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NORTHERN AFRICAN WIRELESS COMMUNICATIONS

FEBRUARY / MARCH 2022 Volume 20 Number 5

- How is Africa embracing renewable energy?
- Opinion: mobile broadband for all
- Nigeria backs more satellite connectivity

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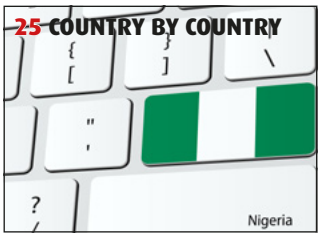

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Disruptive satellite player to service Africa by 2028

Rivada Space Networks (RSN) a disruptive new company with a licence for 4,000MHz of spectrum, will this year launch constealltions of 600-low-earth-orbit (LEO) satellites, which will eventually connect to telecoms operators and enterprises across Africa.

The Germany-based company is aiming to start launches in 2024 and complete the constellation in 2028. It plans to put the satellites 1,000km above the Earth, in polar orbits with 25 satellites in each orbital plane.

Rivada Space Networks says it will use Ka-band spectrum awarded to Liechtenstein by the International Telecommunication Union (ITU). Ka band is in the 27-40GHz range.

That will mean the company is "capable of securely connecting any two points on the globe at gigabit speeds". All 600 planned satellites will be in a single optical mesh network.

A spokesman for the operator told Northern African Wireless Communications that when fully deployed (in 2028), the service will cover the entire globe.

"Rivada Space Networks' global networked satellite constellation will facilitate internet access to remote and underserved parts of the world," he said. "Thanks to our system's unique architecture, it can serve as backhaul in parts of the world where there currently is no backhaul or inadequate backhaul available."

He added that while the company does not plan to sell internet access directly, at least as its main business, it does "intend to work with others to expand internet access to the underserved and keep costs down to a bare minimum in those areas.

Algeria targets 5G launches in 2022

Algeria is clearing and optimising radio frequencies to be used for 5G as it prepares for a widespread launch of the technology "soon", according to reports.

The country's telecoms minister Karim Bibi Triki is reported as saying the north African country's government has previously been focused on improving subpar 4G coverage and service quality. However, due to increasing demand for broadband connectivity the launch of commercial 5G is now being seriously considered. This, Triki said, could happen before the end of 2022.

Traffic has surged in Algeria since 2020 as a result of the pandemic, prompting operators to boost capacity on their networks – in many cases by deploying 5G-ready technology. Several operators have formed vendor partnerships for the deployment of 5G-ready technology, with state operator Mobilis choosing Huawei, Djezzy selecting Nokia, and Ooredoo opting for Ericsson.

Last year, Algeria's operators pressured the government to lay out its 5G strategy so that they could plan their investments in the technology.

The state owns 200,000km of fibre optic cable which will be used to facilitate the introduction of 5G in Africa's largest country by land area.

Safaricom Ethiopia signs dark-fibre agreement ahead of April launch

Safaricom Ethiopia, the new entrant to the east African nation, has signed a dark fibre agreement with the nation's electricity grid company.

Under the terms of the deal, the Kenya-headquartered operator will use a network of optical ground wire (OPGW) cables already installed along the high voltage transmission lines owned by state-controlled Ethiopian Electric Power (EEP).

"Such infrastructure sharing agreements will enable us to fulfil our commitment to transform Ethiopian lives for a digital future and contributes to efforts being made to the phased operation launch," said Anwar Soussa, chief executive officer (CEO), Safaricom Ethiopia. "This first-of-its-kind collaboration will see not only power but telecommunications reach Ethiopians in all corners of the country. The agreement we sign today to share our OPGW infrastructure will enable Ethiopian Electric Power to utilize its resources and increase its revenue, while enabling Safaricom Ethiopia to provide quality and competitive telecommunication services."

EEP said it signed the deal with Safaricom yesterday and that it will last five years. Safaricom Ethiopia is controlled by Safaricom Kenya, with a 55.7% stake. Other shareholders are Japan's Sumitomo with 27.2%, the UK government's CDC Group with 10.9% and Vodacom of South Africa with 6.2%.

The first phase of the agreement includes Safaricom Ethiopia leasing more than 4,000km of OPGW, with the option to agree further phases.

Côte d'Ivoire to launch 5G in 2023

Côte d'Ivoire will roll out 5G in 2023, according to Kanvoli Kacou Bi Djè, the director of legal affairs and international cooperation at the Ministry of Digital Economy, Telecommunications and Innovation.

Making the announcement Tuesday, February 22, 2022, during the "All About" discussion forum initiated by the Government Information and Communication Center (CICG), the minister said that the government has already adopted the roadmap for the deployment of this mobile technology.

The implementation of 5G in Côte d'Ivoire is expected to support the accelerated digital transformation brought about by the global Covid-19 pandemic since 2020, with the technology offering more opportunities for businesses operating in all areas of activity. 5G will also provide high-speed Internet connectivity to populations to meet the new digital consumption habits developed during the pandemic. These include streaming, online video games, telecommuting, cloud, artificial intelligence, Internet of Things.

In December 2021, mobile operator MTN began testing 5G in the west African nation. The company has begun discussions with the Ministry of Digital Economy, Telecommunications and Innovation and the Côte d'Ivoire ICT/Telecom Regulatory Authority (ARTCI) to define the spectrum to be allocated to this new technology.

The date for the introduction of 5G coincided with the 2023 African Cup of Nations, which is hosted by Côte d'Ivoire. The authorities intend to use 5G for "everything that will be broadcasting this event," among other applications, said Djè.

Google's Equiano cable lands in Togo

Google's Portugal to South Africa Equiano subsea cable has landed in Lomé, Togo, making it the third cable to land in the west African country.

The Silicon Valley-headquartered search and cloud giant announced its Equiano privately-funded submarine cable between Africa and Europe in 2019. The cable – featuring 12 fibre pairs and a design capacity of 150Tbps – will link Portugal to South Africa, with branches planned in Nigeria, St. Helena, the Democratic Republic of the Congo (DRC) and Namibia.

Société d'Infrastructures Numériques (SIN), CSquared, and Google announced the cable had landed in the Togolese capital. As part of the announcement, the former, a public telecommunications asset company, has partnered with CSquared, an open access wholesale broadband infrastructure company, to create a joint venture, known as CSquared Woezon.

The new joint venture, 56% owned by CSquared, will be in charge of maintaining and operating the Equiano submarine cable as well as the existing e-Government and Communauté Electrique du Bénin (CEB) terrestrial optic fibre networks located in Togo.

"As Togo continues to earn its place on the regional and international stage as a digital hub and a favorable ecosystem for innovation and investment, our collaboration with Google and CSquared in successfully landing Equiano further demonstrates Togo's commitment to enhancing public and social services for all citizens so that they can benefit economically," said Cina Lawson, minister of digital economy and digital transformation for Togo.

Equiano cable system is the third private international cable owned by Google and the 14th subsea cable invested by Google. Hyperscalers including Meta, Microsoft, and Amazon are also increasingly investing in subsea cables.

"The landing of Equiano affirms Google's commitment to the African continent, to support Africa's digital transformation," said Nitin Gajria, managing director of Google sub-Saharan Africa. "We are thrilled that Togo will be Equiano's first landing on the African continent, as it aligns with the country's continuing efforts to promote digital inclusion for Africa. We look forward to working closely with the Togolese Government and The Ministry of Digital Economy and Transformation as they continue to build their digital infrastructure."

Alcatel Submarine Network is manufacturing and installing the Equiano cable system. WIOCC is building the landing station for Nigeria in Lagos, while Liquid Intelligent Technologies is building one for the cable in DRC. In South Africa, the cable is landing at Telkom's Melkbosstrand Cable Landing Station north of Cape Town. Paratus is developing the landing station in Namibia.

Currently, two other cables land in Togo: the Maroc Telecom West Africa cable running from Libreville, Gabon to Casablanca, Morocco; and the West Africa Cable System (WACS) running from Yzerfontein, South Africa to Seixal, Portugal and then to Highbridge, England.

Equiano will be the first cable to land at St. Helena, because the SAEx cable from South Africa to Brazil and the US, which was meant to land on the island, is still in development. It will be only the second cable to land in Namibia and third in DRC.

Hotels across Egypt told to raise minimum internet speed

Egypt's minister of tourism and antiquities, Khaled al-Anany, issued a ministerial decision ordering all hotels to raise their minimum internet speed determined, according to the classification of each establishment.

The decision stipulated that a contract with any of the telecom service providers licensed to operate in Egypt would be concluded for a period not exceeding one month from the date Telecom Egypt finished connecting the fibre-optic cables to connect the company's external network to the facility's communications room.

All hotel establishments, be they five, four or three stars, or floating hotels, must provide the minimum standard specifications and technical equipment necessary for internal networks that allow fast connection to the HSIA Internet.

One aim is to improve wireless connectivity in and around the buildings.

This is in accordance with the technical specifications in force, and the quality standards approved by the National Telecommunications Regulatory Authority.

Hotels in Sharm el-Sheikh, the popular resort town situated between the desert of the Sinai Peninsula and the Red Sea, must comply with the decision within a period not exceeding six months, while the rest of hotels nationwide must comply with it maximum by the end of December 2022.

Kenyan regulator to pilot 5G in 2022

The Kenyan telecom regulator will roll out 5G this year, having developed a roadmap that outlines strategies to facilitate the project.

According to Matano Ndaro, the director of licensing, compliance and standards at the Communications Authority of Kenya (CA), last Feb. 21, the watchdog will start authorising the first next-generation technology pilot projects this year, then release the required spectrum bands and finally issue commercial 5G licences.

"We are now set to hold a validation workshop in the next one month to discuss the comments received. Once we adopt the input from the stakeholders, we shall establish a national 5G forum and allocate pilot frequencies," said Ndaro.

The regulator is joining several telecom operators that have already begun the process of rolling out 5G in 2021. Kenya's market leader Safaricom launched 5G on March 26 last year in major cities across the country with support from Huawei and Nokia.

The telco was targeting 250 sites by the end of 2021. Rival operator Airtel is ready to move to ultra-high-speed and has already upgraded 600 sites in Nairobi, Mombasa, and Malindi, waiting to receive the spectrum. In addition, many phone manufacturers have launched their 5G-enabled ranges in the country, although the devices are currently too expensive for the average Kenyan.

The ultra-fast connectivity that the regulator is preparing will, among other things, enable operators to meet growing digital demand and new consumption patterns. These include smart homes and buildings, 3D video, streaming, cloud-based work and play, remote medical services, virtual reality and augmented reality.

Telecom Egypt and AMS-IX launch EG-IX, the first Open Access Internet Exchange in Cairo, Egypt

Cairo, 1st April 2022: Telecom Egypt, Egypt's first integrated telecom operator and one of the largest subsea cables operators in the region, announces that EG-IX, the first open access internet exchange in Egypt, is live and available for customers as of today. The new Internet Exchange, powered by AMS-IX, is intended to enhance the digital experience of internet users in Egypt, Africa, and the Middle East.

EG-IX is hosted inside Telecom Egypt's largest certified tier III data center located in Smart Village in West Cairo and named Regional Data Hub (RDH). RDH is connected with advanced fully meshed network securing the access to 14 submarine cable systems, to be increased to 18 cable systems by 2025.

EG-IX is based on the IX-as-a-Service (IXaaS) solution offered by AMS-IX, the world leading interconnection platform service provider, and will act as an open access Internet Exchange Platform for large content delivery network, application and cloud providers and telecom carriers who are looking to enhance the digital experience of end customers in MEA region.

IXaaS solution supports Telecom Egypt to set up and run a state-of-the-art internet exchange point in Egypt capitalizing on more than 25 years of AMS-IX's experience in such field.

EG-IX Platform will support Telecom Egypt in its efforts to improve the quality of internet services in Egypt. Moreover, this exchange point will strengthen Egypt's position as an international connectivity hub, further highlighting the potential of the growing digital sector in the region.

Adel Hamed, Managing Director and Chief Executive Officer, commented:
"We are pleased to announce that EG-IX, which is hosted within the RDH, the largest tier III certified data center in Egypt is going live now in partnership with AMS-IX. The launch of the EG-IX platform will support Egypt's digital transformation plans. This step will not only enhance the country's internet ecosystem, but also support the ongoing regional efforts to establish a regional digital ecosystem that aggregates internet traffic from Africa and the Middle East."

Peter van Burgel, AMS-IX CEO, said:
"The launch of EG-IX is a great milestone for AMS-IX, Telecom Egypt and the Internet community. This new Internet Exchange will enable networks from all over the world to directly connect and exchange traffic, which will lower the cost of peering, reduce latency, and enhance the quality of the Internet for countless end users."

About AMS-IX

AMS-IX (Amsterdam Internet Exchange) is a neutral member-based association that operates multiple interconnection platforms around the world. Our leading platform in Amsterdam has been playing a crucial role at the core of the internet for more than 25 years and is one of the largest hubs for internet traffic in the world with over 10 Terabit per second (Tbps) of peak traffic. Connecting to AMS-IX ensures customers such as internet service providers, telecom companies and cloud providers that their global IP traffic is routed in an efficient, fast, secure, stable and cost-effective way. This allows them to offer low latency and engaging online experiences for end-users. AMS-IX interconnects more than 1000 IP-networks in the world. AMS-IX also manages the world's first mobile peering points: the Global Roaming Exchange (GRX), the Mobile Data Exchange (MDX) and the Internetwork Packet Exchange (I-IPX) interconnection points.

For more information, contact:
The Public relations team
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About Telecom Egypt

Telecom Egypt is the first integrated telecom operator in Egypt providing all telecom services to its customers including fixed and mobile voice and data services. Telecom Egypt has a long history serving Egyptian customers for over 160 years maintaining a leadership position in the Egyptian telecom market by offering its enterprise and consumer customers the most advanced technology, reliable infrastructure solutions and the widest network of submarine cables. Aside from its mobile operation "WE", the company owns a 45% stake in Vodafone Egypt. Telecom Egypt's shares and GDRs (Ticker: ETEL.CA; TEEG.LN) are traded on The Egyptian Exchange and the London Stock Exchange. Please refer to Telecom Egypt's full financial disclosure on ir.te.eg

For more information, contact:
The investor relations team
Email: **investor.relations@te.eg**

‘Legacy networks play crucial role in the transition to 5G’ says Ericsson exec

Africa’s 3G networks could be phased out in the next couple of years as part of plans to increase the capacity of the continent’s 4G and 5G coverage, according to a senior Ericsson executive.

Speaking exclusively to *Northern African Wireless Communications*, Todd Ashton, vice president and head of Ericsson south and east Africa, said 2G and sometimes 3G will remain important technologies during the roll out of 5G due to their role in mobile money and to serve the old feature phones still prevalent on the continent, but the continuous global build-out of 4G and 5G networks, and the corresponding increase in capabilities, have become an enabler for phasing out current technologies. This facilitates further enhancements of the networks by releasing more, important parts of the spectrum for 4G and 5G.

Ashton assures that “while 2G and in rare cases 3G are still important to provide mobile money services for some years to come, we expect 3G and in some cases 2G to reach sunset closer to 2030”. In fact, “the data experience on 3G is poorer than the one provided by 4G,” Ashton added. “In comparison with 3G, one of 4G’s key advantages is also its lower data production cost.”

“Today, 5G is expected to be the fastest-deployed mobile communication technology in history, but older generations such as 2G are still key to support mobile money in Africa considering the widespread accessibility of 2G feature phones,” he said.

Ashton added that the Covid-19 pandemic “has accelerated mobile money usage as a result of the new measures”. According to Ericsson’s Network Coverage Outlook report, the number of mobile money users has tripled and even quadrupled in certain parts of Africa. In fact, around half of consumers across the surveyed countries now use their phones for this purpose.

Over the last few years, mobile money services have had an instrumental role in accelerating financial inclusion in Africa and boosting the continent’s overall economy. This could be credited to its speed, cost effectiveness and accessibility compared to traditional banking services. Even in more remote regions, mobile money has managed to make cross-border transactions far easier than traditional banks. Moreover, by providing access to safe and secure financial services and creating employment opportunities, it has become a life-changing tool across the continent as limited financial infrastructure is a major obstacle for entrepreneurs.

Financial inclusion is an important driver for enabling both commercial and social benefits. As millions of people enter the formal economy and benefit from services mobile financial services, it will give rise to employment opportunities in the continent and bring us a step closer

to support the growth of SMEs through access to financial services.

The link between ICT and e-commerce innovation is clear: ICT offers a cost-effective way to overcome the existing lack of banking infrastructure. It can be rapidly scaled, offers significant efficiency gains, and entails low barriers to entry for individual users.

Mobile money growth ‘hugely evident’ in sub-Saharan Africa, says GSMA report

Mobile money adoption and use saw continued growth in 2021, processing a record US$1tn annually, according to a new report from the GSMA.

The annual State of the Industry Report on Mobile Money says the industry enjoyed a substantial increase in the number of registered accounts, up 18% since 2020 reaching 1.35 billion globally. The volume of person-to-person transactions were up to more than 1.5 million every hour.

Furthermore, the report reveals that one of the most significant drivers of growth was merchant payments, which almost doubled year on year. Other highlights include how mobile money continues to act as a core pillar of financial and economic inclusion, particularly for women.

Globally, mobile money growth was hugely evident in Sub-Saharan Africa in 2021, the mobile money industry had 316 live services, 1.35bn registered accounts, 346 million active accounts, US$53.9bn in transaction volume and US$1tn in transaction value.

“Regionally, Africa contributed the following to the overall 2021 mobile money figures: 173 live services, 621 million registered accounts, 184 million active accounts, $36.7bn in transaction volume and US$701.4-bn in transaction value,” GSMA said.

- **Eastern Africa contributed 59 live services, 296 million registered accounts, 102 million active accounts, US$24bn in transaction volume and US$403.4bn in transaction value.**
- **Western Africa contributed 69 live services, 237 million registered accounts, 58 million active accounts, US$9.3bn in transaction volume and US$239.3-billion in transaction value.**
- **Central Africa contributed 19 live services, 60 million registered accounts, 19 million active accounts, US$2.9-bn in transaction volume and US$50.1-billon in transaction value.**

Orange tests AST SpaceMobile technology to improve network coverage in Africa

Orange signed a non-binding memorandum of understanding (MoU) with AST SpaceMobile to test its space-based cellular broadband network in one of its African markets.

AST SpaceMobile’s service, which will be deployed via the BlueWalker 3 satellite, will allow people to connect directly to the network on their cell phones via standard 3GPP frequencies, without the need for additional equipment on the ground.

Chris Ivory, AST SpaceMobile’s chief commercial officer, says that through this directly applicable solution, the company is “looking to not only fill the gaps in cellular broadband coverage for millions of existing subscribers, but also to extend mobile service to areas that currently have little or no coverage.”

French telecom group Orange, like many mobile network operators, is currently expanding its solutions to meet the growing demand for quality telecom services in Africa. Satellite is an option that is already being implemented. But it has its limitations in that the ground equipment on which the signal is retransmitted does not always allow for effective coverage of populations in remote areas.

AST SpaceMobile’s space technology will help Orange bring the signal everywhere it is needed. The consumer will be able to connect directly to the network. The MOU between Orange and AST SpaceMobile paves the way for discussions on a potential agreement for the telecom operator to use the BlueBird satellite network that the space-based telecom service provider is preparing.

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‘Maroc Télécom is leading operator in Morocco’

Maroc Télécom is the leading operator in Morocco, after several recent reports place the incumbent operator at the top of the mobile network in the country.

First, a report by “Open Signal”, the data analysis specialist, which in its report on the mobile network experience in Morocco published in March 2022 places the company at the top of the operators in terms of mobile experience. Several aspects are concerned, including video fluidity, games, download speed, coverage and availability of 4G, etc.

The operator also achieves the best average mobile Internet performance in 2021, according to the “nPerf” platform barometer on mobile Internet connections for 2021.

According to the same barometer, the company is the first operator in terms of download speed and achieves the best performance in terms of video streaming.

Finally, the “SpeedChecker” report on “Mobile Network Champions in Africa”, carried out in 2021, considers Morocco as the country “with the fastest mobile download speeds in Africa”, followed by South Africa and Tunisia.

In this context, Maroc Télécom is considered the leader among telecom operators with an average download speed per country of 23.57 Mbps.

Meanwhile, the operator is facing a big dispute in Mali as Sotelma, Maroc Télécom’s Malian subsidiary, is facing a dispute with Remacotem, the association of mobile network consumers in the country, against all the country’s telecom operators, according to the financial statement released by the group.

Ghana Chamber of Telecommunications institutes warning systems to curb mobile money fraud

The Ghana Chamber of Telecommunications (GCT) is instituting warning systems to identify and curb mobile money fraud in the country, as the services continue to evolve and new types of fraud emerge in the sector.

Identity theft through SIM swapping, promotional and social engineering scams are the highly reported incidents of fraud. This has brought about a significant economic loss for users.

So far, 35,000 incidents of fraud have been reported to the Ghana Chamber of Telecommunications. About 28,000 devices have been blocked. Seventeen thousand IDs have been blacklisted.

“Mobile money services in Ghana are secured. But the challenge has always been our cyber hygiene. Our call is that you do not disclose your passwords or pins to anyone,” said Ken Ashigbey, chief executive officer, GCT. “You will observe that there are mistakes even in the messages they send. It isn’t that they do not know how to spell. They deliberately do it to beat artificial intelligence. But they always become unsuccessful and get blocked”.

Currently, a fraud control dashboard has been introduced to track and block perpetrators.

“Numbers that are reported to have consistently perpetrated fraudulent acts get blocked.,” Ken Ashigbey added. “When it is reported to the dashboard, the number as well as the device is blocked on all networks. If you suspect any scam or fraudulent number, kindly call 419 and report the number. It will be investigated as soon as possible.”

Senegal president calls for better network coverage

The president of Senegal, Macky Sall, has instructed the minister of digital economy and telecommunications to improve mobile network coverage across the country.

He stressed “the urgency of redeployment and strengthening the mechanisms of intervention of the development fund of universal telecommunications service (FDSUT), an instrument of impetus, whose institutional evaluation of activities remains a priority.

According to the latest data on the Senegalese telecom market published by the Telecommunications and Posts Regulatory Authority (ARTP), there were 15,418,058 Internet subscribers. That is a penetration rate of 92.29%. However, the data of the watchdog remains silent on the coverage rate of telecom services in the country.

The penetration rate is calculated by dividing the total number of SIMs - many individuals living in urban areas hold several SIM cards because they subscribe to several telecom operators - by the total number of inhabitants estimated at 16,705,608 in 2020 by the National Agency for Statistics and Demography (ANSD). This suggests that some regions of the country are still poorly covered by telecom networks.

For Senegal, which is accelerating the digitisation of its public services and the digital transformation of several strategic sectors such as health and education, it is crucial that telecom services, especially Internet and mobile payments, be accessible even in the most remote areas of the country. The President of the Republic believes that this is the only way for all Senegalese to fully participate in the digital society promoted by the Senegal Emerging Plan.

Ethiopian government postpones sale of stake in Ethio Telecom

Ethiopia decided to postpone the planned partial privatisation of state-owned telecoms firm Ethio Telecom because of the prevailing economic environment domestically and globally.

The government had launched a tendering process in June for a proposed sale of a 40% stake in the state-owned carrier to private investors, part of the government’s broader plan to open up the economy to foreign investment.

“Given the recent developments and fast-moving macroeconomic changes, both globally and from a country perspective, the government of Ethiopia has chosen to postpone the privatisation process,” the finance ministry said in a statement. “The Government believes that taking time to accommodate the improved macroeconomic situation as well as continually improving the financial performance of Ethio Telecom will result in better value for all the parties involved.”

The ministry said it was committed to following through with the privatisation and would at a later date contact those who had expressed interest in its Request for Proposals.

In December 2021, the industry regulator Ethiopian Communication Authority (ECA, said it had also suspended a tender process for a second telecommunications licence, which it said it would relaunch in the “near future”.

Algérie Télécom modernises infrastructure for a better quality of service

The Algérie Télécom Group, which has four subsidiaries, has launched a series of measures to modernize its infrastructure to improve the quality of internet and telephone services, said group chief executive officer Khaled Zarat.

Speaking to Algérie Presse Service, Zarat said the operator

is required to significantly improve the quality of service, through the deployment of the latest technologies to ensure among other things a stable network for continuity of service ensuring the required performance for any kind of need.

"To do this, major projects have been initiated and launched in recent years in view of the digital transformation through the modernization of the access network and the gradual switch to the Internet very high speed through the fibre network FTTH (fibre to home)," he added." It is also the increase in the capacity of the transport network and the securing and redundancy of metropolitan loops of the national backbone, the densification of the 4G network and the construction of a network of national data centre housing the appropriate infrastructure to international standards capable of supporting the digital transformation "so requested and expected by our customers," he said.

Several other priority projects, described as urgent, have been included in the action plan according to the CEO. These are projects relating to the optimisation of the architecture of the deployment of caching solutions (Google and Facebook for example) in order to offer a better quality of service, the reduction of latency, the reduction of the use of international bandwidth, the optimization of operating costs and finally the creation of national content.

The modernization of the access network, the securing of the national transport network and the international transport network are also among the projects underway.

CTL selects Curvalux to improve broadband connectivity in Lagos

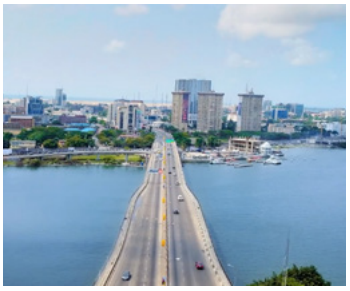
Curvalux, a developer of next generation wireless broadband solutions, has signed a deal with Communication Trend Limited (CTL) to conduct a commercial pilot of the Curvalux system to deliver affordable high-speed broadband access to Lagos, Nigeria.

The agreement will see Curvalux's fixed wireless access (FWA) technology deployed in Lagos to provide significantly improved broadband connectivity to residents and businesses in the city. CTL will install Curvalux's Edge Node antennas across an area of the city and evaluate broadband coverage and performance during a four-week evaluation period. Once the service becomes commercially available, CTL customers will be able to subscribe to a standalone broadband access service or combine it with a TV package 'at significantly reduced costs compared with other access solutions.

This marks the first time that Curvalux's technology is being trialled in Africa and could provide the blueprint for further rollouts in other African nations.

"Internet connectivity is the lifeblood of the global digital economy, even more so given the rapid digital transformation we've seen because of the Covid-19 pandemic," said Yusuf Umar, director of business development, CTL. "It is vital to the future success of Nigeria's people and economy that we can provide affordable, reliable broadband across the country, and this trial is the first step in achieving that. If this trial proves to be as successful as we hope, this could be a new dawn for connectivity in Nigeria and beyond."

The deal follows a recent major contract with Globe Telecom in the Philippines, which sees Curvalux solutions being deployed to bring connectivity to thousands of unconnected homes and businesses across the islands.



PCCW doubles capacity on PEACE cable system

PCCW Global has completed a major and significant upgrade on the PEACE cable system between Marseille, Cyprus and Abu Talat using Infinera's ICE technology.

The company now offers network operators the ability to significantly increase capacity per fiber pair on these critical Middle East and Mediterranean fibre routes.

Leveraging Infinera's ICE technology on the GX Series Compact Modular Platform, PCCW Global is able to reach individual wavelength speeds of 650 Gbps resulting in more capacity, with less hardware, and providing up to 25 terabits per fibre pair.

"The PEACE cable system is the highest-performing open cable system connecting Asia, Europe and Africa," said Haitham Zahran, vice president of EMEA subsea cable systems, PCCW Global. "By collaborating with Infinera to upgrade our network segment to increase fiber capacity, we are able to offer customers industry-leading innovation that provides the most reliability and highest capacity fiber pair available."

Nick Walden, senior vice president of worldwide sales, Infinera, added: "Infinera's subsea solutions have historically provided network operators the greatest amount of value from their fiber assets using innovative, industry-leading technology. Infinera's ICE solution enables PCCW Global to offer network operators open, scalable and flexible services to meet the region's growing bandwidth demands."

SES orders satellite from Thales Alenia

Satellite operator SES ordered a software-defined geostationary satellite from Thales Alenia Space to extend its connectivity services across Europe, Asia and Africa.

SES-26 is the third and final satellite the company has ordered from Thales Alenia – a joint venture between Thales and Leonardo – based on their three-satellite contract. It will carry a reprogrammable communications payload capable of adapting to changing mission needs while in orbit. The satellite will provide Ku-band and C-band frequencies from 57 degrees east, the company said. SES-26 is set to replace the firm's NSS-12 satellite launched in 2009.

The other two satellites under the contract are ASTRA 1Q, a software-defined satellite, and ASTRA 1P, a classic wide-beam spacecraft. Both are scheduled for launch in 2024 to 19.2 degrees East to replace four broadcast spacecraft.

Luxembourg-based SES will deploy a total of 14 satellites in the near future, of which seven already have their launch dates set. Five of these are GEO satellites in the C-band spectrum and nine are satellites for its medium Earth orbit O3b mPower constellation. SES-26 is expected to launch in 2024 or 2025, SES said.

Nigerian operators threaten to increase tariff

Telecom operators in Nigeria have threatened to increase their tariffs over the rising cost of conducting business and the safety of telecommunications infrastructure in the country.

The Association of Licensed Telecommunication Operators of Nigeria (ALTON) also claims it is considering varying tariffs to some 'unfriendly telecommunications states' in order to accommodate their demands.

Operators have threatened to increase their tariffs over the rising cost of doing business and the safety of telecommunications infrastructure in the country.

ALTON is an association of major telecoms operators, including MTN, Glo and Airtel.

The Chairman of ALTON, Gbenga Adebayo, told journalists on Thursday in Lagos that the high cost of energy and security of telecom workers was hampering its operations.

"We are concerned that unless there is an intervention to save this sector, operators will have no choice than to begin a process of price review," said ALTON chair Gbenga Adebayo. "Operators are very concerned about the rising cost of diesel and its implications on the general cost of business."

He said the government needed to do a lot more to keep the nation safe and keep telecom workers safe.

"We reaffirm our commitment to working with the security agencies in order to get necessary support for national security," Adebayo added. "We now need protection from sub-national government and agencies to stop the interference of smooth operations of telecom services."

Talking satellite

Martin Jarrold, chief of international programme development, GVF

25 years... and counting

As I sit to write this column more than one-twelfth of 2022 has already become history. The year is a significant one for GVF as it is the organisation's Silver Anniversary, and we are celebrating a quarter century as the only global trade association representing the entire satellite ecosystem. We have tweaked our logo design to point-out this anniversary milestone, launched a new version of our membership newsletter – now called GVF FOCUS – and resumed our acclaimed Webinar Series, as well as launching an industry-wide marketing group called #GenSpace.

#GenSpace is all about increasing awareness of satellite industry innovation and correcting misperceptions about satellite connectivity. This is being achieved through leveraging the combined marketing power of GVF member organisations – rather than promoting specific company proprietary messages – fostering greater understanding of common and pan-industry trends. Example topic areas include developments in software designed satellites in the space segment, multi-orbit antennas/modems in the ground segment, Cloud-based partnerships in delivering applications, and standards-based networks in enabling infrastructure deployments.

GVF member companies will share facts and stories showcasing the power of satellite innovations that help meet the ever-increasing global demand for connectivity and you can follow this information and knowledge trail under the hashtag "#GenSpaceGVF" on GVF's Twitter and LinkedIn accounts.

Of course, fulfilling the mission to explain and inform has been what has driven the GVF Webinar Series. Since its inception in May of 2020 the Series was the GVF response to the travel limitations of Covid-19, and despite relaxations of such restrictions the global popularity of the Series mandates that we continue with it. The first of the 2022 Webinar Series covered the difficult subject of spectrum regulation – but from an unusual angle.

During 'Spectrum Regulation and Business' an audience from 52 countries had the opportunity to interact with an expert line-up comprising Jennifer Manner of EchoStar, Alex Epshteyn of Amazon, Mohaned Juwad of Intelsat, and Daniel Mah of SES, on how decisions made on global satellite spectrum matters impact satellite businesses everywhere. Starting with an appraisal of how the decisions coming out of WRC-15 and WRC-19 impacted the panellists' companies and the wider industry's bottom line, the dialogue went on to cover how spectrum experts in satellite companies work with colleagues on the business side to develop strategies to secure new spectrum or preserve existing spectrum rights. The global audience posed numerous questions, many answered during the webinar (which you can watch at https://gvf.org/webinar/spectrum-regulation-and-business/ and others answered in writing, post-webinar, which also can be seen using the above link.

An upcoming topic in the Webinar Series (webcast on 24 February 2022) is 'NGSOs: Not Just for New Entrants'. This event will look at how much of the traditional GEO operator community (e.g., Echostar/Hughes, Eutelsat, Inmarsat, Intelsat, SES, Telesat, Viasat) is looking to NGSO to bring an extended range of connectivity options, to offer new services, and to ensure that their market offerings more clearly mirror the demands of an increasingly broadband, increasingly mobile-centric world where the terrestrial and non-terrestrial meet. The discussion will examine the NGSO strategies of traditional GEO operators, understand the respective rationales, and explore the evolving characteristics of a space segment in flux.

Over the almost two-year history of the GVF Webinar Series we have covered issues directly, or indirectly, related to Humanitarian Assistance and Disaster Response, a topic of prime importance in the satellite world. Though not a GVF Series webinar, I will in mid-February have the pleasure of moderating a webinar – 'Advancing Disaster Resilience through Game-Changing Emergency Telecommunications' – in the REDCON Asia Webinar Series which is leading up to the 'Resilience on Emergency and Disaster Conference', taking place 7-9 December 2022 at the United Nations Conference Centre, Bangkok.

Although this webinar and the Conference are Asia-Pacific-centric, the subject matter and principles to be covered are universal issues for all regional geographies – particularly those most likely to be affected by natural disasters but also those affected by human-made disaster – where the imperatives of rapid deployment of emergency and restorative satellite communications apply. The webinar's wide reaching dialogue will feature as panellists Simon Gray, Senior Vice President, Civil Government with Eutelsat; Yasir Hassan, Director of Transmission Operations with Arabsat; and Vaibhav Magow, Associate Vice President with Hughes Network Systems.

Finally, I mentioned above our re-branded newsletter (sent to Members and other subscribers), GVF FOCUS. A feature of GVF's anniversary celebrations included in the fortnightly issues are recollections from satellite industry executives who have been instrumental to the foundation, development and growth of the association and you may be interested to read the perspectives of Jack Buechler of Talia, who first had the idea for a global satellite industry association ("As I recall..." - https://gvf.org/news/as-i-recall-jack-buechler/) and of David Hartshorn, now with Geeks Without Frontiers, who was GVF's first Secretary General ("Happy Birthday, GVF" - https://gvf.org/news/happy-birthday-gvf-david-hartshorn/).

Until next time, stay well and stay safe!

Cameroon suspends unregistered SIMs

Cameroon's mobile operators recently suspended 891,082 phone numbers deemed non-compliant, the country's telecom regulator ART said.

The suspended numbers represent about 3.34% of the 26,623,923 registered phone numbers in the ART's identification database. However, 94,882 other non-compliant numbers are active pending the regularisation of their situation.

ART said those numbers deemed non-compliant are usually registered under fake names using fake identification documents or even documents lost by their real owners. When numbers are registered under fake names, it becomes difficult to trace the user when crimes are committed using them.

To protect citizens against the sheer number of crimes committed using phone numbers (thefts, blackmail, defamation, cybercrime, etc.), the government introduced regulations governing communication. On December 21, 2010, a law was adopted governing electronic communications and on September 3, 2015, a decree was issued making it compulsory to identify mobile subscribers.

The introduction of those regulatory frameworks means security services can find the user of a SIM card when need be and catch criminals who use phones for illegal activities. It also helps operators know who their subscribers are, identify them during emergency calls, facilitate access to roaming and even prevent the use of SIM cards for acts that undermine public security.

MTN Uganda reports jump in pre-tax profit

MTN Uganda reported a 6.6% jump in pre-tax profit for 2021, compared with the previous period, helped by higher data sales and faster uptake of its fintech services.

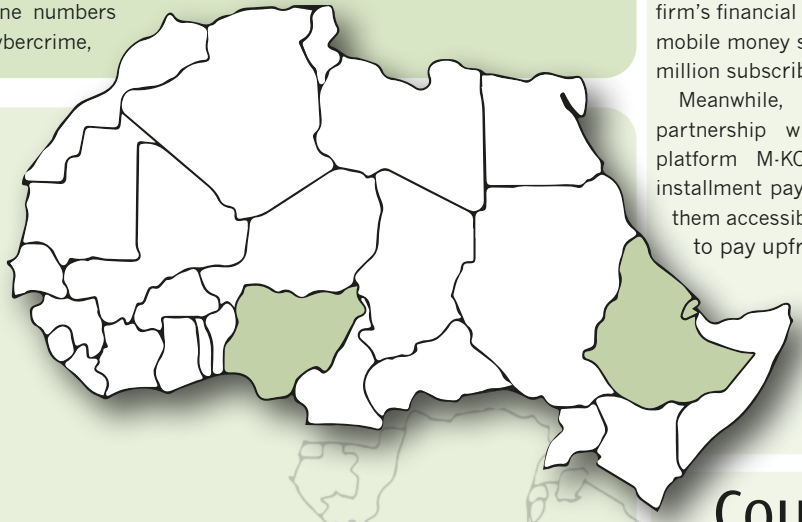
The operator said it earned USh490.9bn (US$136.93m) in 2021 and attributed the profit growth to a jump in data sales of 21.9%. That figure was underpinned by improvements in broadband coverage and growth in active data users.

"We undertook an aggressive deployment of 3G and 4G sites," the company said in its results statement.

Elsewhere, there was also strong growth in the firm's financial technology services, especially in mobile money services. The company added 1.5 million subscribers in 2021.

Meanwhile, MTN Uganda reinforced its partnership with connected asset financing platform M-KOPA, to avail smartphones at installment payment terms as a way of making them accessible to people who may not be able to pay upfront.

The introduction of "Pay MpolaMpola" will avail people of 4G devices from a wide range of 11 assorted Samsung and Nokia devices.



Airtel Kenya pays US$17.6m to renew licence

Airtel Kenya has agreed to pay the US$17.6m demanded by the Communications Authority of Kenya (CA) to renew the company's telecom licence, marking the end of a seven-year legal battle.

When its licence expired nearly seven years ago, the subsidiary of the Indian group Bharti Airtel had switched to the license of YuMobile, a telecom operator it bought from Essar Telecom and whose license expires in 2025. The move was denounced by CA, which opened legal proceedings against Airtel's Kenyan unit.

"We have had this long-standing dispute with Airtel over the Essar transaction," CA managing director Ezra Chiloba told local media. "The dispute has been there for seven years. But I am glad to report that we struck a deal and this is a major achievement for us."

Airtel Kenya made its first payment so that the telecom regulator ends the legal proceedings. The second payment is expected to be made before 2024, the deadline by which Airtel Kenya must complete the divestment of 30% of its equity to local investors per the new telecoms licensing requirements unveiled in April 2021 by Joe Mucheru, the cabinet secretary for the ICT Ministry.

Prior to the new regulations, telecom operators were required to open 20% of their capital to local investors. Airtel Kenya, which had enjoyed an exemption since 2013, is now included.

Meanwhile, Airtel Kenya and Telkom Kenya have been fined a total of Sh37.7m for failing in service quality in the last financial year.

The former parted with Sh26.3m while Telkom Kenya was hit with a Sh11.4m charge for failing to meet the standards pass mark stipulated by the Communications Authority of Kenya (CAK).

"The threshold for compliance is 80% and operators that do not attain this mark will be subject to a penalty of 0.1% of turnover," said the regulator.

Mobile network operators are evaluated on quality of voice, speech, network coverage, quality of data and SMS, among others.

Safaricom's average performance stood at 95.3%, while Airtel and Telkom stood at 67.4% and 67.2% respectively.

Court ends dispute in case of THC chairmanship

The North Tripoli Court has rejected a judicial appeal by the former chairman of the board of directors of the Telecom Holding Company, regarding the invalidity of the decision to remove him from the chairmanship of the holding company's board of directors.

Faisal Qarqab was also told to pay the expenses, to end the legal dispute that arose after the government re-formed the board of directors of the company that monopolises the telecommunications sector in the country. Mohammed bin Ayyad is the new chairman of the THC.

The Libyan Deterrence Apparatus arrested Qarqab after he, accompanied by an armed group, stormed the office of the THC's board of directors.

Nigeria's Pan African Towers issues bonds

Pan African Towers, the Lagos-headquartered telecommunications infrastructure operator, has established a bonds programme worth ₦50bn (US$120m) and made a first issuance of ₦10bn (US$24m) in fixed rate infrastructure bonds.

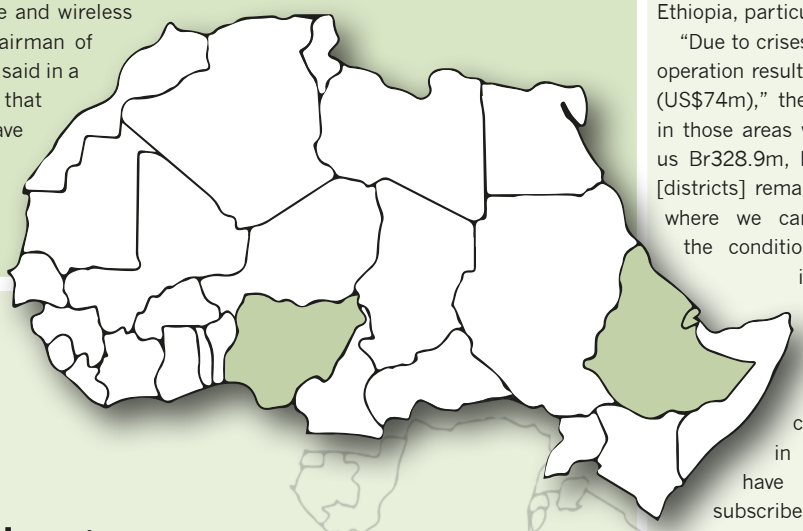
The company provides infrastructure and wireless services for broadband and mobile telephony among others.

Due 2032, the bonds were guaranteed by Infrastructure Credit Guarantee Company (InfraCredit) and oversubscribed by 127%. Funds raised will go towards new telecoms towers built in a more environmentally friendly fashion, aimed at reducing emissions.

"PAT's ambition is to be the number 1 indigenous wholly-owned digital telecommunications infrastructure and wireless service facilitator in Nigeria," chairman of Pan African Towers, Wole Adeleke, said in a statement. "In the last three years that we commenced business, we have demonstrated capacity to achieve faster growth in the number of our rental assets, with solid top and bottom-line performance supported by long-term contracts with leading market leaders in mobile telecommunication and internet service in Nigeria."

Chief executive officer, InfraCredit, Chinua Azubike added:

"The need for digital connectivity is more essential than ever as Nigeria accounts for over 27% of all internet usage in Africa, and much of this internet access are powered by telecommunication infrastructure service providers like PAT. This transaction strongly demonstrates the especially important role of the local pension funds in the allocation of long-term domestic credit to the private sector for sustainable development."



Kenya: Everstrong bids for majority stake in SealTowers

US investment fund Everstrong Capital signed undisclosed deal with Kenyan telecom tower operator SealTowers to secure a majority stake in the company.

Channelled through the Everstrong Kenya Infrastructure Fund, this latest investment will form part of Everstrong Capital's US$12.5mn financing package to roll out an additional 200 telecom towers in rural and urban Kenya between now and 2024.

"We believe that the partnership with Everstrong Capital will enable us to tap into massive opportunities in the telecommunications sector in both urban and rural locations," said Tony Monda, founder and chief executive, SealTowers. "The expansion of 4G and 5G networks will require many more infill tower sites to support networks. In addition, large buildings, malls, commercial and educational institutions provide an opportunity for in-door network solutions and provide expansion opportunities for SealTowers."

The agreement also aligns with the trend of outsourcing telecom infrastructure, which has accelerated since 2019, when many telecom operators prefer to focus more on their core business and offer innovative telecom services.

As part of its partnership with SealTowers, Everstrong will provide its experience and skills in structuring, capitalising, and managing businesses. In return, it will benefit from SealTowers' expertise in telecommunications, design, engineering, deployment, and tower management.

'Ethio missed financial targets in H1 2021 over security challenges'

Ethio Telecom (ET) announced it missed its financial targets for the first half of 2021 by 13.6%, mainly due to security issues, according to the company's chief executive officer, Frehiwot Tamiru.

She revealed the news January 31 during the presentation of the company's financial results for the period from July to December 2021.

Revenue over the period amounts to Br28bn (US$565m), up 6.7% compared to the same period in 2020.

ET says it has missed its expected financial performance due to security challenges in Ethiopia, particularly the Tigray region.

"Due to crises, 3,473 base stations were out of operation resulting in a revenue loss of Br3.67bn (US$74m)," the company said. "The restoration in those areas where recovery was possible cost us Br328.9m, but there are still many woredas [districts] remaining, including the Tigray region where we cannot provide our services and the conditions and status of our telecom infrastructures are not known."

The company further said that it has reached 60.8 million users, which is 100% of the expected target and an increase of 20% compared to the same period in 2020. Mobile voice subscribers have reached 58.7 million, Internet subscribers 23.8 million, fixed services have recorded 923,000 subscribers and there are 443,000 fixed broadband subscribers. This represents a telecom density of 58.5%.

'Airtel Uganda plans IPO by 2022', says MD

Airtel Uganda, the east African country's second largest telecoms company and a unit of India's Bharti Airtel, plans to list a part of its equity by the end of this year, according to its managing director.

The company renewed its operating licence in 2020, with one of the conditions for the new licence being Airtel Uganda to list at least 20% of equity on the local bourse.

"We will be listing in Uganda stock exchange most probably by December of 2022," Airtel Uganda Managing Director Manoj Murali, told local NTV Uganda.

The firm has about 10 million subscribers and is the second biggest operator after a unit of South Africa's MTN Group, which boasts circa 15 million subscribers.

Tanzania: French firm launches Sh64bn investment in speedy internet

Konnect Broadband Tanzania, a subsidiary of Global Eutelsat Group,is planning to invest €25 million (Sh64bn) in high-speed satellite broadband in a space of 15 years from now.

Tanzania is among countries in sub-Saharan Africa that will benefit from the new satellite broadband with speeds of up 100 megabits per second, as a result of the investment.

"We are investing €250m in 40 countries in Africa whereby 10 % of the capacity of the satellite is in Tanzania," said the company's general manager in Africa, Philippe Baudrier.

As a direct result of rolling out their service, which is meant to up the internet penetration in the country, he said, some 100 jobs are expected to be created though partner sales, service and installation.

As of January this year, Statistics from Tanzania Communications Regulatory Authority (TCRA) shows that the internet penetration reached 50% with 30 million people currently using the internet.

"We are not here to compete, but compliment what others are doing," Baudrier added. "Based on our research there is a need for high-speed internet everywhere."

He revealed that Konnect internet services are designed to bolster the development of various economic sectors such as farming, tourism, education and healthcare.

MTN invests $46.4 million in new infrastructure in KwaZulu-Natal

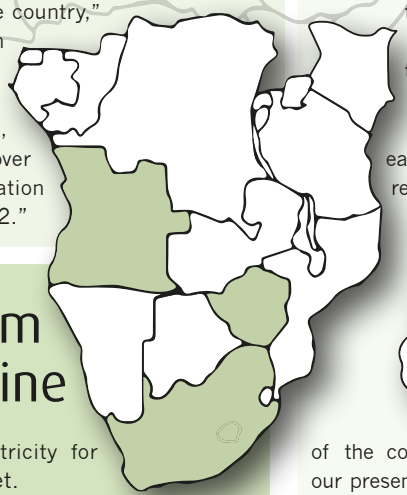
MTN South Africa has announced a new investment of R700m (US$46.4m) to upgrade its existing network infrastructure and deploy new ones in the province of KwaZulu-Natal.

This will include 4G and 5G expansion and restoration of vandalised network infrastructure.

"MTN's investment in KwaZulu-Natal is part of MTN's overall network modernization plans, of which 68 percent has already been completed nationwide, with an additional 1,350 sites to be finalized, and approximately 200 peak areas covered across the country, by the end of 2022," said Matthew Khumalo, MTN's managing director for KwaZulu-Natal operations.

This latest in KwaZulu-Natal is in addition to the R270m and R500m the telco is investing in the region in 2020 and 2021 respectively. These various investments are in line with MTN's rural connectivity rollout objectives to bring telecoms services to people in the most remote areas of South Africa.

"We currently have over 900 active 5G sites across the country," said Khumalo. "In an effort to close the digital access gap in South Africa, our goal is to cover 20% of the population by the end of 2022."



Botswana launches a US$12.7m project to get 500 villages online

The government of Botswana has unveiled plans to connect a total of 500 villages to the internet at a cost of US$12.7m

The SmartBots project will be implemented in phases as villages with a lower than 5,000 population will be connected through the User-Activated Soft Fork (UASF). For that purpose, the government will provide subsidies to mobile operators.

Villages with a population of 5,000 or more will be upgraded to 4G and beyond through regulatory interventions by the Botswana Communications Regulatory Authority (BOCRA). In its first phase, the project will provide internet access in 61 villages with minimal access to back-haul infrastructure electricity for broadband internet.

The SmartBots project is in line with the National Broadband Strategy (NBS) launched in 2018 by the Botswana government as part of its digital transformation process. It is expected to enable approximately 1.2 million Botswanans to access broadband internet and digital services through Wi-Fi hotspots available in public places. According to the government, the project will enable citizens to actively participate in the development of the digital economy. SmartBots will also provide many employment opportunities and allow the youth to compete globally.

Liquid Telecom unveils new LIT identity in Tanzania

RAHA Liquid Telecom has officially unveiled its new identity in Tanzania – Liquid Intelligent Technologies (LIT).

The rebrand is part of the extensive business transformation from being just a telecommunications service provider to a full one-stop-shop technology group for local businesses.

A subsidiary of Cassava Technologies, Liquid has over the last 20 years established itself as a leading pan-African digital infrastructure provider with an extensive network spanning over 100,000 kilometres.

RAHA's rebrand to LIT highlights the organisation's commitment to digitally transform the continent through its cloud business, cybersecurity services in addition to its existing telecoms and connectivity capability.

"The evolution of the RAHA Liquid Telecom brand to Liquid Intelligent Technologies opens up numerous opportunities and is a step towards the creation of a digitally-led economy," said Denny Marandure, chief executive officer (CEO), LIT Tanzania. "Liquid has always believed that public-private partnerships are critical for economic development, and our organisation has successfully partnered with governments across the continent. We are looking forward to partnering with the Government to help reach the ambitious goals set that are the foundation of Tanzania's long-term success."

Adil Youssefi, regional CEO, LIT east African Markets, added that "the rebrand is our reaffirmation to all our customers in Tanzania that we are a one-stop-shop technology service provider" bringing intelligent services such as cloud computing, managed services, cybersecurity. "We have brought intelligent technologies to the rest of the continent, and we are confident that our presence in Tanzania will ensure a digitally connected future for all Tanzanians," he said.

Zain South Sudan selects Tecnotree for digital BSS transformation

Zain South Sudan has selected Finnish firm Tecnotree's BSS suite for a major digital transformation initiative.

The latter will implement its complete range of BSS Suite products and services, providing Zain with a new set of capabilities such as advance customer experience, quick time to market with new unified product catalogue, convergent billing and charging solutions, as well as other key solutions. The deal expands on an existing agreement between the companies signed last year.

This deployment will help drive the digital transformation of Zain's current legacy products and BSS infrastructure, making them 5G-ready. Tecnotree said it will be involved in delivering licences, implementation services, and support services. The firm's solutions and experience will enable the operator to improve operational efficiency, sustain rapid growth and redefine their customer experience.

"This partnership with Tecnotree... will help us update our BSS infrastructure in order to unlock our digital transformation strategy," said Khalid Abdalla, chief executive officer (CEO), Zain South Sudan. This implementation will be a first step towards facilitating our business processes efficiently, and achieving our goals to provide innovative services to our customers."

Padma Ravichander, CEO Tecnotree added: "It is a testament to Tecnotree's growth and expansion as well as our commitment to using our market-proven framework of products and services to provide premium digital experiences. This is yet another chapter in our success story and gives us the motivation to continue providing our clients with state-of-the-art products and solutions."

Talking critical

Hauke Holm, VP solutions & product management, DAMM Cellular Systems A/S

Time to re-think network PMR/ LMR? A new approach

For many generations the design of PMR networks have been built in the same way, continuing to this day. Network coverage is achieved with traditional indoor base stations consisting of an antenna system (including cables), transceiver, base station controller, power supply and a battery backup system (UPS). All components are typically doubled to provide maximum availability for mission and business critical users.

The drawback of such a solution is that the complexity of different components in a base station requires a lot of space and therefore a shelter is a requisite to host all the equipment. In most cases also an air conditioning unit is required to create a comfortable environment for the electronic equipment. Along with such a solution, spare part management becomes a challenge as every single component must be locally available so in case of a failure the component can be replaced immediately. With component scarcity in mind an operator needs to have enough spare parts at hand to maintain the availability of the radio network – a difficult and expensive exercise.

But not only is it expensive it is also not the ideal solution. Users are expecting the network to be available at all times. If a component fails, the redundant part is expected to take over to provide the same service. Users expect seamless operation, however in reality, this is not provided. In most cases a fail-over will cause down time and therefore service interruption. If for example, a base station controller fails, the system will need time to detect the failure. A typical value for detecting this kind of failure is 30 seconds. After this period the second base station controller will take over which usually requires keying down the carriers. Radio users will therefore lose the connection and have no service for quite a while.

With that in mind how could this be improved?

If we compare commercial networks developed over time, starting with 1G (analog) and 2G (GSM) to today's 4G and 5G networks, we find that up to 3G (partially) they were built in a very similar way to PMR networks. Depending on the operator the requirements for battery backup systems and redundancy in general were different but otherwise we find the same kind of shelters, air conditioning etc. required to build a site. But with 3G a significant change is noticeable. The amount and size of equipment were significantly reduced. First to a size where much smaller and simpler outdoor shelters were useable and later to outdoor base stations, to a point where they replaced indoor base stations completely.

Obviously, the requirements for commercial networks are quite different from private networks. But on the other hand, also a commercial operator wants to provide 24/7 operation and service to their customers. So, in some way the requirements are overlapping as availability is key for both.

But how can that be achieved?

First the radio cell can be reduced to the bare minimum of components, basically to a single box and an antenna. As the Mean Time Between Failure (MTBF) is degraded the more components are put in series, reducing the number of components therefore improves the MTBF and so the overall availability.

Second, the complex indoor base stations with all those extra components have a much more inferior MTBF compared to outdoor base stations. In short, less complexity means higher MTBF. On top of that the quality of the parts used and today's manufacturing provides a much higher accuracy and control over the manufacturing process which further improves the quality and so the MTBF.

With all this we can see the MTBF of a modern outdoor site is superior to the classical way of building radio coverage with indoor base stations.

Now you might say that in case of a failure there will be no coverage. But it is not as simple as that. In modern commercial networks all services are IP based and the throughput achievable depends mainly on the signal quality or in other words the distance between base station and radio user.

Commercial networks are built with cell overlap. In case of a cell failure, coverage will remain and data throughput will be slightly reduced, most of the time not even noticeable for the users. However, for the operator there are great savings on maintenance and operation:

- no batteries
- no air conditioning
- very small spare parts stock
- much less energy cost

Most PMR (/LMR) vendors have outdoor base stations but they are not as commonly used as indoor base stations and often only used to fill coverage gaps.

But how can PMR networks leverage from the developments happening in commercial networks? How can this approach be used in a narrowband network?

Very simple: Build your network with outdoor base stations.

Seriously, with a decent cell overlap the requirement for local redundancy becomes redundant. And even better you will get a georedundant system with a much higher availability compared to the traditional approach and lower cost at the same time.

Furthermore, a georedundant system will perform better in case of transmission failure since there is also implicit redundancy on the transmission path. And last but not least, cell overlapping will provide significantly better protection against complete base station outage e.g. due to natural disasters, terrorist attacks or any other force majeure incidents.

Unfortunately, public tenders for PMR networks are often explicitly demanding indoor base stations and redundancy at the component level. It would be much better to change this requirement into something that is relevant for the users – AVAILABILITY.

All those redundancy requirements have been designed more than 20 years ago, at a time when outdoor base stations did not exist. But a lot has changed since then. A variety of different outdoor base stations (single carrier, multicarrier, high TX power, radio head only, all in one etc.) have been developed by different vendors and they have been successfully proven under various conditions in hot, in cold, under salt spray etc. to name but a few.

So next time you are planning a PMR network you might want to consider this approach and benefit from the advantages this brings. It is the right time to re-think network design.

Mobile broadband for all: what we've learned over the past two years

The Covid-19 pandemic that began in 2020 was a destructive force that irrevocably changed the way we live and work. However, it was also a catalyst for something we didn't expect for a few more years, writes Nora Wahby vice president and head of Ericsson west Africa & Morocco

It was an almost surreal experience visiting the Mobile World Congress in person for the first time since 2019. That's because things have developed in a way that we could not anticipate. When we look down the line two-years-ago, we did not expect a pandemic to occur in the way it did and the incredible impact it has had on our day-to-day.

So, technically we have seen a substantial growth with regards to mobile broadband demand throughout the last two years. The reliance on connectivity was a business continuity fall back plan for many businesses. A high demand was put on the mobile network quality and capacity to cater for remote working.

We've seen a lot of governments taking decisions of opting into online education, this has put additional speed and bandwidth requirement on the network.

The decision of going online has accelerated the digital transformation that many industries have been struggling to take for few years before. We can comfortably say that the pandemic has been one of the biggest catalysts for digital transformation in this era.

The pandemic has also put an additional requirement for a quicker development of the mobile broadband networks because everything that used to happen in certain defined geographical locations has transited into the home. As a result, there is an additional requirement in terms of readiness and capacity on the CSP networks, obviously, so the uptake of broadband has been unprecedented.

While the pandemic has caused some major problems for countries all over the world, I can say it has been a catalyst. The transformation, as in where we are today, would have taken a lot longer had the pandemic not happened. So, whether it's good or bad, the transformation is one we expected over a much longer period – instead, it has accelerated.

I cover West Africa and Morocco, where fixed networks are underserved, mobile broadband has been the substitute big time. For example, we've seen an increased offering of fixed wireless access (FWA). People want to be connected at home and there's a lot of innovation around FWA to substitute the absence of fibre. That is providing a similar – sometimes better quality – and at a lower cost and a quicker time to market.

The growth in west Africa has been very important – by that I mean sub-Saharan Africa – where CSPs had the ability to quickly deploy, they have seen enormous growth and a good return.

So, do I think Africa will achieve universal internet access by 2030?

Judging by what we've experienced over the last two years, I don't see why not. There is a will, but let's not forget the pandemic has posed major economic challenges, which are translated into the operator's income.

It's also about how the African continent is going to survive after the pandemic, how quickly it will return to growth and how the entire global community is going to support Africa with vaccines. Africa also needs to recover from this as quickly as the rest of the world is and so progress in this space is down to a combination of a lot of different things.

The obvious diversity in Africa – different terrain, politics, economics, and demographics – also combine to make mobile broadband roll-out faster in some countries and slower in others. It also comes down to policy; how the regulators are technically supporting the CSPs to have access to the right frequencies at the right cost and speed up the enabling of this broadband.

In a few cases where we have seen regulators adopting a policy that underlines the fact connectivity is an economic growth engine and it's not only a way to sell spectrum, but Mobile broadband has also been looked at as an engine to accelerate economic growth, to create more business opportunities and to use innovation to resolve local challenges.

A concrete example is Mobile Financial Services where mobile money is helping to bank the unbanked, increasing the reach of banking services beyond the normal reach of the traditional banking system but also create opportunities to bridge the digital divide and contribute to the welfare of the people.

When you have a clear strategy and market commitment, which is aligned with the country policy, the recipe is way more successful. ■

The long road to going green

Energy, climate change and the environment continue to make headlines and the telecom sector is one of the biggest offenders when it comes to pollution. Robert Shepherd finds out what African telcos and towers are doing about going green

The environment is always – pardon the pun – a hot topic. From climate change and the filth that we continue to pump into the air, to tenacious campaigners gluing themselves to trains, there's always something to furrow the global brow.

Now that COP26 is behind us, countries around the world start to make promises about how they are going to meet various net - zero deadlines. You know COP? It's that event to which world leaders and other people in authority burn fuel by the gallons on private jets in order to tell the rest of us how the problem is going to be addressed.

While the aviation industry quite rightly takes one for the team when it comes to the biggest recidivists in the world, the telecommunications sector certainly has a lot to answer to in this space.

Mobile operators and the GSMA are taking collaborative action to be fully transparent about the industry's carbon emissions and have developed an industry-wide climate action roadmap to achieve net-zero greenhouse gas (GHG) emissions by 2050, in line with the Paris Agreement. The GSMA says that globally, more than 50 mobile operators now disclose their climate impacts and GHG emissions via the internationally recognised CDP global disclosure system. The mobile sector has also been credited by the UN for achieving a critical breakthrough towards its mission of combatting climate change.

If we take sub-Saharan Africa as an example, the use of diesel generators to power mobile towers in off-grid locations and for back-up power in urban areas where public power supply can be irregular is a notable source of GHG emissions.

However, as far as the world's second largest continent is concerned, one opinion is that we shouldn't be too hasty to harbour expectations or indeed judge, as there are lots of variables at play.

"Making generalisations about a continent

as diverse as Africa is difficult," argues Rami Reshef, chief executive officer, GenCell. "Attitudes towards green power (and its deployment in telecommunications) vary greatly across the region. Oil rich nations such as Nigeria are still very much dependent on diesel while Morocco, for example, has made huge strides towards solar and wind energy."

Indeed, Reshef points to the fact that "some countries that have hydropower are leapfrogging from fossil fuel-based grids" to clean power. "Certainly, the enormous capacity of sun and wind over the continent create for Africa enormous potential for production of renewable energy, supporting much discussion about enabling export of renewable energy from Africa to Europe," he adds. "But, in general, the transition to renewable technology in Africa is slow – the adoption cost and skills required to build and use clean power can be a limiting factor."

Although, as Reshef puts it, migration to renewable energy in Africa is "slow", Alessandro Ravagnolo, partner, Analysys Mason, says "there are many examples as most towercos - at least those that manage power – are moving to hybrid solutions to reduce their dependency on diesel and reduce costs". He adds: "It is not just a matter of reducing diesel consumption, but also reducing the truck rolls required to re-fuel tanks. This is particularly important in emerging markets where power grids are not ubiquitous and/or do not offer a reliable service."

However, Alistair Munro, founder and chief executive officer at renewable energy firm Ryse Energy, says that Africa operates with a significant number of towers in bad-grid or no-grid areas so it really is essential that diesel is displaced from the energy mix on the basis of cost and for sustainability. "In terms of natural resources Africa has excellent solar and in many areas wind resources for in terms of available resources yes Africa is well positioned," he adds. "Logistics are a challenge but that is also a positive for moving from diesel as the frequency of refuelling can be significantly reduced also improving network resilience and reducing operating costs."

"Logistics are a challenge but that is also a positive for moving from diesel as the frequency of refuelling can be significantly reduced also improving network resilience and reducing operating costs"

So, which operators and/or tower companies are leading the way with migration to renewables? Munro says, "almost all of the public tower companies have made a commitment to migrate to renewables" and cites IHS, Helios, ATC as having made statements on their sustainability targets.

Although there is evidence to suggest, even prove, that the African telecom sector is making inroads when it comes to using renewable energy, solar, wind and wave power are hardly new – they've been around since the dawn of time. With that in mind, why in 2022 are operators and towercos still not further down the road?

"We are seeing this change but with such a growth in the sector in terms of new towers the operators are more focused on expanding capacity than displacement of diesel," says Munro.

So, would it be fair to say that any reluctance or slow move to green energy is a political or business decision? "Any decision to move to green/renewable energy has to be a business-driven decision," argues Munro. "These are businesses so there has to be a positive effect to the bottom line and the environmental and sustainability benefits are secondary. There is a limited regulatory framework in these markets unlike in Europe and other countries so there is limited 'political' involvement in the decision-making process from our view."

"Oil rich nations such as Nigeria are still very much dependent on diesel while Morocco, for example, has made huge strides towards solar and wind energy"

One of the most recognisable players in this space is NEC XON, which has a strong track record of doing in terms of renewable energy

Example commitments and actions by operators in sub-Saharan Africa to reduce environmental impact of operations and reach net-zero carbon emissions

orange™	• **Orange** has unveiled a sustainability strategy that includes a target to be using 100% renewable energy in its operations in West Africa by 2040. Orange intends to increase the use of renewable energy in its operations to 50% by 2025 from the current 24%, through its subsidiaries in Côte d'Ivoire, Liberia and Burkina Faso. • In the Democratic Republic of the Congo, **Orange** has partnered with NuRAN Wireless to build 2,000 solar-powered mobile towers, which will cover at least 10 million people in rural areas.
MTN	• **MTN** has set science-based targets to achieve a 47% average reduction in absolute emissions (tCO2e) for scope 1, 2 and 3 by 2030. GHG emission-reduction target-setting is in line with an ICT sectoral target-setting approach developed through collaboration between the Global Enabling Sustainability Initiative (GeSI), GSMA, the International Telecommunication Union (ITU) and the Science Based Targets Initiative (SBTi). • To realise its targets, **MTN** has launched its Project Zero programme to leverage the latest technologies and service partners to enable business sustainability through greater energy efficiencies, low carbon emissions, risk reduction and cost control. The programme prioritises renewable solutions, efficient emerging technologies and energy storage.
Safaricom	• **Safaricom** has partnered with the Carbon Trust to take a strategic approach to managing its environmental impacts, with the aim of reaching net zero by 2050. • **Safaricom** has committed to a series of emission-reduction targets, including a 43% reduction by 2030 and a 74% reduction by 2050 from a 2017 base year. The targets have been approved by the SBTi.
vodacom	• **Vodacom** has set a target to reduce its environmental impact by 50% by 2025, against a 2017 baseline. Vodacom's plans to reduce carbon emissions focus on four key areas: energy efficiency (including IoT solutions), renewable energy, independent power producers and renewable energy certificates.

The Mobile Economy Sub-Saharan Africa 2021 (GSMA)

"They reduced human error and greatly improved process adherence through process automation. They gained significant operations, maintenance and workforce efficiencies and performance improvements."

with regards to base stations.

The company's modular energy storage and IoT-based remote monitoring and management solution with managed services helps tower companies, mobile network operators and many other types of businesses improve uptime and profitability, often in remote and difficult to reach locations, cut operating costs and maximise profitability.

"We helped one of the tower companies which manages tens of thousands of towers," says Gregg Sanders, head of digital X at NEC XON. "They cut mean time to repair (MTTR) from more than five hours to just one-and-a-half hours. They achieved up to 95% failure prediction accuracy on key equipment. They slashed mean-time-to-detect (MTTD) from hours to sub-second. They reduced diesel theft by between 12% to 15%. They reduced NOC staff reliance to less than half. They reduced human error and greatly improved process adherence through process automation. They gained significant operations, maintenance and workforce efficiencies and performance improvements."

The Hybrid Storage Solution (HSS) from NEC XON provides battery storage, control system, solar panels, diesel generators, and IoT-enabled sensors for data collection. It is combined with AI data analyses and historical weather data. That enables operators to reliably power base stations for communications networks and other uses in regions with under-developed infrastructure.

NEC XON says the HSS solution, which includes sizing and planning, is currently used in South Africa, Kenya, Nigeria, Tanzania, Ethiopia and Democratic Republic of the Congo (DRC).

The good news is we have a lot of options when it comes to renewable energies – but is one source better than the rest?

Munro argues that they are technologies that should be viewed as complementary toward each other, rather than competitors. ""The combination of wind and solar in combination with energy storage harvests the maximum amount amount of renewable energy," he says. "Solar as a stand alone technology only generates for a maximum of 8 hours per day therefore capital expense, energy storage capacity and land space needs to be significantly increased if this is the only source of renewable energy. The addition of wind into the energy generation mix maximises the generation from the available natural resources and optimizes energy storage capacity. In this way the combination of wind and solar gives the best performance considering all the parameters in telecom and critical infrastructure applications."

Reshef holds the view that every form of renewable energy has pros and cons and all are needed to achieve our ambitious global targets. He says the "best" power solution varies greatly depending on factors such as location, weather patterns, availability of resources etc. "Hybrid projects can integrate the benefits of different types of renewable energy together such as intermittent solar or wind resources reinforced by reliable long duration fuel cells powered by hydrogen," Reshef continues. "Green technology is constantly evolving to make all forms of renewable energy cheaper, easier to deploy and more widely available. With any luck, these factors will help renewable energy sources to achieve progressively faster growth over time as

they become a more obvious choice over fossil fuel alternatives."

Nevertheless, Reshef is keen to highlight the fact that reliable, resilient and efficient hydrogen power driving fuel cells is a key part of a sustainable future. He then explains why hydrogen has some key advantages over other forms of renewable energy.

"Hydrogen is the most abundant element in the universe and thus presents an almost unlimited amount of fuel on which to draw," he adds. "It has an energy efficiency comparable to that of fossil fuels and its availability is not dependent on local meteorological and geographical conditions. It also produces no emissions at the point of use, making it an incredible green power source. Its primary challenges are around the cost and complexity of production, transportation and storage."

Swedish firm Ericsson also has a list of case studies as long as your arm when it comes to helping operators in Africa reduce emissions and use more renewable energy. For example, the Ericsson Radio 6626 combines two frequencies and six ports in one unit to power all three antennas on the tower. It adds dual-band support for FDD in the 1800MHz and 2100MHz frequency ranges in a triple-sector radio form-factor to reduce the number of radios on the tower from six down to one.

Rival Nokia recently announced the commercial availability of its Liquid Cooling AirScale portfolio. Its "first-of-its-kind" solution is designed to make radio networks more sustainable and cost-efficient by reducing the energy required to cool a base station.

"5G networks and technologies will play a critical role in making other industries more sustainable and we must all play our part to minimize our footprint and accelerate the use of green electricity," says Tommi Uitto, president of mobile networks, Nokia.

Daryl Schoolar, research director at IDC, says that controlling total cost of network ownership remains an important priority for mobile operators." A significant portion of that total cost of ownership comes from operating expenses," he adds. "Network solutions that can lower those operating expenses, which includes cost of energy, are certainly welcomed by mobile operators. Also, if those solutions can help an operator achieve its green energy goals, that is just another added plus."

Whatever the will of governments, operators, towercos or just people, Reshef says the transition to renewable energy is challenging for any country. "There are a number of political and social factors involved, as governments need to marshal political capital and resources to encourage the sector and promote acceptance in the wider public," he adds. "Similar challenges exist within the private sector, where the decision to transition to renewables often comes down to the short-term reliability and availability of conventional power versus the long-term sustainability and cost-effectiveness of green power. It is a difficult debate, but one that is very much worth having."

On the plus side, GSMA says that nearly half of all towers in sub-Saharan Africa are still categorised as either off-grid or bad-grid, and more than 80% of these continue to run on diesel power. Furthermore, the seven million metric tonnes of CO2e emitted from mobile towers' diesel generators was estimated to account for approximately 3% of the industry's total emissions in 2020.

Renewable energy will be essential to the mobile industry meeting its climate targets. Nearly 70,000 towers worldwide are powered by renewable energy – a 45% increase since 2014.

"Africa is abundant in natural resources that make it an ideal environment for the growth of renewable energy," says Reshef. "The continent has an expanding population and vast economic potential, driven by the innovation and growth of many African businesses and communities. As mentioned above, with both internal and international support, it is probable that Africa will become an important exporter of clean energy. This has been evidenced in north Africa, where Morocco has made tangible steps to export renewable and sustainably produced hydrogen and ammonia to Europe."

However, it's not just the north that's making significant progress. GSMA says that despite having only about 3% of the world's towers, sub-Saharan Africa now accounts for 14% of global green sites. This reflects the investment by operators and tower companies in innovative green energy solutions to reduce CO2e and the operating cost of mobile towers. For example, Africa Mobile Networks (AMN), which provides a network-as-a-service solution to operators, is building small cell networks at scale in Africa. These sites are optimised for – and powered exclusively by – solar photovoltaic battery systems, with no diesel generator backup.

Reshef concludes by saying that there is a greater impetus to deploy small solar and wind installations in places where the population is sparse or terrain is prohibitive - for instance, in remote mountainous regions with limited infrastructure. "In these areas, renewable energy can actually be easier to deploy and more effective than traditional fossil fuel-based energy sources," he says. "As with many other areas across the globe, there is emerging grassroots support for green power in Africa. Development banks and other commercial organisations are recognising the opportunity that developing green energy infrastructure for many use cases including telecoms represents. If these moves are successful, this will spur the market on to greater change and investments."

Nevertheless, even with all the right kit made available, Reshef says the decision to 'go green' can be a difficult one for governments and businesses to make. "The crucial fact to remember however, is that moving to renewable energy is in the interest of everyone, most obviously because we know it is necessary for our continued survival on this planet," he adds. "In addition, we also know that a continued dependence on fossil fuels is an unsustainable strategy that is leading us to irreparable climate disaster if we don't drastically reduce emissions as soon as possible. If businesses do not transition in the short term, the long-term consequences will be catastrophic."

The mobile telecommunications industry in Africa is in a transitional phase with changing industry structure and dynamics. Africa currently has over 800 million mobile connections and nearly 450 million unique subscribers. The coverage of mobile network has varying range from 10% to 99% across countries in Africa with an average of 70% mobile coverage. Using renewable is high on the agenda, as evidenced above. It just takes time. ■

4GLinked – Advanced Hybrid LTE and TETRA System

From its Headquarters in Paris, ETELM has been supplying critical communications infrastructure for over 40 years to systems integration and partners worldwide. In response to the demand for mission critical broadband services ETELM has developed one of the most advanced, fully integrated hybrid solutions – 4G Linked; combining both LTE and TETRA Base Stations on a single core network. The system utilises all the benefits of the standard LTE Core as the management system for both TETRA and 4G Subscribers, thereby avoiding separate networks and gateways. Indeed the TETRA Base Station connects directly to the LTE Core in the same way as any eNodeB.

ETELM strongly believes that the future of all private critical mobile communications should be based on 3GPP's internationally recognised core networking standards – 4G LTE Core and 5G NR standards are the most powerful mobile communications architectures available, and we believe should be adopted by all types of communications technologies. This will allow critical communications users to leverage from advances in the high-volume consumer marketplace and if adopted by other vendors, will allow true interoperability to exist between all manufacturers and across different technologies. This concept would potentially allow users to mix TETRA, LTE and other communications technologies over the same standardised core network...

4G LINKED ARCHITECTURE

ETELM's 4G Linked is an advanced hybrid solution for mission critical users, combining the benefits of both TETRA and LTE in a single network, based on internationally standardised networking. The system architecture is very straight forward and avoids complex gateways and interfaces. The transmission eco-system utilising the LTE Core with all central management servers connected to radio sites equipped with 4G Linked TETRA Base Stations which are directly connected in the same way as any LTE Base Stations (eNodeB's). This is achieved as we have added the LTE standard S1 connectivity to the 4G Linked TETRA base station, so in effect it becomes a 'TETRA eNodeB'.

Cell sites may be designed with TETRA only, LTE only or merged TETRA and LTE equipment – all connected to the same core, this is entirely based on the services and geographic coverage required by the user. Communications between TETRA and LTE subscribers is completely seamless to the user, and call set-up time

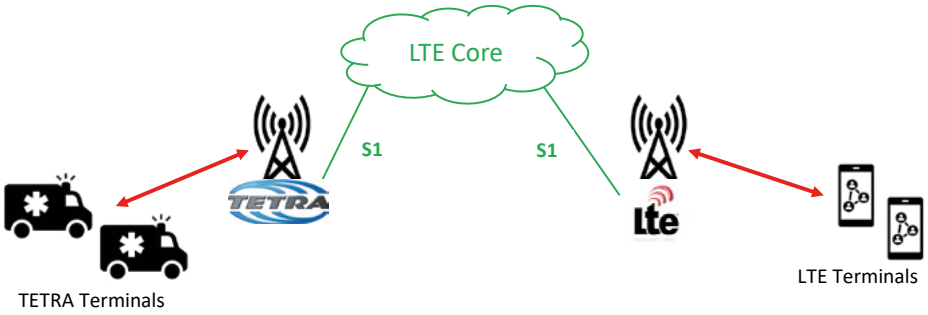


Figure 1: 4G Linked Basic Architecture

significantly faster than any separate networks with gateway solutions, particularly where group calls are concerned. The architecture comprises five essential building blocks:

1. Central Equipment: Based on the 3GPP standard IP based LTE core (including MME, PDN and a central data base) and a standard IMSI server for audio communication; MCPTT Server may be added optionally where group functions are required.
2. TETRA radio site equipment: Each TETRA Site has one or more 4G Linked Base Station along with standard site equipment (antennas, feeders, power supplies etc.)– if the system is updating existing TETRA radio sites, all existing RF/PSU equipment can be re-used (duplexers, filters, antennas).
3. LTE radio site equipment: Any standard 4G LTE eNodeB radio base stations, with antennas, feeders etc. ETELM supplies its own range of LTE eNodeB's but, as with any LTE network, the core supports standard

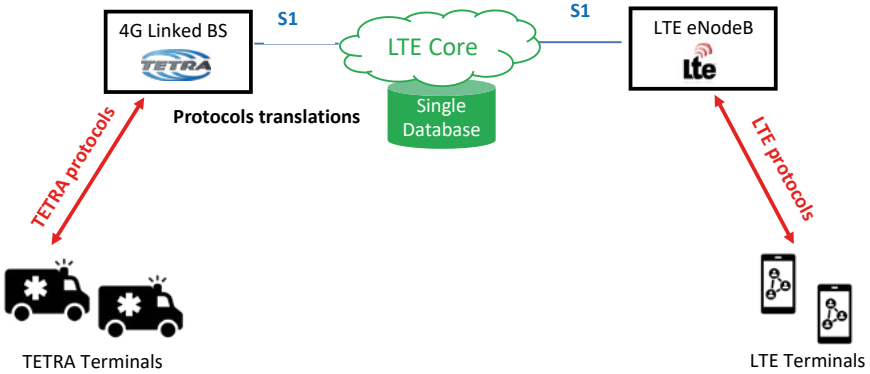


Figure 2: 4G Linked Protocols

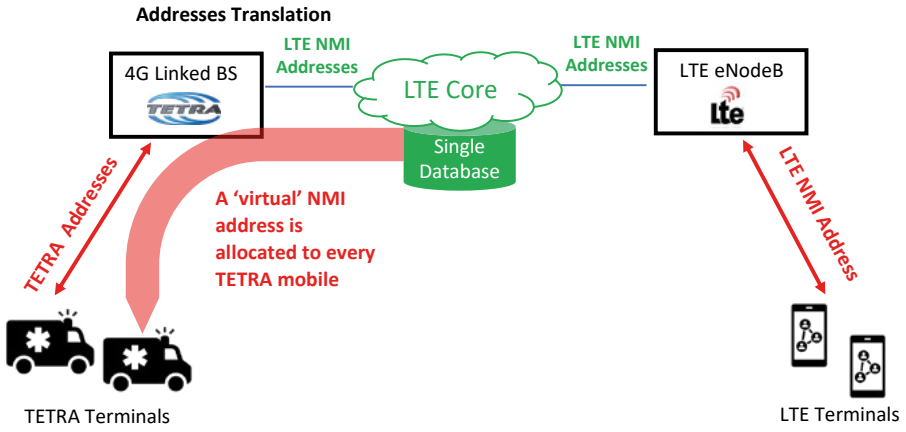


Figure 3: 4G Linked Addressing

eNodeB's from any vendor.

4. TETRA terminals: All Standard TETRA Terminals are supported – a major advantage being that all existing TETRA subscribers can be re-used or re-deployed, ensuring that users can retain and redeploy their investment
5. LTE terminals: Again using standard LTE Smartphones configured according to the services and frequency band allocated.

Note: Dual Band TETRA + LTE Terminals are now available which can be used where users wish to use both TETRA and LTE Services.

HOW 4G LINKED WORKS

Standard smartphones under LTE coverage operate in exactly the same as in any public 4G network, with identical functionality. Audio functions are managed by the IMSI server for selective calls and using an MCPTT server for group calls (most MCPTT servers include the IMSI server)

Standard TETRA terminals under the PMR coverage area operate with full TETRA standard functionality They register on a TETRA 4G Linked base station. This base station seamlessly converts the registration request into an LTE registration request on the network and continues converting any request and response (from infrastructure or from mobile.)

Due to this automatic subscriber database conversion the TETRA terminals appear from the Core's perspective just like any other LTE smartphone. The system thereby allows seamless communications between smartphones and TETRA subscribers.

Table 1. Fully integrated or gateway differences

Features		4Glinked	Gateway
Use or re-use of TETRA terminals		YES	YES
Data base		Only 1	3 (which must be syn-chronized
Additional PTT latency		low	high
In case of using an existing TETRA network	New Software release	No	Probably
	gateway	No	Specific for any vendor
	Base station	To be Updated	No change
	Any other radio site equipment	Re-used	No change
	TETRA SwMI	Replaced by LTE core	To be updated
	Adding LTE radio site	Yes	According to LTE operator

This conversion is possible using a special numbering scheme: each TETRA terminal is mapped at the network administration level with an LTE standard NMI number which is uniquely allocated to this mobile-just like any smartphone. The standard TETRA address is used over the air, but translated to a 'virtual' NMI address by the base station. As a result of this seamless conversion, the core equipment only manages NMI addresses and the TETRA user (theoretically) does not need to be made aware of its related NMI address.

Obviously, in the central database, an NMI address range must be retained for TETRA terminals. This range is preserved for profile number use as the first numbers in the NMI plan. This is just an example, it also may be configure in a different way.

The 4G Linked base station must be aware of the address conversion rules – this issue is mainly simplified by using 'profile' that is, the base station converts the TETRA address into the profile head-number and the TETRA address (last numbers of ITSI).

FEATURES

All selective audio functions are retained between TETRA terminals.

All audio selective functions are provided between TETRA and LTE terminals

Group audio functionality between mixed user groups (groups comprising a mix of TETRA and LTE subscribers) are provided when there is an MCPTT server and when smartphones are loaded with an MCPTT application.

All these functions apply to TETRA terminals under TETRA coverage areas and LTE terminals under LTE coverage areas.

Any service and/or function requiring high data rates (LTE Services) are not supported by TETRA terminals.

GATEWAY/4G LINKED COMPARISON

An alternative to the fully integrated 4G Linked approach for TETRA/LTE interconnection is to add a Gateway between the TETRA SwMI and the LTE network. This means that the TETRA and LTE cell sites are connected on their own independent networks, with the gateway acting as a bridge.

The Gateway must comprise of two elements – the LTE Interface and the TETRA interface. The interface to the LTE Core may be fully standardised, however connection to any TETRA network is proprietary to each vendor – as a result, all gateways must have a proprietary element in order to operate.

The two different approaches have advantages and disadvantages (see table above). Two main problems exist with gateways:

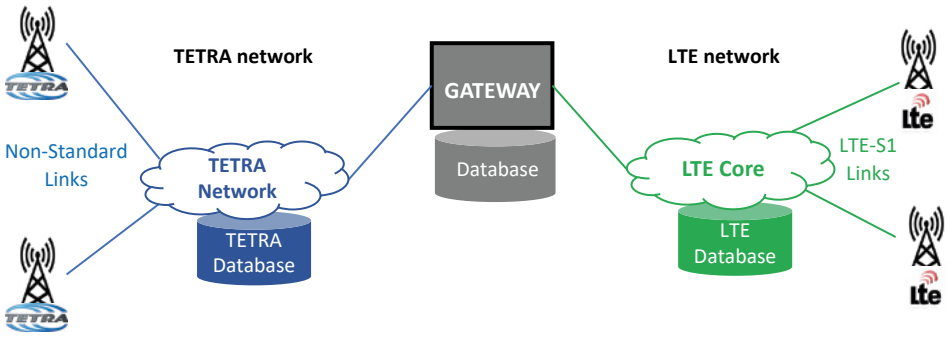


Figure 4: The Gateway Alternative

PTT latency
The PTT management requires a network wide solution, this is quite straightforward for individual calls but extremely complex for group calls. The system must 'search' for the terminals included in the group call and assess call priorities extremely quickly. The first step is the choice of terminal to be granted permission in case of several parties requesting the token ring (priority, age of the requests....). Where the system is fully integrated the group set-up is managed extremely quickly, however for the gateway option, the TETRA network manages calls between TETRA terminals, and the LTE network between respective LTE terminals, however the gateway forms a 'bottleneck' and so there is some latency which is unacceptable for many PMR users.

Databases
LTE networks have their own standardised user database (HSS) and TETRA networks have their own proprietary database embedded inside the SwMI. The gateway must also have its own database, describing the rights for a terminal to join (or not) another terminal (or group) in another network. This means that there are 3 independent databases to manage for the whole system and these must be synchronized all the time – a nightmare for network managers! Conversely the 4G Linked solution only uses the standard HSS as a single, unique user database for all subscribers, this is possible since TETRA terminals are converted from a numbering perspective to the LTE standard numbering with their 'virtual' NMI mapped to it's TETRA Subscriber Identity (ITSI).

COST IMPLICATIONS

The cost comparison is very different according to the existing infrastructure:

Case A : a TETRA network exists, but no LTE network
Case B : there is both a TETRA and LTE network
Case C : there is an LTE network and no TETRA network (this case is rare since, when a private LTE network is in operation there is no reason to deploy a TETRA network – but in the case of specific and/or economic situations).
Case D : there is neither TETRA network nor an LTE one (this case is also rare).

Cases A and B are the most common and should be looked at carefully:

- TETRA radio sites are not fundamentally changed: the existing antenna system, feeders/cabling, lightning protection, power supply units (in general 48V dc) RF coupling, duplexers, cavities etc. are fully retained and re-used. Only base stations (often in need of updating for first generation TETRA systems) are to be changed
  Note: In the case of existing ETELM Networks - ETELM TETRA base station may be upgraded to 4G Linked by software upgrade only.
- Central Equipment:
  In case B, the links to the radio sites are simply routed to the LTE core (IP links)

  In case A, an LTE core is added in place of the TETRA SwMI (with IMSI and/or MCPTT server) – there is no longer any need for a TETRA SwMI as all network management is performed by the distributed LTE Core.

  In any case, the existing TETRA SwMI is no longer required as all functions are managed by the standard LTE Core for both TETRA and LTE Base Stations.

The cost for Case D is the same as for deploying a new LTE network, but with reduced radio site costs.

All these costs relate to CAPEX investments, the operational costs (OPEX) are different according to whether the LTE network is a public one or owned by the same operator as the TETRA network; in the first case, the OPEX is mainly included in the contract with the external operator, in the other case the added LTE radio sites OPEX is the same as for the existing TETRA sites (apart from the cost of frequencies)

It is to be noted that in case of radio sites with 4G linked BS and eNodeB's, the IP links to the central equipment may be shared by using S1 multiplexors.

4GLINKED NETWORK MANAGMENT

The network management of the 4G Linked System may be decided by the system administrator either with separate LTE and TETRA management or with a unified management system.
The unified solution is based upon the LTE standard management rules with an OAM separating seven managements functions:

- Alarms management
- Configuration management
- Software management
- Security management
- User management (data base)
- Billing management
- Performance management

In the fully integrated approach, a unique view of the whole network is available, displaying TETRA and LTE equipment; according to the user selection, the function request is routed either to TETRA or to LTE equipment as necessary.

MODULARITY

The main advantage of the 4G Linked solution (in case A) is to move seamlessly from TETRA to LTE, allowing re-use of the TETRA terminal fleets and the majority of the infrastructure and the possibility to add LTE radio sites (to existing TETRA Sites and/or new LTE Cell Sites) to ensure LTE radio coverage in areas where smartphone functionality is required (and access to their APIs) with the benefit of being able to communicate with existing TETRA mobiles (or TETRA groups).

4G or 5G

As technology is evolving the 4G Linked approach is almost identical for 5G; the choice of which technology is selected is dependent on two main factors:

- Frequency bands: 5G is mainly defined for frequencies above 3.5 GHz, which does not offer the same coverage as with lower frequencies – especially with PMR; moreover, in many countries the 5G spectrum may not be available and/or very expensive.

- Costs: Currently 5G equipment is much more expensive than 4G and the functional difference is very limited (especially the latency.)

CONCLUSION

As the industry transitions from traditional narrowband PMR to mission critical broadband services, there are several scenarios where clients may need to benefit from a hybrid solution, these include but are not limited to:

1. Re-use of existing investment in user equipment i.e. TETRA terminals
2. Minimise risk of transition to new technology, important for critical comms
3. Overcome limitations in availability of spectrum for private 4G or 5G
4. Balance spectrum costs and service requirements for specific users
5. Prioritise 4G/5G services in small, concentrated areas with high density of users and PMR services in wider geographic areas with fewer users

There will be a high demand for merging technologies either for technology transition, cost or simply frequency availability, and although the gateway method may be an option for some users, the benefit of a fully integrated solution such as 4GLinked cannot be underestimated. This is particularly so where a long-term solution is required, since an integrated approach avoids the added cost of separate networks and gateways which can be more costly and difficult to maintain and update long term. It goes without saying that fast call set-up is essential for critical communications, however gateways will have a significant impact on latency particularly when managing group calls between several users on different networks and technologies. 4GLinked is based on a single core network approach with TETRA mobiles viewed from the network perspective as 'virtual' LTE devices so the latency is significantly reduced. As the 4G Linked approach uses latest, internationally standardised core networking it can keep pace with all latest mobile communications standards, and avoids dependence on proprietary gateways and the associated security and maintenance issues.

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Nigeria's government approves funding for more satellite connectivity

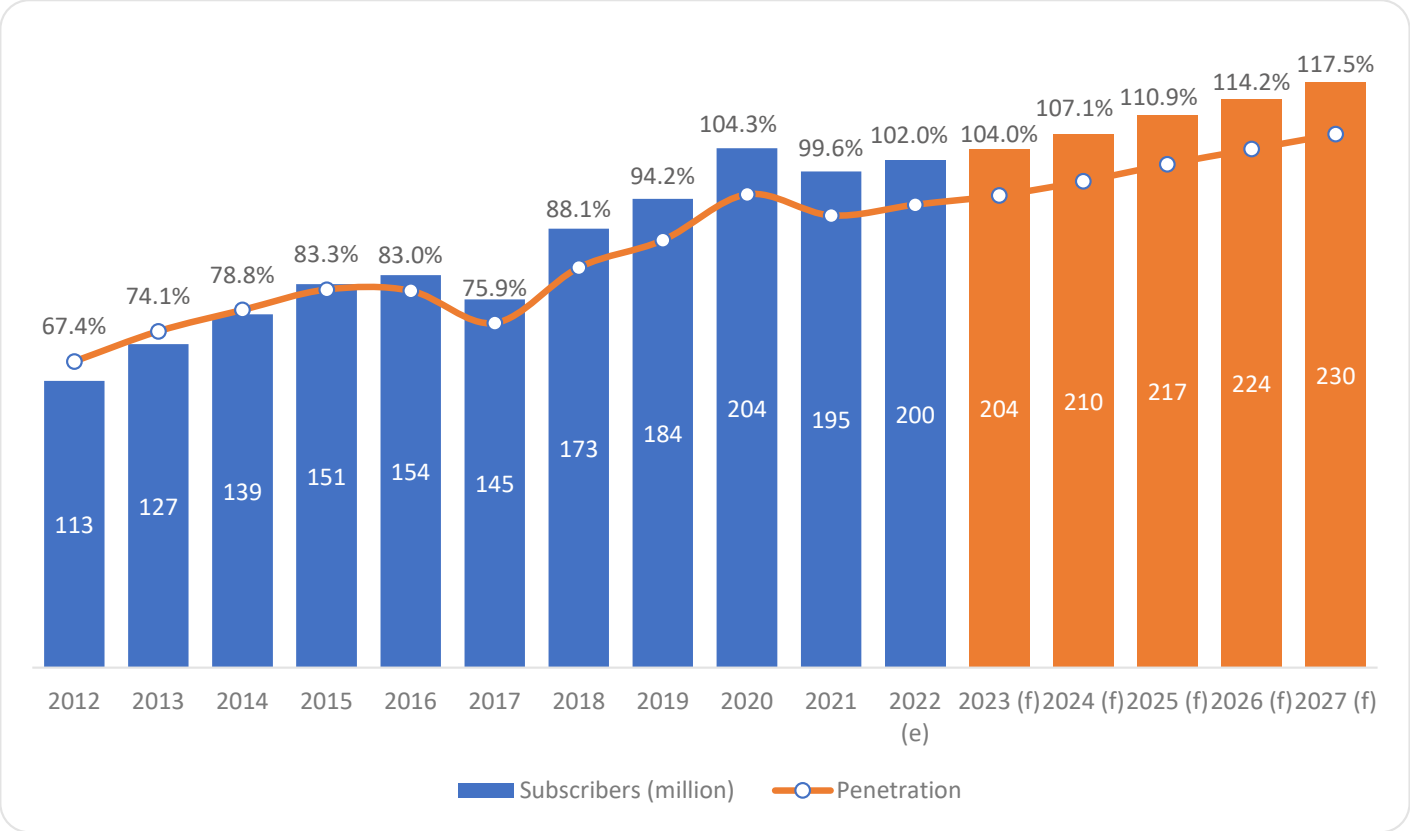
Sébastien de Rosbo,
research manager, BuddeComm

Nigeria has one of the largest telecom markets in Africa, supported by the second largest economy on the continent after South Africa.

In recent years, the telecom sector has benefitted from sympathetic regulatory measures aimed at improving competition and developing infrastructure. This has helped boost the country's fixed-line broadband sector, which has seen considerable consolidation among players in recent years. The government aims to increase broadband penetration to 70%, largely via mobile networks but also supplemented by satellite connectivity covering remote areas.

Having called on industry players in mid-2020 to contribute towards its 5G framework, the Federal Executive Council in September 2021 approved a 5G policy which should see 5G services covering major urban areas by 2025. This has been supported by the award of spectrum in two bands to MTN Nigeria and Mafab Communications.

Chart 1 – Growth in the number of active mobile subscribers and penetration – 2012 – 2027



Source: BuddeComm based on regulator data

Table 1 – Growth in the number of active mobile subscribers and penetration – 2012 – 2027

Year	Subscribers (million)	Penetration
2012	112.778	80.5%
2013	127.246	91.1%
2014	138.960	93.4%
2015	150.830	107.9%
2016	154.342	110.4%
2017	144.849	103.6%
2018	172.610	123.5%
2019	184.426	96.7%
2020	204.229	107.2%
2021	195.128	102.4%
2022 (e)	199.760	104.1%
2023 (f)	203.755	106.1%
2024 (f)	209.860	109.4%
2025 (f)	217.210	111.9%
2026 (f)	223.730	113.2%
2027 (f)	230.220	115.6%

Source: BuddeComm based on regulator data. Note: Data relates to active lines

Key developments:

- **MTN Group sells down stake in MTN Nigeria to 75.6%;**
- **Government approves funding for a second satellite, NigComSat 2;**
- **MTN Nigeria and Mafab Communications each secure 100MHz of TDD spectrum to provide 5G services;**
- **Airtel Nigeria follows MTN with 5G trials;**
- **Regulator amends international termination rate;**
- **Government approves $328 million loan to complete national backbone project;**
- **Second stage of the NIPTI project is started, focussed on delivering fibre to northern areas of the country;**
- **Government pledges to deploy 18,000km of fibre to extend broadband to rural areas;**
- **National Broadband Plan 2020-2025 aiming to deliver 70% broadband penetration;**
- **Report update includes the regulator's market data to December 2021, operator data to Q4 2021, updated Telecom Maturity Index charts and analyses, assessment of the global impact of the pandemic on the telecoms sector, recent market developments.**

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Nokia adds liquid cooling tech to latest AirScale Base Station portfolio

Nokia announces the commercial availability of its liquid cooling AirScale portfolio. The Finnish firm says the "first-of-its-kind solution" is designed to make radio networks more sustainable and cost-efficient by reducing the energy required to cool a base station.

The liquid-cooled AirScale baseband solution can, Nokia says, accommodate any liquid-cooled common or capacity plug-in unit and supports all radio access technologies from 2G to 5G. It supports the reduction of base station-related CO2 emissions by up to 80%.

Nokia's Liquid Cooling solution is also almost completely silent and maintenance-free making it ideal for apartment buildings, whereas more traditional air-cooling systems are typically noisy and require regular maintenance. Liquid is much more efficient in the transmission and transfer of heat. Nokia's solution carries the captured waste heat produced by the base station during operation. This can then be circulated and reused for other purposes. For example, it can be redirected to a building's heating system for free, at a price, or even traded.

Here's a comment from a happy client: "AT&T is committed to tackling climate change, enhancing the efficiency of our network, and reducing our operational carbon footprint," says Joe Taylor, vice president implementation, provisioning & optimisation at AT&T. "We're pleased to work with Nokia as we take a more sustainable path and to trial its liquid-cooled base station in our network. We firmly believe that sustainability is one of the biggest factors impacting the world right now and is a key differentiator in business. We're eager to continue aligning with like-minded, innovative companies like Nokia that are developing ground-breaking solutions to combat climate change." *nokia.com*

Cobham makes Tactical move

Cobham Satcom, global provider of land and maritime satellite communications solutions to the government and enterprise sectors, brings to market its new Tactical Tracker antenna range.

The new terminals are available in three sizes and are the first MIL-STD antennas to fully support multi-orbit tracking across GEO, MEO and LEO satellites. Combining multi-orbit tracking capabilities with a rugged, lightweight, and robust design, the new terminals provide unmatched deployment flexibility and a future-ready terminal for ultra-resilient battlefield communications.

The tracking terminals are easy to operate, Cobham claims, fast to deploy and quick to connect – going from box to operational in less than 30 minutes. A tool-free assembly and set-up further streamlines the process. This rapid deployment and connection time allows users to be prepared in mission-critical scenarios, where every second counts.

"Innovation is at the core of Cobham Satcom, so we're proud to be able to announce the first transportable terminals featuring full multi-orbit tracking capabilities" notes Kevin McMahon, director of sales for government and defence solutions. "New LEO and MEO constellations will transform tactical operations, so it's vital to have future-ready terminals that can leverage these constellations and help our users maintain their communications advantage." *cobham-satcom.com*

Compact TETRA radio

"Being on the frontline demands a special kind of communication device that's easy to carry yet rugged and capable enough to get the job done," says Motorola in its marketing material.

The company's ST7500 is a compact TETRA radio that weighs less than 200 grams, which apparently makes "it easy to carry and easy to wear in a variety of belt or body-worn configurations".

Motorola also says that despite its size, performance is mission-critical "with leading-edge features such as multi-band vompression for loud and clear audio, a hybrid antenna and the latest Bluetooth 4.1 LE technology for collaborating with a range of complementary devices and wireless accessories". *motorola.com*

Perle's new 5G router

Introducing the Perle IRG7440 5G router, which the manufacturer says provides fast, secure, and reliable 5G network connectivity where a user needs primary or backup 5G NR or CAT20 LTE coverage for business-critical equipment.

The IRG7440, Perele furtner claims, is ideal for IoT/M2M network access applications such as IP camera surveillance systems, digital signage, smart lockers, processing IoT data at the edge by connecting industrial equipment, remote data loggers, or sensing devices.

The IRG7440 5G router is designed to leverage the reliability and flexibility of cellular networking to minimise downtime, reduce service calls, and bring branch office and temporary locations online faster than other solutions.

"Perle's approach has always been to design reliable hardware, using high-end components from trusted chip manufacturers, that runs a complete and robust software feature set," says John Feeney, chief operating officer, Perle Systems. "As we add new features and enhance functionality, we have always made it available to our customers at no additional cost. This has been our business model from day one."

Although the IRG7440 is described by Perle to be "ideal as a 5G failover and out-of-band management solution", it can also be deployed in 3G or 4G environments while ensuring a frictionless and seamless transition to 5G as these networks become more widely available over time. If a wired link is down, the IRG7440 will maintain network access with automatic failover to a cellular network. Numerous conditions can be configured to automatically trigger a failover. *perle.com*

New L-Band RF over fibre solution for air force satcom telemetry

ViaLite Communications delivers a solution for a satellite communications downlink for air forces, transferring the L-Band signals through the ground station complex.

ViaLite's L-Band HTS links, in the standalone blue OEM module format, were selected by AFRL for integration into their system. Compact, single link and available in RF bands up to 6 GHz, ViaLite claims "the links were an ideal fit". They can be operated as either transmitters or receivers and are easily mounted into existing equipment. AFRL explained that they'd decided on the links based on their performance, best in class quality and reliability.

"We are pleased to continue supporting AFRL; helping with the advanced satellite and terrestrial infrastructure they operate across multiple satellite transponders and locations." Craig and the team were also on hand to provide service and support to AFRL during the equipment installation process.

As well as OEM module format, the links are available as rack chassis cards (for use in ViaLite 3U and 1U rack chassis units), as Yellow OEM modules (designed for system integrators and equipment manufacturers to build into their own designs) and in the ViaLite Blue2 module which houses two links and can be setup to be a dual transmitter, dual receiver or transceiver. *vialite.com*

GenCell launches 'revolutionary' off-grid ammonia-to-power solution for MNOs

GenCell Energy, a provider of hydrogen and ammonia to power solutions, is bringing to market the GenCell FOX off-grid power solution for mobile operators, that generates power on-demand from ammonia. The company reckons its new solution "delivers reliable, resilient and zero-emission primary power" which can replace fossil fuel generators. The solution can also complement solar PV and wind power solutions at telecom sites around the globe. The FOX can be placed at a telecom base station in virtually any location where grid services are poor or non-existent to keep the tower running without any need for servicing or refueling for as long as half a year.

An evolution of the GenCell A5, the GenCell FOX has been developed specifically to provide power for operators' radio networks. GenCell says it has successfully completed a series of rigorous field tests of the FOX in various weather conditions with a number of operators, the company claims. It will be offering operators a limited number of pre-launch projects for deployment in 2022, and it will be available for full commercial deployment in 2023.

"The GenCell FOX is the first fuel cell solution to overcome the limitations of the current hydrogen infrastructure by creating hydrogen-on-demand from ammonia, the world's second most-produced inorganic chemical," said Rami Reshef, chief executive officer at GenCell, said,

More than 200 million tons of ammonia is produced each year and distributed globally via pipelines, tankers and trucks, making it readily available and inexpensive. The firm also claims that by creating hydrogen-on-demand from ammonia, the GenCell FOX provides zero-emission fuel cell power at a lower cost than diesel generators.

"As the need for green power for towers has become more insistent and obvious, while in parallel we have demonstrated that the product has completed successful field tests in various extreme weather conditions, we are seeing increasingly broad interest in the FOX from telecom, cable and other connectivity providers around the world." *gencellenergy.com*

'Serving as the core platform for advanced wireless IoT applications'

Laird Connectivity introduces the newest addition to its system-on-module (SOM) portfolio, the Summit SOM 8M Plus based on the NXP Semiconductors i.MX 8M Plus applications processor and 88W8997 wireless SoC.

The Summit SOM 8M Plus is a highly-integrated and comprehensive hardware and software solution that combines NXP's multi-core applications processing with NXP dual-band 2x2 Wi-Fi 5 and Bluetooth 5.3 connectivity for a broad range of advanced IoT applications.

"When Laird Connectivity asked us to recommend an applications processor that could serve the next generation of industrial-grade connected systems, the i.MX 8M Plus applications processor was an easy choice," said Alex Dopplinger, marketing director for the building and energy segment at NXP Semiconductors. "It is the fullest-featured member of our scalable i.MX 8M family, targeting applications that range from industrial HMI, machine vision, service robot and drone control, fleet analytics, building management systems, gateways, and audio/voice systems. Laird Connectivity's Summit SOM 8M Plus combines it with NXP's Wi-Fi technology in a compact solution that simplifies and speeds time to market for secure connected products."

The Summit SOM 8M Plus is "ideal for a broad range of applications, including harsh, industrial IoT rugged handheld devices, industrial IoT gateways, IoT vision solutions, and healthcare devices," Laird opines. It supports the latest WPA3-Personal, WPA3-Enterprise, and WPA3-Enterprise SuiteB 192-bit security standards and has an upcoming FIPS 140-3 certification. It will be globally certified to reduce customers' barrier to entry. Regulatory certifications will include FCC, IC, CE, RCM, MIC, and Bluetooth SIG approvals. *lairdtech.com*

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World's first Pi-powered satellite shows resilience of Raspberry Pi

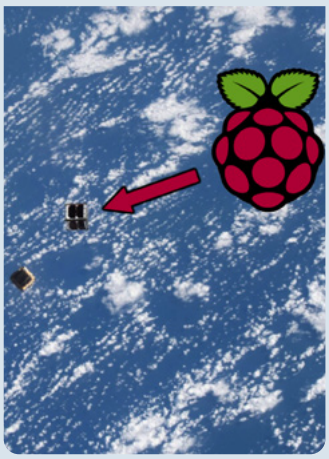
Undergraduate students at the Utah State University (USU) have successfully launched the first Pi-powered satellite into orbit. The GASPACS CubeSat, which was sponsored by NASA, features a Raspberry Pi Zero computer, a second-gen Pi Camera Module, and a DFRobot Beetle microcontroller to facilitate basic tasks at a low price.

Like other CubeSat devices, the GASPACS CubeSat is quite small — measuring a mere 10 centimetres wide. Its mission is to test an "aeroboom" stabilisation system, which successfully deployed 45 minutes after astronauts tossed GASPACS CubeSat off the ISS.

Naturally, the tiny satellite has several secondary missions. One such mission, is to test the resilience of relatively cheap hardware like the Raspberry Pi Zero. The GASPACS CubeSat has no radiation shielding, so it's vulnerable to any radiation that gets past Earth's magnetic field.

The Raspberry Pi computer hasn't died yet. And in case some solar wind manages to knock the Pi Zero unconscious, a DFRobot Beetle microcontroller will try to revive the computer ... by turning it off and on.

Additionally, GASPACS CubeSat features a Pi Camera Module to take photos in space.



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Nokia and Antofagasta Minerals deploy private wireless network in Chile

Nokia has deployed a private wireless network with Antofagasta Minerals for Minera Centinela, to support operations at its copper mine in Chile.

The Finnish tech firm has designed and deployed the private 4.9G/LTE solution, including Nokia AirScale radio equipment, mobile packet core, IP/MPLS service aggregation routers, and Wavence microwave transmission.

This network will allow the mining group to accelerate its digital transformation.

Nokia industrial-grade private wireless provides the high capacity and low latency required for enterprises, such as mining companies, to connect a variety of sensors, devices, equipment and vehicles, above and underground, the firm said.

The network, already in operation after being deployed in a record four months for Minera Centinela, will initially connect a fleet of autonomous trucks. Going forward it will support a wide array of operations as part of a five-year digitalisation plan which aims to transform the mining sector, while enabling safer and more efficient operations.

"We are transforming the way mining is done," said Gino Ivani, technology manager, Antofagasta Minerals. "We want to deliver excellence in everything we do, leveraging operational efficiencies to achieve the best results. We are committed to sustainable mining and to providing the safest and most efficient facilities. We are very pleased to leverage Nokia industrial-grade private wireless solutions and its experience in mining automation to support our efforts."

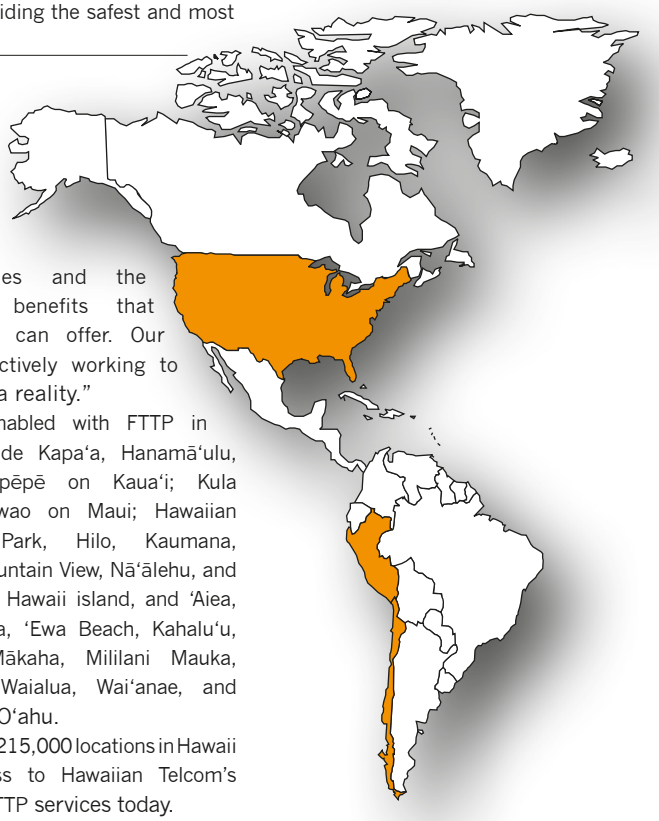
Hawaiian Telcom invested $100M for state-wide fibre deployment

Hawaiian Telcom set a new record in capital spending to expand fibre-to-the-premise availability and improve broadband connectivity across the archipelago in 2021.

Last year, the operator invested more than US$100m to expand and support its next generation fibre network. As a result of this investment, an additional 30,000 locations throughout the state now have access to FTTP broadband service, enabling market-leading upload speeds and among the fastest download speeds available in Hawaii.

Five hundred megabits per second is the fastest upload speed in Hawaii and gigabit internet is one of the fastest download speeds available. These speeds enable multiple users to utilise the same secure, reliable connection with little to no disruption or latency.

"Our core purpose at Hawaiian Telcom is to connect and empower Hawaii, so we are accelerating our fibre expansion to bring the benefits of high-speed broadband access to more people in more places throughout our state than we've ever done before," said Su Shin, president and general manager. "Imagine the possibilities when there is true digital equity here in Hawaii and everyone from keiki to kūpuna, from Hilo to Hanalei, has access to the benefits of online education, e-commerce, telehealth opportunities and the countless benefits that broadband can offer. Our team is actively working to make this a reality."



Areas enabled with FTTP in 2021 include Kapa'a, Hanamā'ulu, and Hanapēpē on Kaua'i; Kula and Makawao on Maui; Hawaiian Paradise Park, Hilo, Kaumana, Kea'au, Mountain View, Nā'ālehu, and Volcano on Hawaii island, and 'Aiea, 'Āina Haina, 'Ewa Beach, Kahalu'u, Kapolei, Mākaha, Mililani Mauka, Nānākuli, Waialua, Wai'anae, and Waikiki on O'ahu.

North of 215,000 locations in Hawaii have access to Hawaiian Telcom's ultra-fast FTTP services today.

Peru launches next phase of initiative to provide internet to jungle

Peru launched the third phase of the Conecta Selva (connect the jungle) program, which aims to digitally connect via satellite some 200,000 people in 1,034 localities.

The communications undersecretary at the transport and communications ministry, Fredy Tito Chura, along with Daniel Lizárraga López, the executive director of national telecommunications program Pronatel, launched the initiative in Amazonas, where 35 public institutions will be connected, including schools and medical posts.

"We are fulfilling our commitment to bridge the digital gap in areas where data service and digital interconnection will be accessed for the first time to be connected to the world," Tito Chura said.

Under the initiative, 21 locations in Amazonas have already been connected, benefiting 9,560 citizens. The public entities will be able to count on connection speeds of 10Mbps for download and 2Mbps for upload.

The objective, which targets the Loreto, Ucayali, Amazonas and Madre de Dios regions, involves a total of 1,316 public institutions (1,212 educational institutions and 104 health centres).

According to Pronatel, there are 952 schools and 81 health centres in 798 locations with the service already operational.

Argentina's Telespazio won the contract to operate the connections.

Cellnex plans 80% coverage for IoT network in Ireland

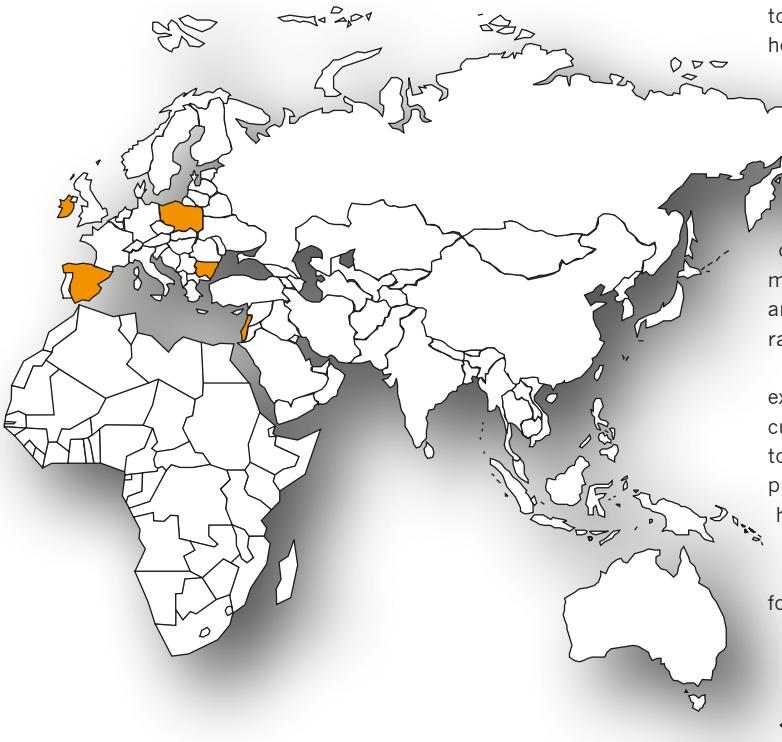
Cellnex Telecom is targeting 80% coverage of Ireland with the country's first national Internet of Things (IoT) network by the end of 2022.

Through its partnership with Everynet, Spanish firm Cellnex will bring a new nationwide low power wide area (LoRaWAN) network to all major cities by the end of December.

The initial investment in the network between Cellnex and Everynet is around €2m and the rollout of the LoRaWAN network will enable the former to work with both public bodies and private businesses across the country on their IoT requirements. This can include building and energy management, air and water quality monitoring, waste management, and parking validation.

This network will build on the successes of a pilot project launched in Edenderry, county

Offaly last year, during which the town became the first in Ireland to use LoRaWAN technology to help deliver solutions to monitor disabled parking bays, bin level sensors, air quality monitoring and tracking energy use in public buildings.



Cellnex Ireland has over 70 customers here including all the mobile operators, the broadcast and emergency services, and a range of local wireless operators.

The company said that as it expands its service offering the customer profile "is evolving to include public bodies, utility providers, leading players in the hospitality, retail, transport, manufacturing and construction sectors, all of whom are looking for connectivity solutions to address coverage issues."

Cellnex committed to delivering 600 new telecom sites by 2026 and 300 have been delivered to date.

Orange and MasMovil discuss €20bn Spain merger

Orange and MasMovil, the second and fourth largest operators in Spain, entered in to discussions to forge a 50:50 joint venture in the country.

The deal values Orange's Spanish unit at €8.1bn and MasMovil's at €11.5bn, creating a combined enterprise value of €19.6bn.

A new converged operator would have circa 7.1 million fixed line customers and 20.2 million mobile subscribers. Its combined FTTH network would reach over 16 million homes.

Furthermore, the operators say that the merger would generate a wealth of relevant synergies, valued at over €450m from the third year of operation post-closure.

"To assure leading telecom infrastructure in 5G and FTTH as well as outstanding service in Spain, we need strong operators with sustainable business models," said Meinrad Spenger, chief executive officer, MasMovil.

"The combination of Orange and MasMovil would be beneficial for the consumers, the telecom sector and Spanish society as a whole."

Moreover, the deal also includes a clause allowing for a potential initial public offering in future, with Orange having the right to buy a controlling share of the business at a fixed share price.

If merger goes ahead, the entity will be large enough to challenge hegemony of Telefónica. Spain's third place player, Vodafone, had also previously been tied to merger talks with MasMovil.

All of Spain's operators have been under increasing financial pressure in recent years, due in part to the expensive rollout of 5G and fibre. This has led to profit margins becoming slimmer.

EC clears Iliad acquisition of UPC Poland

The European Commission (EC) has cleared the acquisition of UPC Poland by French telecommunications group Iliad from Liberty Global, saying the purchase would not raise competition concerns.

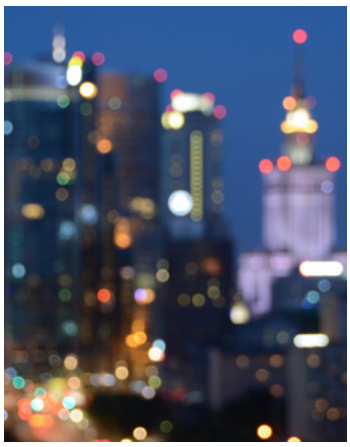
Explaining its decision, the executive branch of the European Union said it will see only minor overlaps in the selling of mobile, broadband, audio-visual services and multi-play services.

The acquisition of Warsaw-based UPC is part of Iliad's plans to bolster its position in Poland.

Additionally, the acquisition will not stifle access to the wholesale mobile network market, says the EC.

Iliad and Liberty Global struck the purchase agreement in September 2021 for the sum of zł7bn (US$1.6 bn).

The French firm only entered the Polish market in 2020 when Iliad acquired the country's second-largest operator Play. UPC Poland will become a subsidiary of Play on completion of the acquisition.



MNO Veon finds 'alternative routes' to move cash amid Russia sanctions

Ukraine's largest mobile network operator (MNO) Veon has "alternative routes to move cash", after its boss warned that providing full-year guidance would be "irresponsible" in light of Russia's invasion of its neighbour.

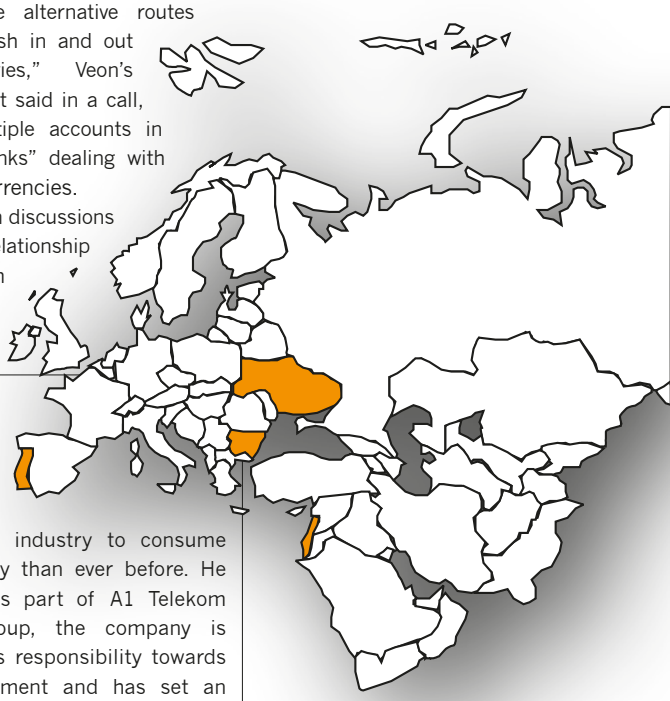
Russia and Ukraine, where Veon operates the Beeline and Kyivstar mobile networks respectively, are the company's two biggest markets, followed by Pakistan and Kazakhstan.

The Bermuda-registered company, whose Ukrainian mobile network is "completely running" with 4,000 people on ground, according to its chief executive officer Kaan Terzioglu, said it was closely monitoring sanctions imposed on Russia.

The European Union, along with the United States and other Western partners, said on Saturday it would cut off a number of Russian banks from SWIFT, the secure messaging system which allows banks to connect for rapid cross-border payments.

"We have alternative routes to move cash in and out of countries," Veon's management said in a call, citing "multiple accounts in multiple banks" dealing with different currencies.

"We are in discussions with our relationship banks from different countries on how we can mitigate any kind of changes in the SWIFT regulation but so far, it is functioning."



A1 Bulgaria inks solar deal with Renalfa

Telecommunication service provider A1 Bulgaria has signed a deal with domestic clean energy investment group Renalfa for solar energy, as well as operations and maintenance services.

The long-term power purchase agreement (PPA) will see a photovoltaic plant in south Bulgaria with a peak capacity of 33 MW set to supply A1 Bulgaria with 20 GWh of electricity per year for the next decade.

Renalfa will also provide the so-called sleeving service to A1 via its subsidiary Toki.bg. Sleeving is the process of transforming the pay-as-produced PV profile of the generation project into the consumption schedule of the telecom through the electricity market. This is the first such agreement on the Bulgarian market.

With a sleeved PPA, the buyer gets electricity through an intermediary which handles the transfer of both energy and money, bears the wholesale price change risk and is responsible for buying balancing power.

"Climate change is arguably the biggest challenge of the 21st century," said Alexander Dimitrov, chairman of the management board and chief executive officer of A1 Bulgaria. "While digital technologies can support sustainable development, the unprecedented global data usage during the Covid-19 pandemic has caused our industry to consume more energy than ever before. He said that as part of A1 Telekom Austria Group, the company is aware of its responsibility towards the environment and has set an ambitious environmental target: reducing CO2 emissions to net zero by 2030. "This will be achieved by decreasing our own carbon footprint and gradually switching to energy from renewable sources," Dimitrov concluded.

A1 Bulgaria offers mobile and fixed services, high-speed broadband internet, satellite TV, own interactive TV platform, sports channels, financial services, ICT, cloud, and IoT solutions to more than 4.8 million customers.

IP Telecom expands Portuguese fibre network

IP Telecom has commissioned Nokia to extend its fibre optic network around metro areas in Portugal, with a key emphasis on quantum security.

The Finnish tech firm will supply IP Telecom with networking equipment to build an encrypted optical data centre interconnect (DCI) solution. The network will use 100Gbps and 200Gbps data rates and will apparently be ready to deliver 400GE services in the future.

Nokia says there has been a rise in sophisticated data theft and the line encryption is supposed to protect against unauthorised data tapping in the fibre optic network.

Its kit will provide as part of the deal the 1830 Photonic Service Switch (PSS), 1830 Photonic Service Interconnect – Modular (PSI-M) optical transport platforms and the 1830 SMS secure management server.

The 1830 SMS platform is where the security number crunching happens. Running the encryption of the optical links from central location, Nokia says the solution gives 'immediate protection against highly sophisticated brute-force attacks, including threats from emerging quantum computers.'

IP Telecom has data centres in Lisbon, Porto and Viseu, and this network expansion will allow it to reach out to additional nodes throughout Portugal.

"Nokia's modular optical networking solution allows us to easily upgrade each customer's cloud DCI as needed and at the same time, ease any concerns about data protection," said Pedro Mendonça, IP and telcos director at IP Telecom. "The encryption capabilities are a differentiator for us."

Israel's Partner Communications Q4 profit jumps

Partner Communications, Israel's second-largest mobile operator, reported a sharp rise in fourth-quarter profit, boosted by revenue gains in its mobile and internet services while expenses declined.

The company said it earned ILS77m shekels (US$24m) in the October-December period, compared with ILS5m a year earlier.

Revenue rose 6% to 853 million shekels, helped by subscriber growth in its fibre optics network, TV and mobile offerings, as well as demand for its cellular roaming services from tourists after Israel reopened its borders to foreign tourists.

Its mobile subscriber base reached 3.02 million, up 187,000 customers in 2021, for a market share of 28%. The number of fibre-optics subscribers rose to 212,000 last year, while it had 374,000 internet customers and 226,000 subscribers to its TV service.

NTC launches 4G at popular religious site

State-backed Nepal Telecom (NTC) has introduced a 4G service in Pathibhara, a popular religious site in the country's Taplejung district.

This enables the visitors to the precious heritage site to enjoy high-speed broadband connections on their devices.

Yogesh Bhattarai, a UML politician and former minister of culture, tourism and civil aviation published the news in a Facebook post.

He added that the 4G launch in the area will allow visitors to post their photos and videos online. The service launch has been the result of a long effort by the state-backed operator, Nepal Telecom (NTC), he said.

Pathibhara is one of Nepal's most popular religious heritage sites, located at 3,794 m elevation in Taplejung, a district in eastern Nepal.

Thousands of devotees visit the site every year. However, the lack of mobile broadband had kept the people at a disservice for so long. Now, with NTC-backed 4G in the area, the visitors will have reliable fast broadband. They can connect to the internet and communicate while they are at and around the site, the operator said.

TM deploys IP CORE network of the NGN

Telekom Malaysia Berhad (TM), the largest wireline operator in the country, has partnered with China's ZTE Corporation to deploy the service provisioning of its IP CORE network of the NGN (Next-Generation Network).

TM NGN is the first backbone transport network to deliver high-speed mobile services in Malaysia, including home broadband, voice, enterprise private line, network leasing, CDN, and wireless (4G/5G) backhaul.

A press release distributed by ZTE said, with rapid development and commercial use of 5G worldwide, Malaysia started large-scale transport network construction in 2021.

"With strong product competitiveness, customised functions, and reliable delivery capabilities, ZTE won the entire IP CORE network bid and a 30% share of IPRAN bid in February 2021," the release said.

ZTE provides its 2T/slot multi-service router ZXR10 M6000-S to build NG CORE, HSE, and AGG sites in the NGN. It provides an innovative satellite router solution composed of ZXR10 M6000-S and ZXCTN 6120 H-A for AGG sites, providing a large quantity of GE interfaces to implement large-scale access to home broadband and enterprise private lines. Meanwhile, ZTE employs the ZXCTN 6100H series supporting Tbit access to build CSR sites, offering flexible slicing for next-generation transport.

In addition, ZTE provides an advanced network design for the existing network interconnection and smooth service transition. Its management and control system can implement fast end-to-end service provisioning, flexible network tuning, simplified O&M, and differentiated SLA guarantee, to help TM build an intelligent large-scale full-service transport network.

Dialog becomes 'first in south Asia to trial 5G SA'

Dialog Axiata, Sri Lanka's largest mobile network operator (MNO), claimed it has become the first company in South Asia to successfully trial the most advanced 5G Standalone (5G SA) network.

The MNO said that with this successful 5G SA trial the island nation's connectivity provider further advanced the nation's 5G journey and would enable more advanced use cases that required 5G SA support.

According to a press release, 5G SA can bring more advanced features in 5G, which enable use cases such as autonomous driving and enhanced real-time immersive services. "It will open up innumerable next-generation opportunities for enterprises and bring forth the fourth industrial revolution (4IR) that will catalyse ground-breaking innovations," it said.

"The successful trial of the 5G Standalone network marks a key milestone in the advancement of connectivity infrastructure, not just in the country, but also in the South Asian region," said Supun Weerasinghe, group chief executive of Dialog Axiata. "We at Dialog are proud to propel our nation amongst our global peers to achieve yet another region-first in technology, where the evolution of our 5G architecture will enable us to provide even better services to our customers".

Reliance Jio to land cable in Maldives

India's largest mobile operator Reliance Jio said it would land multi-terabit India-Asia-Xpress (IAX) undersea cable system in Hulhumalé, Maldives.

The high capacity and high-speed IAX system will connect the reclaimed island directly with world's major Internet hubs in India and Singapore.

Jio's IAX project will land in the Maldives in collaboration with Ocean Connect Maldives, the company said in a statement.

The IAX system originates in Mumbai in the west and connects directly to Singapore, with branches including additional landings in India, Malaysia, and Thailand.

The India-Europe-Xpress (IEX) system connects Mumbai to Milan, landing in Savona, Italy, and includes additional landings in the Middle East, north Africa, and the Mediterranean.

IAX is expected to be ready for service end-2023, while IEX will be ready for service in mid-2024.

"These high capacity and high-speed systems will provide more than 200Tb/s of capacity at speeds of 100Gb/s, over 16,000 kilometres," Jio said in a statement.

Q&A

Eugina Jordan
vice president marketing
Parallel Wireless

What was your big career break?

Let me tell you. It happened when Starent's CEO Ashraf Dahod gave me an opportunity. The story goes like this ...

At the age of 37, newly single, with a new mortgage, & a 2-year old son counting on me to provide for him, I realized that as an EA, I had little opportunity to advance.

On a mid-winter afternoon in 2007, I marched into my CEO's office determined to ask for his support.

Thoughts raced through my head. I had heard about an entry-level marketing job that sounded like an opportunity for career growth. I had been considering my options carefully & going back to school was not financially viable in my present circumstances, but this job...this job felt like something to help me grow. I knew that given the chance; I would succeed. All I needed was a chance to prove myself. All I needed was a "yes" from my boss, the CEO.

But I am his EA, I support the whole executive team. Will he let me go?

Anxiety roiled in the pit of my stomach as I walked into his office. I remember the way the sunlight streamed through the window across his desk like it was yesterday. His answer had the power to be life changing.

I took a deep breath, and with no preamble, before I could change my mind, I told him, "There is an opening in the marketing department, and I want a transfer."

He studied me for what felt like an eternity, then he smiled, and said, "I would miss you, but I cannot be selfish and stop your growth."

I didn't even realize I was holding my breath until I felt it whoosh out of me at his answer.

And just like that, with one simple "yes," I got my biggest career break.

With that one simple "yes", I took the first step of my journey to becoming one of the best marketers in the tech industry & a C-level female executive.

And make no mistake, it was hard work. For a full year, I did both jobs—EA & marketing, learning all I could about the marketing profession, while as a single mom, raising my son.

I did not know back then that one day my story of "asking for more" might help others: other single moms, other immigrant women, other women struggling to make ends meet in entry-level jobs...in short, other women who want more. Other women just like me.

It's taken me 14 years since that mid-winter day, when I asked for a job, I wasn't sure I deserved, but each day, I make a conscious choice not to hide the extraordinary light of my true self and perform to my best ability.

Who was your hero when you were growing up?

My mom has been always my hero. She has been gone 10 years now. We fell out of touch during the last years of her life, but her unconditional love, and the hard work she demonstrated and taught me made me who I am today.

She got to be the person she was because she was a single mom to twin daughters in communist Russia. She worked extremely hard. Every weekday, she got up in the dark at 5 AM to get ready for work, then get on a bus for an hour-long ride to be at work by 7 AM. She was working as a secretary making just enough to cover basic food and clothing needs and we had hard times making ends meet. That meant that sometimes we had to borrow macaroni from the neighbors or walked to a place instead of riding a public bus. But she never gave up hope and she never allowed my sister and me to give up hope. When Russia was going through turmoil in the early nineties, she knew that her daughters "deserved better." She sold what she could, an apartment, her jewelry, so her daughters could immigrate to Canada, because she believed we deserved better, and we could only build a better life in a free world.

Never in my wildest dreams did I, an immigrant woman and a single mother, imagine that I would become who I am today, a C-level executive.

All because of those words that my mother said to me when I was growing up "you deserve better". Because of those words I would dream the biggest dreams.

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

A Hollywood actress! I still have some time to fulfill that dream once I retire from telecom though.

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

"Don't act like a victim." This means that a person is always in control of their life. We cannot blame others for us not getting to our goals.

If you could live anywhere, where would you choose?

Anywhere where there is no snow. I grew up in Russia, then lived in Canada and now I have been living in New England for 20+ years. So, dealing with winter and all that cold and snow is getting old. I would love to live somewhere closer to the ocean (if I can afford it). The sounds and the smells of the ocean are very calming.

At some point in my life, I thought that I would go back to the big city life eventually, with lots of things happening. I have been living in the small-town USA now for almost half of my life and I appreciate the serenity and simplicity of that life. So, I have realized that small town is where I belong, just not with the snow.

Which law would you most like to change?

I would change any law where the government tells people what to do with their bodies. For example, the Due Process Clause of the Fourteenth Amendment to the U.S. Constitution provides a fundamental "right to privacy" that protects a pregnant woman's liberty to choose whether or not to have an abortion. And we still have many countries preventing women in 2022 (!) the right to choose what to do with their bodies.

What would you do with US$1m?

Let me tell you. First, I would give some scholarship money to my nephews and nieces. Student debt can cripple a young person when they get out of college. So, by giving them the scholarship money, my hope is to give them a leg up and start their adult life after college in a better position than many.

Secondly, I would donate to programs that help with food insecurity for school age children. My husband grew up very poor and the only meals he got were the meals that he got when he went to school, on the weekends he often went hungry. And he grew up in Massachusetts! During Covid when the schools were closed and just like my husband experienced, children did not have access to food, I drove food early in the morning to central locations where parents can pick the meals up.

Thirdly, I would establish a charity where I can help immigrant women like me to create better lives.

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

That would be Princess Diana. I relate to her as she was a simple girl and once, she fell in a position of power, she made sure she used it for good, to make an impact on the world.

Which place must you visit before it's too late?

I miss traveling ... My job and my personal passion for travel took me to many different places across the world, from Brazil to Japan. I am always fascinated by new cultures and excited to meet new people. I would like to go back to Paris and Venice. I also would like to visit Australia and the Pacific islands. Who am I kidding? There is not a particular place, I want to see all the 7 wonders of the world, all 1000 places a person should visit. Sign me up! ■

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