the antenna housing was filled with an RF compatible foam using a proprietary foaming system to ensure both vibration protection and wireless performance. A new mounting bracket was selected which allowed the antenna to be placed where it could provide the best coverage both near to the vehicle and at a distance. The new bracket was strong enough to provide additional protection from vibration.



Towercos: seizing opportunities to stay ahead

Sumedha Tatke, director – marketing and product management, Tarantula



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

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

Digitalization drivers

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

The market imperative

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

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

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

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

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

Internal impetus

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

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

Technology suppliers

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

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

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

Digitalization - various journeys

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

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

Path 1 - big bang digital transformation

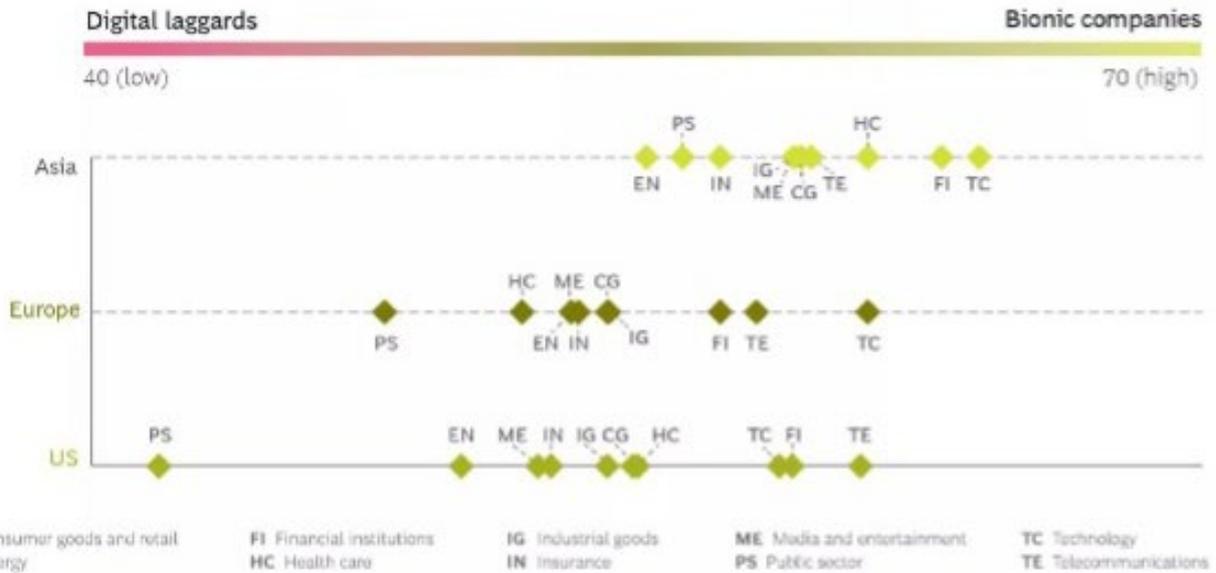
The path towards digitalization is demanding for towercos. It involves technology-enablement not only for tower infrastructure and operations but also for all business and support functions, including administration. It's a comprehensive approach where towercos go 'all-in' with their digital transformation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

Path 2 - digitalization > point solution or platform

There are two sub-paths in the digitalization journey:

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

Platform approach: A platform is a set of tools and services that enable the development,



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

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

Path 3 - digitization

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

Risk vs return

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

Assess digital maturity with DAI

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

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

Acceleration Index (DAI).

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

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

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

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

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

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

Press the four accelerators

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

Technology, data, and human capabilities:

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

AI integration:

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

Governance and platform operating model:

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

Technology and human capabilities connection:

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

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

Shifting gears in telecommunication

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

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

The telecom industry teaches us the importance of adaptation and seizing opportunities to stay ahead. ■



Bringing broadband to Sudan's gold mines - via satellite

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

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

Satellite networks have enabled mining companies to overcome all technological barriers and provide high-speed broadband to remotely based work teams. Satellite communications systems ensure



that users can exchange real-time information regardless of location, thus accelerating the decision-making process.

Serving Sudan's mines - from space

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

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

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

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

YahClick's ecosystem consists of Ka-band links, Mikrotik routers, Mesh access points, network

controllers, Point-to-Point access points and IP phones. YahClick has been commissioned to provide its services for five years.

Extending to local communities

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

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

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

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

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

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

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

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

Enhancing safety and efficiency

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

"Data is a valuable asset for miners, enabling 'Data Driven Decision-Making' in the critical mining environment," said Wang. "5G connectivity will make the South African mining sector globally competitive. We are excited about

working together with our partners like BCX to drive digital transformation in the mining sector, which is such a crucial industry in the economy."

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

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

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

Two phase deployment

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

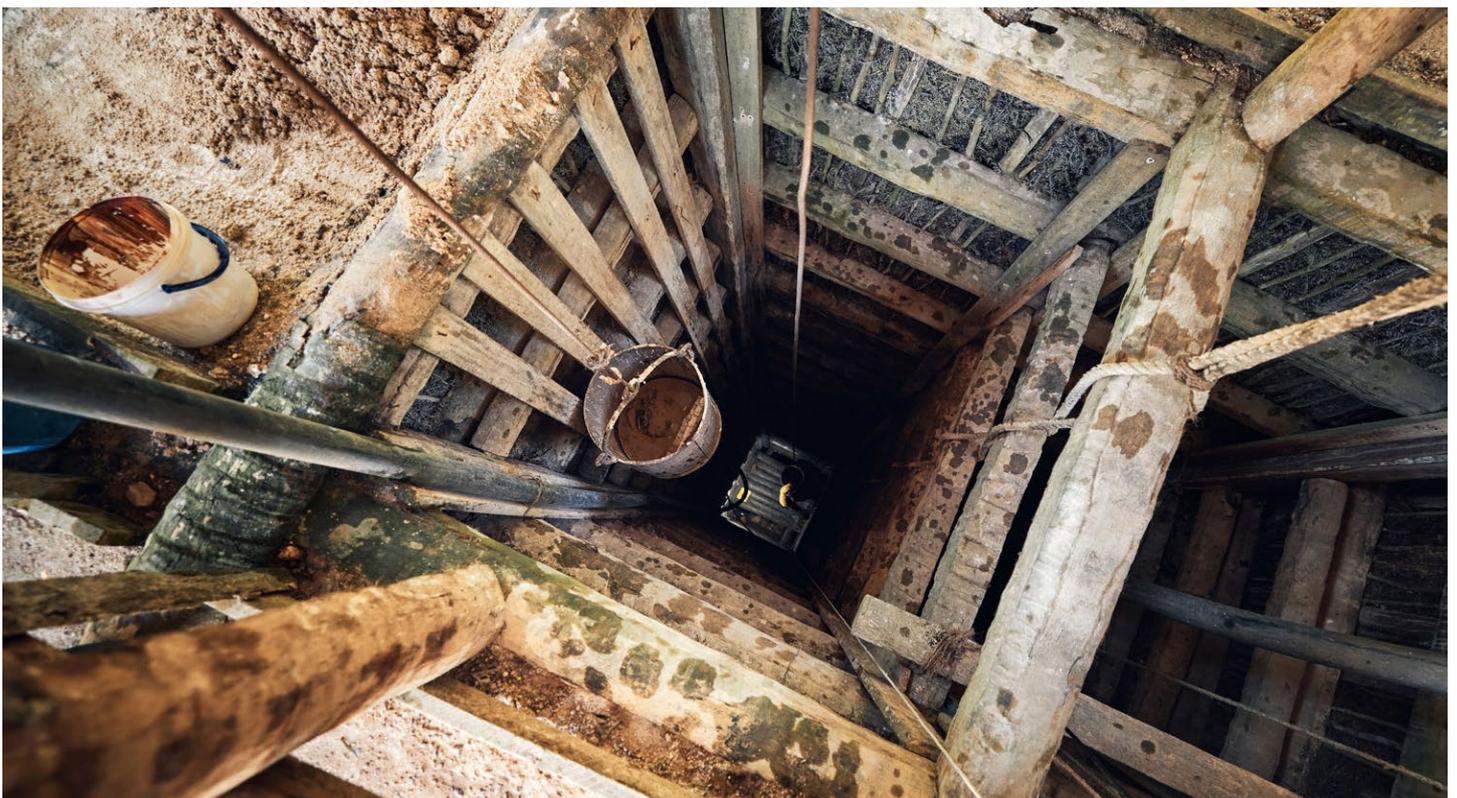
In the first phase, BCX deployed 5G-enabled cameras at critical points at the mine to enable

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

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

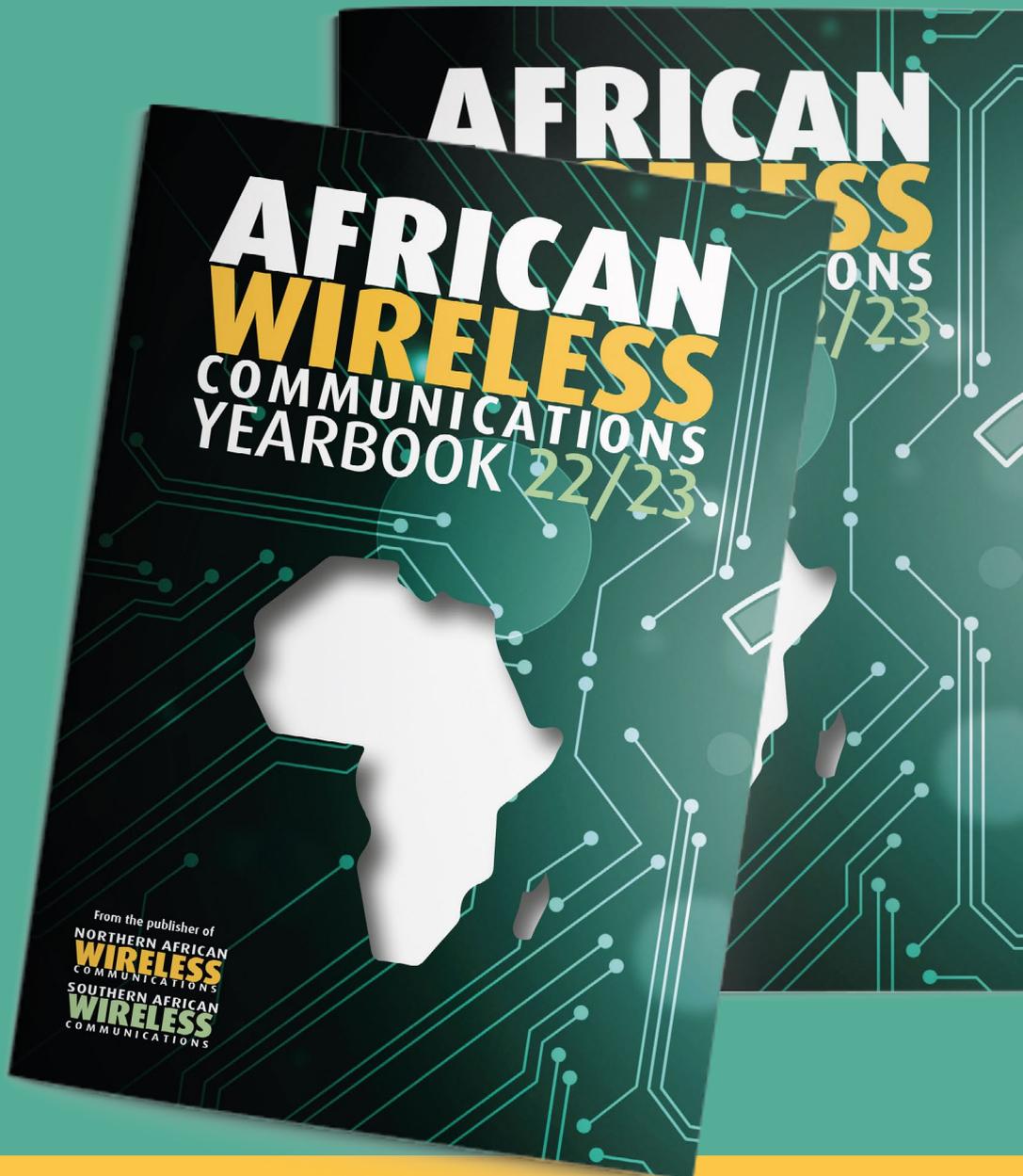
The second phase saw the extension of connectivity underground to enable a fully connected smart mine that will increase security, supply motion sensors that trigger an alarm, and enables the mine's control room to monitor underground activity effectively.

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



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Expanded NTN capabilities to connect the underconnected

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

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

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

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

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

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

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

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

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

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

"The high mobility and easy pole-mount installation system

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

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



Industrial SMEs to benefit from compact private wireless connectivity

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

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

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

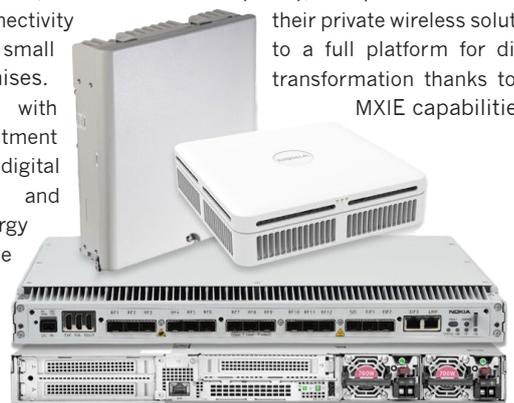
In keeping with Nokia's commitment to accelerate digital transformation and green energy adoption, the Nokia DAC PW Compact is up to 60% more energy-efficient than

WiFi, resulting in much lower energy footprint.

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

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

their private wireless solutions to a full platform for digital transformation thanks to the MXIE capabilities.



Sitracker adds GIS for towerco design

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

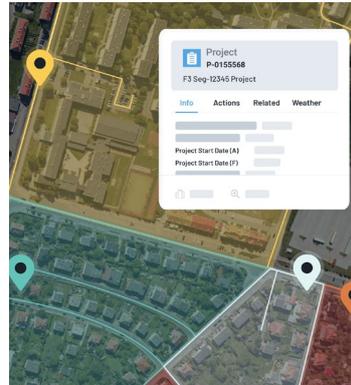
The new solution, Sitracker GIS Link, connects geospatial data from web GIS systems such as Esri's ArcGIS within Sitracker's deployment operations suite. GIS Link will also support new functionality within Sitracker that will provide network operators enhanced visibility into deployments by rolling up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

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

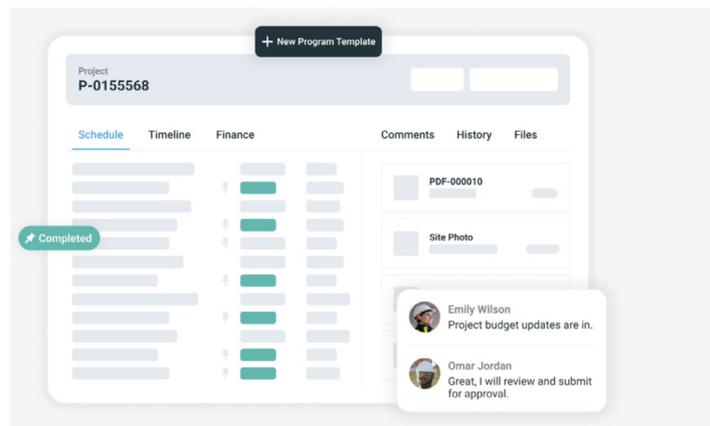
a key and core system in our overall architecture."

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

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



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



Look out for...

AI comes to wireless comms

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

One way that wireless performance is optimised is by providing accurate channel state information (CSI), which is used in real-time throughout a wireless system to adapt transmissions as best as possible to current channel conditions with the goal of maintaining the best performance. This is a crucial component to achieving reliable communications with high data rates and multi-antenna systems.

Traditionally, calculating and reporting accurate CSI is computationally and resource intensive making it a good candidate to begin integrating AI and ML into the network. Accordingly, wireless researchers at University of Malaga (UMA) – in partnership with Keysight – developed an AI / ML model for CSI feedback enhancement for 6G systems.

Keysight developed a digital twin platform to emulate the performance of ML models in real world conditions. Building an interface layer that connected to Keysight's PathWave System Design (SystemVue) modelling tool, UMA researchers were able to evaluate the model under a wide array of fading profiles and other test conditions to prove this method outperforms traditional approaches.

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

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

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

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

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

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

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

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

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

Batelco launches MENA's first 'Mobile Peering' service

 Batelco has introduced 'Mobile Peering,' a service available on Manama IX (MN-IX) for platform members, making it the first in the Middle East and Northern Africa (MENA) region to provide this service.

The Mobile Peering service is a secure and open interconnecting solution facilitating the exchange of

global mobile roaming data between mobile operators and Internet Packet Exchange (IPX) providers.

The advantages of this service include improved network efficiency and reduced latency through direct connections between mobile providers on MN-IX. This direct exchange of mobile traffic with

other mobile networks enhances the roaming experience for the mobile operators' end-users. The service eliminates the need to pay a third party to carry mobile data traffic, resulting in overall cost savings that can be passed on to end-users, leading to more competitive mobile roaming data plans.

Telekom Deutschland installs first mobile mast on Saarland's A1 motorway

 Telekom Deutschland is accelerating the expansion of the mobile network on German motorways with Autobahn.

The first jointly implemented mobile phone mast has now been installed on the A1 in Saarland, with plans for an additional 400 cell towers. These developments are expected to double the network speeds and reduce the number of dropped calls.

Telekom Deutschland announced that the first cooperative cell phone tower on the motorway is now operational at the Schellenbach rest area. In the future, 5G and 4G LTE with at least 200Mbps will be available across all motorways in Germany, for which Autobahn will provide Telekom with the necessary space in the immediate vicinity of the road.

"We are pleased that we can now go full speed ahead with the expansion of mobile communications along the motorway. In the past, the selection and coordination of new cell phone sites was a lengthy process. The cooperation with Autobahn GmbH has shortened this significantly. This is demonstrated by the speed with which we were able to build the first mast on the A1, from signing the cooperation to implementation in just six months. We want to offer our customers the best possible mobile phone coverage across the entire motorway network," said Telekom Deutschland.

Autobahn and Telekom have been working to enable seamless 5G coverage on the highways since May 2023. Autobahn said it takes its responsibility for safe sustainable,

and future-proof transport routes seriously and makes areas available for mobile phone coverage, creating the conditions for autonomous and connected mobility for tomorrow.

Telekom said the mobile mast at the Schellenbach rest area provides 2G, 4G and 5G network coverage and operates on the 800MHz, 900MHz, 1800MHz and 2100MHz frequency bands.

"The next three mobile phone stations have already been selected: the motorway locations in Heidesheim, Hauxberg, and Wolftratshausen. Construction of the masts at these chosen locations will commence as soon as the necessary building permits are obtained. This also applies to the new mast in Schellenbach, which is currently a mobile solution. However, this does not impact the radio quality," said Telekom Deutschland.

Up to 75 additional new mobile phone sites will be selected by the end of 2023; this number will increase to around 200 new locations by the middle of next year. The locations for all 400 planned new cell phone masts along the highway should be determined by the end of 2024.



Ooredoo Kuwait launches country's first managed WiFi 7 service

 Ooredoo Kuwait has launched Managed WiFi 7 through 'CloudConnect,' a Network-as-a-Service (NaaS) solution in partnership with Huawei.

With the launch, Ooredoo has become the first operator in Kuwait to introduce WiFi 7 technology

specifically for businesses. According to Ooredoo, the introduction of the 'CloudConnect' solution is set to revolutionise enterprise networking in Kuwait.

The solution introduces a comprehensive suite of cloud-managed networking services, and

WiFi 7 is one of the key features that revolutionises business connectivity. Ooredoo Kuwait said that CloudConnect gives businesses improved network efficiency, as well as enhanced data security and compliance with local regulations.

O2 Czech Republic launches 5G in Prague Metro stations

 O2 Czech Republic has launched 5G services in Jiřího z Poděbrad metro station in Prague. With the launch, 4G/5G broadband services are now accessible in all 61 Prague Metro stations, including tunnels.

The initiative to provide high-speed internet coverage in all Prague metro stations is a collaboration between a consortium of operators: T-Mobile, O2, Vodafone, and CETIN. After the cable replacement, installation of new technologies, connection of distribution with radiation cables throughout the tunnel section, and increasing the number of antennas to 16, all customers can now experience uninterrupted services and enjoy high-speed internet.

The network enhancement not only provides users with increased security in situations where emergency communication is necessary, but also enhances travel comfort for passengers, making life easier with connectivity available throughout the journey.

"This marks the end of one of the most important joint investment projects of the three largest Czech mobile operators. Thanks to it, the people of Prague have coverage of all metro stations with the fastest mobile internet, which allows them to be online, listen to music or even watch their favourite shows during the entire journey to work, school or for entertainment," said O2 Czech Republic in a statement.

The operators are continuing their cooperation with the Prague Public Transit Company (DPP) and have already installed technologies and antenna systems as part of the project documentation for the construction of the new D metro station. The expansion of coverage to the new sections will occur concurrently with the construction of the stations.

Orange Spain to prevent fire in agri-food plants



Orange Spain has commenced testing a solution designed for the prevention and early detection of fires in agri-food plants and large warehouses.

This initiative leverages edge computing and 5G SA technology, Orange 5G+. Orange will invest Euro 4 million in the project, with almost Euro 1.3 million being subsidised by the Single Sectoral 2023 Program launched by the

Ministry of Economic Affairs and Digital Transformation.

The project is based on an application that collects real-time data from IoT sensors, drones, and autonomous robots using Orange Spain's 5G SA Network. This information is processed with the help of AI, which can predict a fire before it occurs by detecting thermal anomalies. Additionally, it generates immediate

automatic responses through ultra-low latency.

"This project is an example of the great potential of edge computing technology, supported by a 5G+ network, in the business world. These two technologies allow data processing to be carried out very close to the place where they are generated, which is key in all applications that require immediate response times, such as industrial

automation, security services or the development of smart cities with the aim of improving the quality of life in urban environments," said Orange in a statement.

Orange said that 5G+ will allow the definite development of IoT, thanks to advantages such as ultra-low latency, maximum connections at maximum speed, better indoor coverage, and longer battery life provided by 5G SA networks.

Italgas adopts IoT for gas and water monitoring



Italgas, a distributor of gas and water serving enterprise and consumer customers, can now monitor more than 8 million connected smart meters across the country following the successful deployment of Infovista's next-gen automated assurance solution, Ativa.

The Ativa solution provides Italgas with real-time visibility and control over its IoT network, enhancing service reliability, reducing costs, and enabling Italgas to adhere to contracted Service Level Agreements (SLAs) with the Italian Regulatory Authority for Energy, Networks, and Environment (ARERA).

Ativa plays a pivotal role in supporting Italgas' digital transformation, with the company expecting to achieve more than 90% cost reduction through operational efficiencies such as minimizing field visits, improved visibility of the network quality Italgas receives from CSPs and adherence to contracted SLAs, and subsequently higher compliance to their SLA requirements mandated by ARERA.

The automated assurance of Italgas' 8 million IoT devices enables the company to quickly identify the root-cause of any issues and monitor the reliability of the three CSP networks connecting its nationwide network of smart meters. Ativa allows Italgas to integrate with its own cloud-based business intelligence systems for maximum operational efficiency. Meanwhile, Ativa's multi-tenancy capabilities enable the expansion of the existing system to other

international markets in which Italgas operates.

"The challenge of managing a network of over 8 million IoT devices is significant—but even more so when you add the regulatory requirement for every one of these devices to be connected and providing daily meter readings," said Diego Vola, telecommunications project manager, Italgas. "The ability to quickly identify and resolve the root-cause of a problem is critical to both the customer experience we deliver and the SLAs to which we are accountable. The cost savings from deploying Ativa are expected to be over 90%, and we are excited to be working with Infovista to look at extending these operational efficiencies to all our markets."

"The increasing deployment of IoT devices in industrial and enterprise environments is creating assurance challenges such as monitoring and troubleshooting which are new for businesses for whom connectivity is not their core focus," said Franco Messori, chief strategic officer, Infovista. "Italgas is a perfect example – they have a nationwide network of millions of smart meters connected to their central system via public CSP networks. The assurance of optimal performance can only be achieved by having the right observability and control to ensure the efficient operation of their expansive IoT network. We're delighted to be working with this pioneering utility to support them with their digital transformation towards assuring an uninterrupted and reliable IoT network across Italy and beyond."

LLA to sell 1,300 mobile towers to PTI



Liberty Latin America (LLA) will sell 1,300 mobile tower sites across Panama and various Caribbean islands to Phoenix Tower International (PTI) in a deal valued at \$407 million.

PTI will acquire LLA's tower sites in Panama, Jamaica, the Bahamas, Puerto Rico, Barbados and the British Virgin Islands. LLA will continue to use the sites under long-term master lease agreements for each market included in the transaction terms. The \$407 million figure also includes an agreement by LLA and PTI to build another 500 towers in those markets over the next five years.

PTI CEO Dagan Kasavana said

that the deal will strengthen its presence in existing markets and enable new market expansion in the Bahamas, British Virgin Islands and Barbados. Meanwhile, LLA president and CEO Balan Nair, said that the company will use the proceeds from the PTI deal to reduce debt and further invest in its businesses.

"The long-term lease agreements and ongoing coverage extension will enable us to continue delivering leading mobile services to our customers and support network expansion including future 5G deployment plans across the Caribbean and Latin America, while lowering capital costs associated with these assets," said Nai.

Space Norway to buy Telenor Satellite



Telenor Group has entered into an agreement with Space Norway, wholly owned by the Norwegian Government, to sell its satellite subsidiary 'Telenor Satellite' at an enterprise value of NOK 2.36 billion.

The transaction is expected to be closed in January 2024.

"For more than 20 years, we have served our customers with premium, high-quality broadcasting and data services via satellite. Now the time has come for a new era for Telenor Satellite. With Space Norway, Telenor Satellite will have an industrial owner who has the right competence and who will prioritise the required financial resources to realise the company's potential," said Telenor

in a statement.

"Satellite-based capabilities are more important than ever. The combination of Space Norway's partly governmental customers and Telenor Satellite's commercial customer base will give the new company a strong platform to grow the business in both sectors. We are very excited to enter into this agreement and look forward to contributing to the long-term development of Telenor Satellite," said Space Norway.

Telenor and Space Norway have already signed a letter of intent outlining a strategic partnership and possible joint business development initiatives, particularly regarding additional satellite capacity and satellite consulting services.

MarineMobile 5G from Telkomsel and ZTE increases fishing yields by 11%

Telkomsel and ZTE have launched MarineMobile, a 5G-based mobile maritime solution designed to help fishermen overcome operational challenges.

This long-range mobile communications solution provides access to weather forecasts, optical fishing location determination, GPS tracking, and real-time access to direct fish buyers in the market, according to the official release.

The collaboration focuses on testing the enhancement of 5G network capabilities based on the 2.3GHz frequency band, aiming to expand broadband service coverage for maritime regions.

Initiated in February 2023, Telkomsel and ZTE teamed up to test the use of 5G networks to meet the digital connectivity needs of Indonesia's maritime regions. The trial subsequently resulted in the introduction of the MarineMobile solution, which integrates Massive

MIMO technology and Ultra 5G coverage features, utilising ZTE i5GC. The device is reportedly said to have flexible network backhaul support and can deliver low latency and high throughput of up to 250Mbps.

Telkomsel's broadband coverage in the maritime region of Gorontalo was improved using ZTE's 5G radio devices with active antenna technology. These devices can achieve a coverage distance of up to 72km for 2G, 69km for 4G/

LTE, and 60km for 5G in open waters. This seamless connectivity has reportedly led to enhanced operational effectiveness and efficiency, reduced costs, and increased profits through more precise fishing activities.

Telkomsel and ZTE note that the enhancement of the broadband network in the coastal areas has resulted in an 11% increase in fish catch volume, reaching 9,070 tons in the second quarter of 2023 compared to the previous year.



REALLY expands DeWi network across the US

Optiva has been selected by REALLY to power and grow its new mobile phone service nationwide, powered by Optiva BSS on Google Cloud. REALLY is on a mission to bridge the digital divide by introducing a nationwide decentralized wireless (DeWi) network across the U.S., commencing in Austin, Texas.

The REALLY DeWi network is powered by the people, bringing the sharing economy to the telecom industry. The network is fueled by strategically positioned cell site radios hosted on rooftops and balconies, making increased speeds and seamless roaming available to all customers on the network. Recognizing connectivity is a necessity, its decentralized network is about providing service and creating community through its G.O.A.T. program, honoring people and causes while offering free and discounted services to qualified first responders, teachers, veterans, and other deserving individuals to make quality mobile connectivity universally accessible.

"Optiva is inspired by REALLY's vision to bridge the digital divide and enable better coverage and faster speeds for consumers across the US," said Robert Stabile, CEO of Optiva. "We are proud that our Optiva BSS will bring the functionality needed to achieve their goals. Optiva's mission is to power innovation in the telecom industry, and REALLY is a shining example of that goal."

REALLY will be empowered by Optiva's full suite of comprehensive BSS features, pre-integrated carrier APIs, third-party services, dual-network provisioning and turnkey managed services and support.

"Our mission is unique, and we needed a BSS platform that delivers a broad range of functionality and integrations, plus a rapid launch with the scalability to support nationwide growth," said Adam Lyons, founder and CEO of REALLY. "Optiva's comprehensive software, telecom expertise and dual-network support were key to choosing Optiva."

Singapore Airlines rejuvenates communications and collaboration tools

Tata Communications has announced a multi-year agreement to transform the Singapore Airlines (SIA) communications and collaboration tools to enhance employee productivity and boost user experience.

This new transformative initiative delivered on Tata Communications GlobalRapid platform enables SIA users to be connected and collaborative anytime and anywhere globally.

"We take great pride in our long-standing relationship with Singapore Airlines. As a global CommTech

player, we are privileged to be chosen as their partner in progress as they emerge stronger than ever and strive to create new benchmarks in customer experiences," said Amitabh Sarkar, vice president & head of Asia Pacific and Japan – enterprise, Tata Communications.

Tata Communications has been working with SIA for the last five years and in addition to the above solutions, Tata Communications IZOTM SDWAN also enables SIA with intelligent customer call routing to their global customer service centres, ensuring a

seamless customer experience.

Additionally, SIA pilot and cabin crew collaboration platforms are also powered by Tata Communications MOVE enabling global and always connected experience to the crew. MOVE global intelligent cellular connectivity facilitates a swift and secure exchange of critical flight and passenger data on pilots and crew tablets, leading to expedited flight turn-round and enhanced on-time performance while achieving significant cost savings compared to traditional data roaming solution.



Latvia's SPRK approves spectrum auction outcome for 3750-3800MHz

 Latvia's Public Services Regulatory Commission (SPRK) has approved the outcomes of the auction for the radio frequency band 3750MHz - 3800MHz.

The auction, held in two rounds, saw Latvijas Mobilais Telefons (LMT) and Tele2 securing the right to use frequencies for 20 years. The auction proceeds of 550,000 euros will contribute to the state budget within six months, according to SPRK.

According to SPRK, Latvijas Mobilais Telefons (LMT) secured the right to use spectrum in the 3750MHz - 3775MHz frequency range (25 MHz), and Tele2 secured the right to use spectrum in the 3775MHz - 3800MHz range (25 MHz), each with a bid of 275,000 euros, respectively. The right of use for commercial activity in the territory of the Republic of Latvia has been granted from 1 January 2024, to 31 December 2043, for both telcos.

Both operators plan to use the spectrum for network modernisation. Following the announcement of the

auction results, both companies unveiled their respective network development plans.

"It's no secret that 5G technology opens up new opportunities for both citizens and companies, so LMT is purposefully developing it. The work so far on the development of the 5G network infrastructure has been successful, but it should definitely not stop there. The additional purchased frequencies will increase the capacity of the 5G network, allowing the widest possible range of people in Latvia to benefit from the advantages provided by 5G within the operating area of one base station," said LMT in a statement.

LMT reported that the number of LMT 5G base stations currently stands at 400, providing extensive 5G data transmission coverage across 180 populated areas throughout Latvia. In the first nine months of the year, it has invested 20 million euros in the development of the network and infrastructure.

Tele2 Latvia has noted a 30%

increase in the capacity of its 4G network over the last two years through the implementation of ambitious network development projects. Ongoing network development continues actively, with the installation of a new 5G base station occurring daily in various locations across Latvia, alongside the modernization of one 4G base station. Tele2 has outlined upcoming network modernisation projects to increase capacity in Riga (in the vicinity of Braslas Street and Aleksandra Caka Street), Dobele district (near Krimunu parish), Saulkrasti parish (near Zvejniekiema), Rezekne district (near Gaigalava parish), and Balvu district (near Brivibas Street). The company has allocated 20 million euros for the development of its mobile communication network this year, with investments directed toward network modernisation, 5G deployment, maintenance of network capacity, and the construction of new data core network infrastructure.

Solomon Islands to gain Sat2Phone service through Lynk-bmobile deal

 Lynk and bmobile Solomon Islands have teamed up to launch the initial satellite direct-to-mobile phone (Sat2Phone) services for subscribers, utilising Lynk's 'cell-towers-in-space' technology.

The collaboration aims to expand mobile coverage beyond Guadalcanal, Malaita, Western, and the Central Province. The initial service will commence as a beta service in Makira, with plans to expand the coverage in 2024.

bmobile provides high-speed data, voice, and SMS communications across the Solomon Islands and currently operates in four provinces: Guadalcanal, Malaita, Western, and the Central Province.

Lynk supports SMS, broadcasts emergency alerts, and facilitates voice calls on all seven continents, with plans to commence commercial service with multiple MNOs worldwide over the course of 2023.

"Lynk is humbled and thrilled to bring sat2phone connectivity to the people of Solomon Islands, everywhere in Solomon Islands," said Dan Dooley, Lynk's chief commercial officer. "For bmobile subscribers, this service will be like no other in use today. Our initial Sat2Phone service will start as a beta service in the Makira and extend next year across the island nation to include all remote areas, including the Solomon Islands maritime economic exclusion zone, which covers more than 1.6 million kilometres. Lynk will also be used to provide back-up services, when natural disasters damage the ground network, to enhance network resilience. With over 75% of Solomon Islands' residents living outside urban areas in mostly small communities, Lynk's service has the potential to be a game changer for residents and visitors alike."

Lynk is also targeting its service launch this year in Papua New Guinea in partnership with bmobile's parent company Telikom.

UScellular wins \$5.8 million from Missouri Cell Towers Grant Program

 UScellular has been awarded over US\$5.8 million from the Missouri Cell Towers Grant Program to improve mobile and in-home connectivity in multiple counties across the state.

The Missouri Cell Towers Grant Program is dedicated to investing in the expansion of cellular service throughout the state. With this funding, UScellular has announced plans to construct 11 new cell sites, thereby expanding wireless coverage in the following 19 counties: Adair, Audrain, Clark, Howell, Knox, Laclede, Lewis, Marion, Monroe, Oregon, Ozark, Pike, Ralls, Randolph, Schuyler, Scotland, Shelby, Texas, and Wright.

UScellular expects the new towers to be constructed and operational late in 2025. Building and maintaining a new cell tower in rural areas can cost twice as much as building one in an urban centre,

meaning programs like this play a crucial role in enabling wireless carriers to quickly and efficiently connect residents.

Moreover, UScellular will be discontinuing its CDMA network in 2024 and reallocating the network for 4G/LTE services. The company CEO said that "of note regarding our network initiatives, we will be shutting down our CDMA network at the beginning of 2024. Our team has done an excellent job migrating the customer base away from CDMA-dependent devices. Less than 42,000 customers are left and that's down from 386,000 just 18 months ago. We believe we're going to continue to see more customers migrate over the next several months. We intend to reform that spectrum to support our LTE network. And we expect to see additional systems operation savings once that CDMA network is

fully shut down in 2024."

UScellular utilises the 800MHz and 1900MHz spectrum to provide CDMA services. The company anticipates that by the end of 2024, approximately 50% of data traffic will be handled by sites equipped with mid-band spectrum..



Q&A

Craig Palmer,
CEO,
VAS-X



Who was your hero when you were growing up?

My dad was my hero when I was growing up - and probably still is! He dropped out of school at the age of 17 and worked his way up from Standard 9 to CEO of a shipping firm. So, you could definitely call him a self-made man, a true self-starter.

He was firm with his staff but always prioritised their welfare. He built fantastic friendships, which were a great example to me, and taught me all about gamesmanship and sportsmanship - as well as everything I know about sports today! He was also the one who first introduced me to golf, sparking a love of the game, which stays with me now.

What was your big career break?

My big career break was securing the Virgin Mobile enterprise project office manager role. It was my second stint at Virgin Mobile, and I was tasked with starting up an enterprise project office due to a vast backlog of projects and delivery. This allowed me to touch

“The design, detail and architecture of Victorian buildings in particular is something that I admire, with some great examples in South Africa in Durban and Port Elizabeth for instance.”

every aspect of the business and people, from C-level executives to call centre teams and permitted me to learn about each area of the business. I gained knowledge and experience of how one decision can impact multiple departments, processes, rules, and contracts. The operational expertise that I developed in that role led me to other opportunities within Virgin Mobile, and then into

my first COO position. I consider the lessons that I learned in that enterprise project office manager role to be my MBA.

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

I wanted to be an architect when I was growing up. I love buildings - their shapes, lighting, gardens, and interior dynamics that bring steel and concrete to life. The design, detail and architecture of Victorian buildings in particular is something that I admire, with some great examples in South Africa in Durban and Port Elizabeth for instance.

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

I would choose to have dinner with the South African cricketer Hansie Cronje and the American road racing cyclist Lance Armstrong. Both were supreme athletes, driven to success, knocked down by scandals related to match-fixing and doping - but crucially still able to retain their dignity. I would love to know what it was

that drove them, why they did what they did, and what they would do differently if they had their time again.

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

The best piece of advice I have ever been given was to admit when you’re wrong or have made a mistake, apologise with

grace and humility, learn from it, don’t repeat it, and move on! My dad gave me the advice when I was growing up and continually impressed it upon me. I used it to good effect in a previous role when I was summoned to explain an issue to the then CFO and the entire c-level team. I stood up, faced the CEO, confessed to the problem and the 60 minute meeting was over in 10 minutes,

“In Africa, in particular, mobile connectivity has the potential to accelerate digital transformation and drive socioeconomic advancement, yet 78% of the population in sub-Saharan Africa is still unconnected, according to GSMA data, creating barriers to mobile internet adoption.”

with all egos intact and trustworthy relationships cemented.

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

If I had to move away from the mobile industry, I would choose mercantile law. I love contracts and commercials, understanding how they tie into a scope of work, the win-win scenario for both parties and the satisfaction of creating a framework to deliver a body of work.

The Rolling Stones or the Beatles?

It’s the Rolling Stones over The Beatles, but I have to say that Dire Straits win hands down when it comes to both lyrics and music!

What would you do with £1 million?

I would invest £1 million and watch it grow - waiting for me to retire so that I can enjoy the fruits of the investment. It would be so

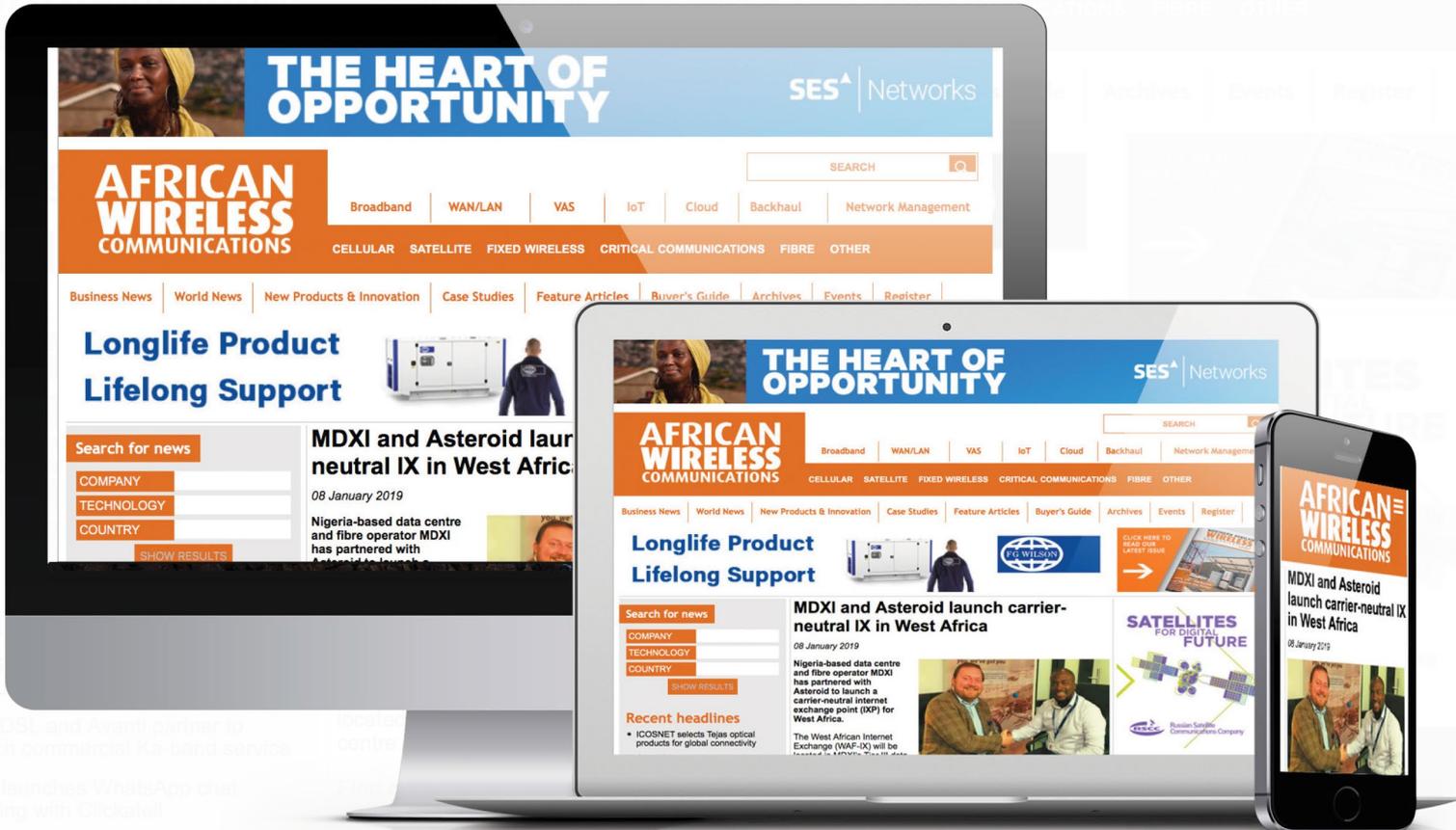
good to not have to worry about where the next pay cheque was coming from, and be able to travel around South Africa, pursuing my love of golf and mountain biking with my wife.

What’s the greatest technological advancement in your lifetime?

As someone who has worked in and around the mobile

industry for a number of years now, I would have to say that the mobile phone and mobile networks represent the greatest technological advancements of my lifetime. Mobile devices and connectivity can transform an individual’s life, connecting them like nothing that’s gone before to friends and family, business opportunities and goods and services. In Africa, in particular, mobile connectivity has the potential to accelerate digital transformation and drive socioeconomic advancement, yet 78% of the population in sub-Saharan Africa is still unconnected, according to GSMA data, creating barriers to mobile internet adoption. A more entrepreneurial approach is needed, presenting opportunities for new operators and growing demand for innovative wireless solutions to overcome challenges such as the theft of traditional copper fixed lines being stolen within a week of installation in South Africa. ■

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