For communications professionals in the southern Asian region

SOUTHERN ASIAN WIRELESS COMMUNICATIONS

Q1 2022 Volume 15 Number 1

- Land mobile radio trends in southern Asia
- Is this the start of a new 'space race'?
- Country focus: Nepal's 5G strategy

TETRA TO LTE SMOOTH MIGRATION

PROVIDES **TELEVISION, INTERNET, CORPORATE AND GOVERNMENT SERVICES** ACROSS THE MIDDLE EAST, NORTH AFRICA AND BEYOND.

Es'hailSat Key Services Include

- TV BROADCASTING
- PLAYOUT
- VSAT
- MOBILITY SERVICES
- TELEPORT SERVICES
- CORPORATE NETWORKS
- TELECOMMUNICATION SERVICES
- GOVERNMENT SERVICES

Space to deliver your vision

www.eshailsat.qa

Es'hailSat سهيل سات

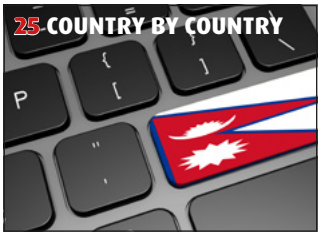
Qatar Satellite Company الشركة القطرية للأقمار الصناعية

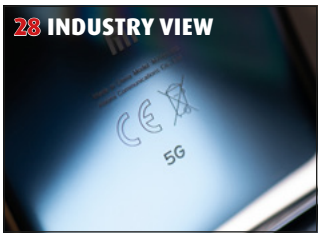
SOUTHERN ASIAN WIRELESS COMMUNICATIONS

Q1 2022
Volume 14
Number 5

KADIUM

CONTENTS





5 NEWS
- Cambodia delays launch of national internet gateway
- NTC launches 4G at popular religious site
- Nokia and Teletalk roll out 5G in Bangladesh
- ASEAN gets 'first' 5G smart hospital

12 WIRELESS BUSINESS
- Telenor completes Myanmar exit
- Saudi Telecom acquires Pakistani tower firm
- EU telcos look to Phillipines
- ATC appoints new CEO

19 FEATURE
Are we at the start of a new 'space race'?

25 COUNTRY BY COUNTRY
Nepal's 5G strategy in 2022

28 INDUSTRY VIEW
5G: insights from APAC

28 WIRELESS SOLUTIONS
- Mining tools
- 'High-end routers'
- 'Breakthrough next-gen VSAT platform'
- Optimised for IoT applications in the world?

31 WORLD NEWS
- Hawaiian Telecom's US$100m fibre investment
- Cellnex unveils Ireland IoT plans
- Israel's Partner Communications sees Q4 boost
- Orange and MasMovil talk Spanish merger

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

EDITORIAL:
Editor: **Robert Shepherd**
Designer: **Ian Curtis**
Sub editor: **Gerry Moynihan**
Contributors: **Ken Rehben, Martin Jarrold, Amit Somani, Ali Ahmed Al-Kuwari, Richard Swardh, Sharyn Nerenberg, Sébastien de Rosbo, Ludvig Landgren and Richard Jacklin**

Editorial enquiries:
roberts@kadiumpublishing.com
Tel: +44 (0) 1932 481729

ADVERTISEMENT SALES:
Sales: **Kathy Moynihan**
kathym@kadiumpublishing.com
+44 (0) 1932 481731

Production & circulation: **Karen Bailey**
karenb@kadiumpublishing.com
Tel: +44 (0) 1932 481728

Publishing director: **Kathy Moynihan**
kathym@kadiumpublishing.com
+44 (0) 1932 481730

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.

Cambodia delays launch of national internet gateway

The government of Cambodia has pushed back the implementation of its planned National Internet Gateway (NIG), which was due to launch in February.

Speaking to Nikkei Asia, Ministry of Posts and Telecommunications (MPTC) spokesman So Visothy said that the gateway's launch had been delayed "due to the disruption caused by the spread of the Covid-19 pandemic."

It was due to go live February 16.

The NIG is a controversial move by the Cambodian authorities that will see all domestic and international internet traffic routed through a single state-controlled point. The government claims that the NIG will facilitate national revenue collection as well as strengthen national security.

However, critics argue that it will in practice allow authorities to silence dissent and political opposition by affording it greater powers of surveillance and censorship.

It has also been reported that the Asia Internet Coalition (AIC) has claimed that the NIG represented a threat to freedom of expression and user privacy in Cambodia, arguing that it could also be used to block citizens' rights to internet access.

Nokia and Teletalk roll out 5G in Bangladesh

Nokia and Teletalk, Bangladesh's largest telecommunications service provider in the country, have launched the country's first 5G network in Dhaka.

The south Asian nation is joining more than 60 other countries with the fifth generation of mobile internet connectivity. Bangladesh introduced 3G cellular technology in October 2012 and 4G technology in February 2018.

This latest move is a step that sets the foundation for next-generation mobile services.

Bangladesh has 17.69 million cellular subscribers and 12 million mobile internet users among four cellular operators, according to latest figures provided by the Bangladesh Telecommunication Regulatory Commission (BTRC).

Only 28% of subscribers have used 4G networks, while the adoption of smartphones is 41%. It is understood that the technology is set to change how people use their phones and consume data for consumers and businesses.

Users will benefit from faster internet and smoother telecommunications services after introducing the 5G technology.

The commercial test will be rolled out through a cluster-wide deployment in the Dhaka metropolitan area at 200 locations by 2022, focusing on commercial and government offices.

The technology will help develop smart manufacturing through cloud-based wireless robotic control, wireless electronic healthservices, and live broadcasting in social networks.

"We're thrilled to be the first company in Bangladesh to deliver 5G, as part of our broader vision for enhancing connectivity," said Shafin Ahmed, CEO of Teletalk. "5G is a major milestone for us and we look forward to furthering our efforts on introducing innovative technologies that improve the lives of consumers."

In the initial deployment phase, Finnish tech giant Nokia will provide equipment from its latest ReefShark System on Chip-powered AirScale equipment portfolio, including its 5G AirScale Digital Baseband Unit with a plugin capability to add capacity where it is needed.

It will also supply its high-performance 64TRX AirScale MIMO adaptive antennas to cover all deployment scenarios, including dense-urban environments and wide-area coverage.

Nepal hands Indian travellers digital payment access

Indian visitors to Nepal will no longer need to carry physical cash thanks to a new cross-border payment system based on interoperable and mobile first technology.

The National Payment Corporation of India (NPCI) and International Payments Limited (NIPL), the international arm of National Payments Corporation of India, have partnered with Gateway Payments Service and Manam Infotech to deploy a unified payment interface (UPI) in Nepal.

This means travellers can simply make payments by scanning quick response (QR) codes.

It is viewed as major step forward for Indians travelling north as there are restrictions on the use of high denomination IC notes in Nepal. The system is currently not on a reciprocal basis as Nepalis are not allowed to make payments through Bharat-QR while travelling to India.

The new system is expected to be introduced in May.

"We are all set to launch the system after three months," Anu Maity Shakya, marketing head of Gateway Payment Service, told the Kathmandu Post.

The system will enable payments for larger digital goods and boost interoperable real-time person to person (P2P) and merchant payment transactions (P2M) in Nepal.

The UPI is a real-time payment system that provides person to person and person to merchant transactions simply, safely and securely in India.

The government move to ban the use of high denomination Indian currency notes in Nepal had drawn criticism particularly from the tourism industry because Indian bills were widely used in Nepal.

However, according to Nepal's central bank, the system is currently not on a reciprocal basis and Nepalis are not allowed to make payments through Bharat-QR while travelling to India.

"We have sought permission to allow digital transactions for Nepalis while travelling to India as well. We are waiting for the response from Nepal's central bank," added Shakya.

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
Email: **bram.semeijn@ams-ix.net**

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**

BTRC offers more relief for mobile users

The Bangladesh Telecommunication Regulatory Commission (BTRC) has introduced big changes to mobile data and other packages, in a bid to provide more relief to mobile users.

This move will cut the number of offers and enable customers to carry forward their unused data of the current deal to the next one.

The new guideline from the regulator means operators have to bring down the number of packages from a few hundred packages to 95.

"There are numerous packages in the market that are creating confusion and customers are complaining about this at the ministry, call centre of the BTRC, and during public hearings," said Subrata Roy Maitra, vice chairman of the BTRC. "We have taken this step to simplify data packages so that customers can easily select their desired packages."

According to the new directives, an operator can offer 95 packages across three categories: regular packages, customer-centric special packages, and research and development packages.

The number of regular packages, which are aimed at all types of subscribers, could be as high as 50, while the number of customer-centric special packages, which are for targeted groups of customers, will be a maximum of 35.

Others will come in the research and development category to allow operators to analyse the viability of packages and trends.

Every package will contain four types of duration: three, seven, 15 and 30-day.

"While the company has complied, we also believe in understanding customers' needs and package simplification diversification accordingly for ensuring a better customer experience," said Md Hasan, head of external communications at Grameenphone.

Ankit Sureka, head of corporate communications and sustainability of Banglalink, added that the number of products should not be limited, as people now expect customised products. "So, customers should be given the liberty of choosing the best ones that could be unique for them," he said.

Thanks to the new directive, the unused data can be carried forward if customers purchase the same package before its expiration, regardless of duration.

From March 1, the customers can transfer the unused data and talk-time to the same package if it is bought before the existing offer expires.

Furthermore, the data can be transferred to the new package under the other three types of duration.

Thailand unveils ASEAN's first 5G 'smart hospital'

Thailand has become what it claims to be 'the first country' to launch ASEAN's first 5G Smart Hospital following thanks to a new digital health care facility in Bangkok.

The collaboration with Huawei aims to bring patients a more convenient and efficient experience by introducing 5G, cloud, and artificial intelligence (AI) technologies. This includes promoting Siriraj Hospital to become a model for smart hospitals in Thailand and the world.

According to a press statement from Huawei, the 5G smart hospital project is the "first and largest" in Thailand and the Southeast Asian region. The facility will also showcase various innovative digital applications.

Huawei and the Siriraj Hospital strengthened their partnership around 5G since the pandemic started. A five-year memorandum of understanding of an immediate upgrade of the hospital's previous infrastructure and the conduct of demonstration exhibitions and events to promote 5G was signed by both parties recently.

The Siriraj World Class 5G Smart Hospital project comprises nine sub-projects comprising smart emergency rooms and emergency medical service. There is also a pathological diagnosis system with 5G and AI, an AI platform for non-communicable diseases, smart inventory management, a permission-based blockchain for personal health records, smart logistics with a 5G self-driving car, multi-access edge computing and a hybrid cloud system.

"The Thai government understands the importance of technology, successfully drafting a plan for Digital Thailand," said Thai prime minister and minister of defence general Prayut Chan-o-cha said during his address on the national policy on 5G technology

and digital economy. "The utilisation of digital technologies and 5G in the medical field will help reduce processes for medical personnel, decrease overall risk, and will improve the effectiveness and efficacy of healthcare for patients."

He added that Siriraj 5G Smart Hospital is a pilot project, which will expand to other hospitals in the future.

Siriraj Hospital and Huawei also stated that they established a Joint Innovation Lab to incubate innovative 5G applications. It is expected that 30 5G medical applications will be incubated and promoted nationwide in 2022.

Heli-SGI selects Skytrac for its helicopters

Indonesian company Heli-SGI, which provides aviation services to the mining, tourism and VIP sectors, has selected Skytrac Systems to provide Iridium Satcom terminals to enable mission-critical capabilities onboard their Bell 212 and Bell 412 helicopters.

Operating in terrain with active volcanoes, jungle landscape and rugged mountains, Heli-SGI said it needed reliable satcom connectivity. It chose satellite transceiver, the ISAT-200A, for a cost-effective and powerful Satcom and onboard server solution. The multifunctional system will enable Heli-SGI with real-time two-way voice and text communications to connect air and ground assets, even under challenging weather conditions, with 99.9% uptime reliability, it said.

Skytrac's ISAT-200A will also deliver automated flight following to track fleet activity and accurate flight data monitoring (FDM) tailored to Heli-SGI's operational needs through Skytrac's SAFR FDM software platform leveraging the ISAT-200A's data acquisition capability.

"Operating in the largest island nation in the world has unique challenges," said François Lassale, chief executive officer at Heli-SGI.

Skytrac will also provide Heli-SGI with the DAL-200 access link, extending the ISAT-200A's onboard capabilities with wireless in-flight and post-flight connectivity for seamless FDM data downloading post-flight. Heli-SGI will also utilise Skytrac's CRU-200 inflight camera to discreetly record hours of high-resolution cockpit audio-visuals to enhance their flight data monitoring program.

"Our solutions are designed to offer secure and reliable communications for mission-critical operations anywhere on earth," added Jan van der Heul, vice president of sales and marketing, Skytrac. "We look forward to expanding our Asia-Pacific presence and supporting Heli-SGI in their mission to provide safe and efficient aviation services to their customers."

India should take lead in 6G and set direction for world, says telecom minister

India's union minister for communications, electronics and information Technology Ashwini Vaishnaw said his country should take lead in the 6G technology so that it can set the direction for the whole world.

Addressing the inaugural session of a Telecom Disputes Settlement and Appellate Tribunal (TDSAT) seminar in the capital New Delhi, Vaishnaw explained how southern Asia's largest and most populous nation was in a position to be a pioneer when it came to the next-generation technology.

"We have already initiated work on 6G also, as we have made very good progress on 4G, 5G," he said. "We should take lead in the 6G technology otherwise what's the point of being called a nation of talents? A talented nation should be thinking in that way where it takes the lead, sets the goal and sets the direction for the whole world."

He also said that India wants to overhaul the regulatory structure to facilitate the development of technology and interaction with industry as a partner and not as adversaries. Another claim Vaishnaw made is that that the system entangled everybody and some people who did not have sufficiently strong values created a mess which defamed the telecom market in the past.

"Can we have one regulator for the entire digital world?," he said. "Those kinds of things are happening. We need to really overhaul our entire regulatory set-up in terms of the legal structure, regulatory execution structure, the way that government bodies think, people are trained, the way we interact with the industry-- not as adversaries but as partners. That's the next big thing that we have to do."

Vaishnaw added that a consortium of 11 institutions including IIT Chennai, IIT Kanpur, IIT Bombay, IISc Bangalore has created 4G technology in 14 months with expenditure in the region of US$30m, which is a very small fraction of the cost at which dominant players in the telecom sector have created the technology.

Earlier this year, the University of Oulu in Finland said it was collaborating with Jio Estonia, a subsidiary of India's Jio Platforms to explore digital opportunities in 6G technology. Jio already has an active development program for its 5G RAN and Core Platforms. This collaboration not only extends its 5G capabilities in exploring use cases in the 6G era but also builds India's presence in the 6G technology race.

Cambodia: MekongNet and IPification deliver mobile authentication

Cambodian ISP and A2P messaging aggregator MekongNet joined forces with mobile identity solutions provider IPification to provide seamless mobile data authentication services in Cambodia.

The former is offering the full suite of IPification mobile identity solutions under its Mobile Data Authentication service. These include fraud prevention services such as SIM swap detection and device change detection, as well as faster user acquisition and QR code login processes.

IPification provides mobile IP address-based authentication and identity solutions which allow users to confirm their identity via a mobile ID key consisting of their IP address, phone number, and device data. The firm's collaboration with MekongNet will drive the deployment and adop-tion rate of this service by enterprises in Cambodia.

Albert Lee, head of MekongNet's value added services, said:"IPification's platform allows us to further enhance our focus on security by providing the newest innovation in phone number veri-fication."

After partnering with IPification in 2021, MekongNet has since developed API/SDK enhancements around the firm's solution, including account management, deployment and operations support features, service monitoring, and reporting. This has allowed MekongNet to offer new and existing clients the flexibility to use both SMS & Mobile Data Authentication service under a single billing and account. Various implementation scenarios and hybrid models can also be provided by MekongNet to ensure each client can use the service effectively for their specific processes.

"MekongNet has a huge presence in Cambodia, and I am very happy that together we can enable top-notch security in the enterprise landscape in the country," added Stefan Kostic, IPification CEO. "Apart from security, I am looking forward to seeing the effects frictionless mobile authentication and phone verification will have on productivity within these companies."

Airtel joins SEA-ME-WE-6 consortium

Indian giant Bharti Airtel has joined the SEA-ME-WE-6 undersea cable consortium, participating as a major investor.

The company said it is participating as a "major investor" in the SEA-ME-WE-6 and is anchoring 20% of the overall investment in the cable system, which will go live in 2025.

It added that it had joined the 'SEA-ME-WE-6' consortium to scale up its high-speed global network capacity to serve India's fast-growing digital economy.

Other consortium members of SEA-ME-WE-6, of which there are 12, include Bangladesh Submarine Cable Company, Dhiraagu (Maldives), Djibouti Telecom, Mobily (Saudi Arabia), Orange (France), Singtel (Singapore), Sri Lanka Telecom, Telecom Egypt, Telekom Malaysia, and Telin (Indonesia).

In terms of reach, the 19,200 Rkm (route kilometres) SEA-ME-WE-6 will connect Singapore and France and will be among the largest undersea cable system globally.

"Through SEA-ME-WE-6, Airtel will add a significant amount of 100 TBps capacity to its global network," the statement said.

Airtel has acquired one fibre pair on the main SEA-ME-WE-6 system and will co-build four fibre pairs between Singapore – Chennai – Mumbai as part of the cable system. Airtel will land the SEA-ME-WE-6 cable system in India at new landing stations in Mumbai and Chennai.

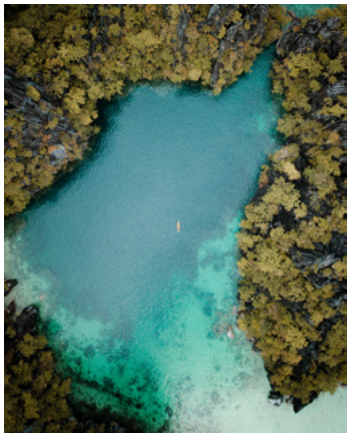
PLDT and Telesat make Philippines' first successful broadband connection using satellite

PLDT of the Philippines and global satellite operator Telesat of Canada have successfully conducted the Asian country's first on-orbit testing of high-speed broadband connectivity with Telesat's Phase 1 Low

A first for Telesat with any operator in southeast Asia, the testing was conducted from Feb 11 to Feb 19 by PLDT's Technology Strategy and Transformation Office using an 85-cm Intellian parabolic antenna stationed at the PLDT office in Greenhills, San Juan to connect to the LEO satellite.

The live test and demonstration saw broadband download and upload speeds of 100.46 Mbps and 95.62 Mbps, respectively, and roundtrip latency of 26.53ms, which enabled a seamless meeting experience over Microsoft Teams, as well as mobile online gaming without lag, video streaming without buffering and Facebook Live, via LEO satellite.

This successful test signals opportunities for PLDT and its wireless unit Smart Communications (Smart) to use innovations in the satellite industry to expand their high-speed mobile and Internet services to more hard-to-reach communities across an archipelago like the Philippines.



India orbits three satellites in first space launch since failure

An Indian radar satellite and two rideshare payloads rode a Polar Satellite Launch Vehicle into orbit, which saw India return its space program to flight after the failure of a different type of rocket in August 201

The mission lifted off from the Satish Dhawan Space Center, located about 50 miles (80 kilometers) north of Chennai on India's east coast, at 7:29 p.m. EST Sunday (0029 GMT Monday).

India's PSLV flew in its most powerful configuration, called the PSLV XL, with six strap-on solid rocket boosters. The boosters and core stage motor, also burning pre-packed solid propellants, sent the rocket downrange over the Bay of Bengal.

Four of the boosters fired to assist the core stage in the first segment of the mission. Two more air-lit boosters ignited 25 seconds later to give the rocket two million pounds of thrust at maximum power.

Six boosters burned out and jettisoned in the first minute-and-a-half of the mission, then the core stage consumed its propellant and separated at T+plus 1 minute, 49 seconds. A fraction of a second later, the rocket's Vikas liquid-fuelled second stage engine powered up to continue the climb into space.

The PSLV deployed the EOS 4 spacecraft nearly 18 minutes after liftoff. About a minute later, the rocket released its two rideshare payloads. On-board cameras showed the satellites flying free of the rocket, and officials from the Indian Space Research Organization confirmed the PSLV reached an on-target orbit.

MobileMark

antenna solutions

STAY CONNECTED

with Advanced 5G Antenna Solutions for Autonomous Vehicles, Public Transportation, Precision Agriculture, Medical IoT,Robotics, and More!

www.MobileMark.com

Contact Us Now:
+44 1543 459555
enquiries@MobileMarkEurope.co.uk

Pakistan's Ufone one of the best in APAC for improvements in 3G/4G speeds

Mobile users in Pakistan are experiencing across-the-board improvement in their average download and upload speeds in recent months with Ufone leading its competitors, according to new data.

In its third Global Awards report, the UK-based Opensignal compared growth statistics from around the world to recognise operators who offer the best mobile experience to their users.

It found that 14 out of the 30 Global Rising Stars for the Download Speed Experience come from the Asia Pacific (APAC) region.

Pakistan's Ufone ranked among the top 30 Global Rising Stars in the 'Download Speed Experience — Most Improved' category. Ufone's Download Experience (50.7 percent) was 1.8x times higher than the global average of 28%.

Ufone has been named a Global Rising Star in two categories: Download Speed Experience and Upload Speed Experience, as the average download and upload speeds observed by Opensignal users on its network rose by 50.7% and 58.5%, respectively between H2 2020 and H2 2021. The latter was the third highest percentage increase seen in the APAC region, behind Sri Lanka's Airtel (275%) and India's Jio (62.7%).

Likewise, the report observed that Ufone's 'Upload Speed Experience – Most Improved' statistics have improved as well. Ufone's Upload Speed Experience (58.5%) was 2.79x times higher than the global average of 20.9%.

The report observed that the Global Rising Stars for Upload Speed Experience increased their scores compared with the previous year by at least 9.2% points more than the global average of 20.9%.

Elsehwhere, the Asian Global Rising Stars for Upload Speed Experience include Globe in the Philippines, together with Smartfren and Telkomsel in Indonesia.

Talking critical

Ken Rehbehn, principal analyst at CritComm Insights, contributing principal analyst for Omdia

Land mobile radio trends in southern Asia

Even as high-speed mobile cellular data services expand, the tremendous utility offered by simple push-to-talk voice communication is tough to beat. In the 2021 edition of Omdia's Licensed Mobile Radio Report, the installed base of these handheld portable and vehicle-mounted radios continues to expand. The lurking question, however, is what changes are in store as push-to-talk over cellular gains traction in the years to come.

Land mobile radio spans a variety of radio technologies, ranging from simple analog systems to complex, computer-driven digital trunked networks. But at its core, the land mobile radio market is focused on a fundamental goal: simply and efficiently getting a voice transmission to a group of listeners. For the user, the key to simplicity is a single button that initiates the voice transmission.

Push-to-talk simplicity wins

The simplicity of push-to-talk means that a user does not have to unlock a screen, look up a number, or make multiple button taps when initiating a conversation. This feature makes push-to-talk the preferred voice communications tool for enterprise teams on construction sites, airfields, bus fleets, and other dispersed work activities. All users need to hear the same message, and push-to-talk makes this possible. Likewise, in public safety agencies, the simplicity of push-to-talk is an essential feature that aids police and fire operations.

Land mobile radio (LMR) systems deliver the push-to-talk capability with narrowband radio signals in the spectrum below 1 GHz. As a narrowband technology, data transmission capabilities are minimal. Digital LMR systems such as TETRA or DMR support data transmission, but only as short messages or packet data. Older analog LMR systems are voice only, with no data functionality. For heavy data sessions supporting graphics, cloud applications, or video, users must turn to LTE or 5G mobile broadband technologies.

Beyond south Asia, analog begins to fade

Omdia's Licensed Mobile Radio Report tracks the market dynamics for push-to-talk radio communications. The 2021 edition concludes that the installed base of LMR users continues to grow, even as shipments slipped during the COVID era. Omdia found more than 53 million LMR active users at the end of 2020, an increase of 1.7% from the prior year.

Significantly, Omdia found 65.4% of the total 2020 installed base were digital subscribers. These users will continue to grow, increasing by 35.8% in 2025. The reason for the growth is the efficiency and expanded features enabled by digital land mobile radio systems.

Southern Asia presents a mix of technologies

As a large and diverse region, mobile radio technology adoption across South Asia varies significantly from country to country. Most nations across the region embrace high-end TETRA systems for sensitive communications facilities supporting the emergency services or rail systems. However, the trend is not universal as these digital systems tend to get deployed in major cities. Outside the cities, vast rural areas remain analog radio strongholds.

Pakistan and Bangladesh embraced different approaches towards LMR technology evolution. Early Huawei eLTE public safety deployments in Pakistan shifted notions about digitalization technology for large police forces. While almost 90% of Pakistan remains operating analog LMR systems, digital trunked systems such as TETRA remain limited. On the other hand, Bangladesh has embraced economic DMR Tier III digital trunked systems for some of the nation's public safety communications requirements. Conventional DMR Tier II systems are now appearing in rural areas of the nation.

LTE and 5G disruption

Though land mobile radio systems have proven valuable tools for group coordination, the data limitations and high deployment costs are forcing enterprises and governments to shift from narrowband to broadband technologies. For enterprises, a variety of push-to-talk over cellular solutions are available that operate over mobile LTE networks. Government users are turning to a standardized mission-critical push-to-talk over cellular technology that incorporates quality of service, priority, and preemption.

Unfortunately, however, a shift to LTE presents a particular challenge to public safety operations. The ability for users to communicate with nearby users, even when the network is not reachable, is paramount but not available with today's LTE devices.

Though the 3GPP standards effort that created mission-critical push-to-talk included the proximity services feature as a direct mode alternative, the capability has not entered the market. This gap means that the shift towards LTE and 5G depends upon hybrid push-to-talk devices that can handle LTE and a legacy LMR radio technology. Most major LMR device suppliers now provide hybrid options.

As the options for land mobile radio expand and users contemplate a future shift towards LTE and 5G communications, the fundamental need for simple group voice communications remains. For many years, and in many parts of the world, narrowband land mobile radio coverage will remain the foundation for enterprises and public safety.

Across South Asia, however, government regulators and policy-makers have not charted a course towards mobile broadband adoption. With no spectrum set aside or moves to engage national mobile network operators, speedy adoption of high-speed data services supporting the emergency services is unlikely.

CritComm Insights and Omdia are both members of TCCA www.tcca.info

Communicate Smarter

Sepura's SC20 TETRA hand-held is resilient, intelligent and durable, providing outstanding performance for mission critical communications, while keeping staff safe. Features includes:

- Enabling wireless programming
- Deploying intelligent applications
- Creating automated actions

Visit **www.sepura.com** to see how our solutions support public safety organisations around the world.

sepura

Going further in critical communications

Telenor completes Myanmar exit

Telenor will receive payments for the sale of its Myanmar operations in instalments over the next five years, it said following the completion of the transaction.

The Norwegian operator in May 2021 wrote down the value of its Myanmar business by US$751m and later said it would be sold for US$105m to Lebanese investment firm M1 and local firm Shwe Byain Phyu.

"Telenor has received US$50m at closing," the telco said in a statement. "The remaining US$55m shall be received in equal instalments over the coming five years."

The firm added that due to the uncertain political situation in Myanmar, the deferred payment will not be recognised in the accounts at closing.

Prompted by last year's military coup in the country formerly known as Burma, the sale has been criticised by some Myanmar civil rights groups and Norwegian politicians who fear it puts the data of 18 million people within the junta's reach.

The Norwegian Forum for Development and Environment (ForUM) condemned the sale and Kathrine Sund-Henriksen, ForUM's general manager called it a dark day for Telenor and for Norway as a human rights nation.

"Ever since the sale was announced last summer, we have worked to prevent it because there is a big risk that the military junta will have access to sensitive personal information and use it to persecute, torture, and kill regime critics," said Sund-Henriksen. "Incredibly, Telenor is going through with a sale that has been criticized by human rights experts, civil society, Myanmar's government in exile, and even their own employees in the country."

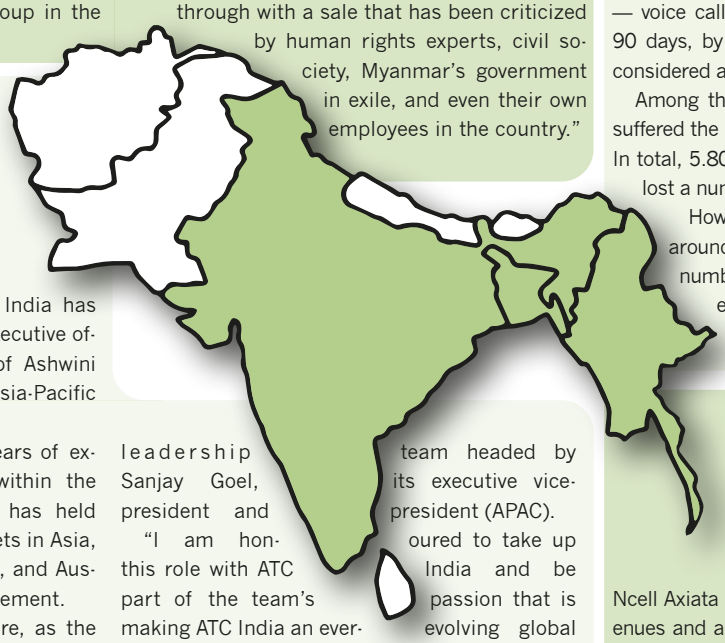
ATC appoints new CEO

Telecom infrastructure provider ATC India has named Sandeep Girotra as its chief executive officer (CEO) as a direct replacement of Ashwini Khillan, who is moving into a new Asia-Pacific (APAC) regional leadership role.

The new incumbent has over 30 years of experience across various functions within the telecom and technology space. He has held leadership positions in multiple markets in Asia, including India, ASEAN, Japan, Korea, and Australia/New Zealand, ATC said in a statement.

He joins ATC India from STL, where, as the chief sales officer, he was responsible for steering global growth for the India-headquartered company.

He will move to India from his current location in Singapore and will form part of the APAC leadership team headed by Sanjay Goel, its executive vice-president and



"I am honoured to take up this role with ATC India and be part of the team's passion that is making ATC India an ever-evolving global infrastructure provider," said Girotra.

ATC India is an indirectly-held subsidiary of American Tower Corporation. Since its launch in India in 2007, the company's portfolio has expanded to about 75,000 towers.

Saudi Telecom acquires Pakistan tower firm

Saudi Telecom (STC), the Middle East's most profitable business, has expanded beyond its core mobile-network business with an investment in Pakistani tower company, Awal Telecom.

The buyer, which is controlled by the kingdom's sovereign wealth fund, said one of its units had bought a full stake in the business but declined to comment further.

This deal shows STC is looking to build new business lines and rebuild a footprint outside Saudi Arabia after forays into Indonesia and Turkey did not yield the results it had hoped to achieve.

In 2020, it also proposed to acquire a majority stake in Egypt-based Vodafone Group Plc in a deal that would have been valued at US$2.4bn. However negotiations were abandoned a few months later without the reason being disclosed.

As part of a strategy to diversify into new areas, STC said in February that it plans to spin off its submarine cables and points-of-presence assets into a new firm. It spun off its internet services unit and listed it on the Saudi stock market last year.

The firm's also building out its digital bank, STC Pay, and invested in a US$500m venture capital fund launched in 2017.

Bangladeshi telcos lost 27 lakh internet users in December

Bangladeshi telecom operators lost more than 27 lakh internet users and five lakh mobile SIM subscribers in December last year, according to the country's regulator.

The number of total internet users in the country was recorded at 12.38 crore at the end of December, which was some 12.66 crore in November, the Bangladesh Telecommunication Regulatory Commission (BTRC) report says.

The number of broadband internet users, however, has increased slightly.

When counting the number of subscribers, BTRC takes into account any activity at least once — voice calls, data use, SMS — in the preceding 90 days, by a biometric verified SIM, for it to be considered active.

Among the country's operators, Grameenphone suffered the biggest loss in mobile SIM subscribers. In total, 5.80 lakh users left the operator. Robi also lost a number of subscribers.

However, Banglalink and Teletalk added around one lakh subscribers, bringing the number of mobile users to 18.10 lakh at the end of December, which was 18.15 lakh in the previous month.

Ncell records NP41bn revenues

Ncell Axiata ended 2021 with NPR 41 billion in revenues and also maintained its EBITDA at 58%, according to its latest yearly report.

The private operator generated a total of NPR41bn and 45 crores of revenues in 2021. As per the report, Ncell collected NPR10bn, 19 crore, and 70 lakh revenues in the final quarter (Q4) of 2021. This marked an increase of 2.3% against the Q3 revenues of this same year.

However, comparing the total yearly revenue against 2020, Ncell's total collection this year dropped by 1.14%. In 2020, Ncell ended its annual book with 41 billion 92 crores and 80 lakh. Ncell's year-to-year revenue dropped by 47 crores, and 80 lakh. They blamed the marginal slump on "lockdown and stiff competition".

However, the telco did maintain a healthy EBITDA (earnings before interest, taxes, depreciation, and amortisation).

The company says, "whilst revenue continues to be dragged by lockdown and competitive pressures, we are encouraged by the growth in EBITDA on the back of cost controls and its healthy EBITDA margin."

Ncell managed 56.725% of EBITDA in 2020. In 2021, the company grew to 58.15% marking a YoY increase of 1.4%.

Smart Axiata records FWA growth

Cambodian operator Smart Axiata said it saw a significant rise in fixed wireless access (FWA) users during 2021, with the service attracting more than 100,000 registered users for that year.

Available in more than 20 of the country's provinces, the growth of FWA has been driven further by Huawei's FWA Suite, a solution that enables end-to-end (E2E) service automation.

The pandemic dramatically increased demand for home broadband connectivity in Cambodia as people began to work from home, learn online and remain connected to the outside world.

Fibre to the home (FTTH) deployment in the country faced multiple roadblocks during the country's lockdowns, so FWA became a natural and obvious choice for consumers.

Smart Axiata and Huawei are collaborating to bring premium broadband services and experiences to more unconnected homes as well as people in Cambodia. They have jointly leveraged the FWA Suite to facilitate home broadband service provisioning during the pandemic.

During Smart Axiata's initial trials in the capital Phnom Penh, network experience improved by more than 12%. This whole process of iterative optimisation for the whole city took only seven days to complete, which is far lower than any other traditional optimisation method. To date, the automatic provisioning of FWA services has reached the level of L3 autonomous driving network and the FWA Suite has been commercially deployed in more than 80 networks in 35 countries worldwide.

Singtel names two non-exec directors

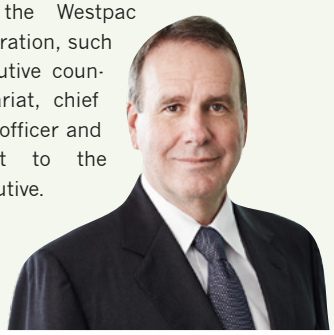
Singtel has confirmed the appointment of two non-executive and independent directors.

Yong Hsin Yue and John Arthur took the positions January 1, 2022, following a review of the recommendation by the Corporate Governance and Nominations Committee.

Previously, Yong served as managing director for Kuok (Singapore) since January 2017. In addition, she held positions in Wilmar International Limited as general manager for Special Projects from July 2015 to December 2016 and in Goldman Sachs (Singapore) Pte.

She was also appointed as an alternate director of PACC Offshore Services Holdings Ltd., in January 2018 and director the following May. PACC, however, was delisted from the exchange in February 2020.

Arthur has served as a member of the Optus Advisory Committee for Singapore Telecommunications, as well as chairman, Sydney Metro since 2019. From December 2008 to 2020, he also held various executive positions in the Westpac Banking Corporation, such as group executive counsel and secretariat, chief operating officer and consultant to the chief executive.



Ericsson says it won Malaysia 5G contract on merit

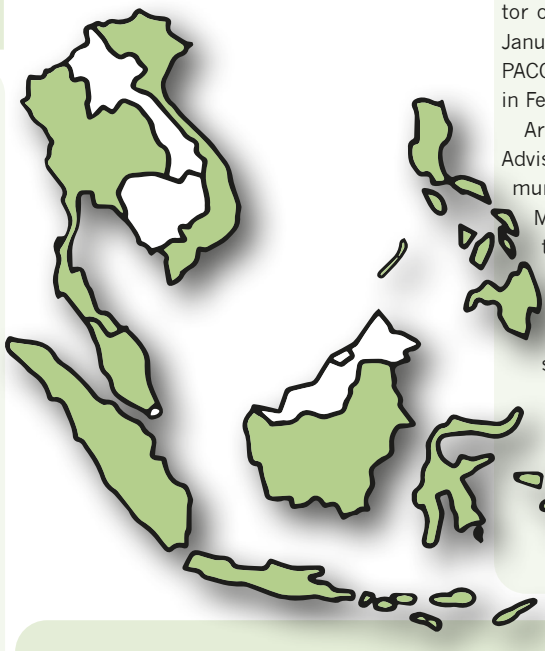
Swedish tech giant Ericsson has asserted that its 5G contract with Ministry of Finance Malaysia-owned Digital Nasional Bhd (DNB) was won fairly, following allegations of possible financing of terrorism in Iraq and wide-scale corruption in more than a dozen countries.

The statement came a day after PH member of parliament for Lembah Pantai Fahmi Fadzil urged the Malaysian Anti-Corruption Commission (MACC) to probe the US$2.6bn government contract and collaboration between DNB and Ericsson. He argues that based on a news report, the telco had allegedly breached pacts and had compliance issues in a deal in Iraq in 2019.

The 5G contract, according to DNB in July 2021, was awarded following the strictest standards of governance as advised and facilitated by EY Consulting, Ericsson said in a statement.

DNB had said Ericsson's offer was judged to be the most competitive as it ranked first in all three key components of the tender evaluation criteria.

The accusations come at a turbulent time for Ericsson after it admitted that suspects some of its employees in Iraq may have bribed members of the ISIL (ISIS) armed group to gain access to certain roads in the country.



'Five EU telco firms keen on Philippines', says official

Five European telecom companies are expected to invest in the Philippines once Malacañan Palace finally signs the amended Public Services Act (PSA), according to the archipelagic country's trade and industry secretary.

In a radio interview, Ramon M. Lopez said that "easily" four to five foreign telco firms in the technology sector are just awaiting President Duterte's signature of the amended law after it was ratified by the Senate. He expects the PSA to become a law within 30 days. Lopez said the telcos are from Germany, United Kingdom and Denmark but did not give further details.

The amended PSA opens public services to majority foreign ownership, including telecommunications.

"More players, more competitive," Lopez said as he noted complaints of poor internet service and high cost.

The German-Philippine Chamber of Commerce and Industry (GPCCI – AHK Philippinen) expects vast amount of foreign business opportunities as soon as the Amendments to the PSA is signed into law.

"Aside from locally introducing international public service standards, we would also like to present sustainable business practices in the liberalized sectors," said GPCCI executive director Christopher Zimmer. "We certainly welcome the positive developments as we look forward on the establishment of much-needed reforms to enable foreign investors to participate in critical and fundamental areas of local public services."

Ooredoo Group appoints new Maldives CEO

Ooredoo Group announced the appointment of Khalid Hassan Al-Hamadi as chief executive officer (CEO), Ooredoo Maldives, while former managing director and CEO, Najib Khan, re-takes on a new role within the group.

Al-Hamadi joined Ooredoo in 2010, where he was most recently senior director consumer sales, achieving substantial revenue for the company and significantly enhancing digital sales. His appointment aligns with the core element of Ooredoo Group's corporate strategy, which includes a firm commitment to investing in its people and recruiting, training and developing the next generation of talent from within its markets.

"I am delighted to announce the appointment of Khalid Hassan Al-Hamadi as CEO of Ooredoo Maldives, following an already impressive career within the group," said Aziz Aluthman Fakhroo, managing director, Ooredoo Group. 'I also take this opportunity to thank Najib Khan, who will now join the group team, for his great achievements during his years of service as MD and CEO of Ooredoo Maldives."

PTCL asks power watchdog to put telecoms in industrial category

Pakistan Telecommunication Company Limited (PTCL) has requested National Power Regulatory Authority (NAPRA) to revise its tariff from commercial to industrial category as it has considerably increased the electricity bills of the company exchanges across the country.

In its petition submitted to NEPRA, PTCL said that company is facing great financial implications due to the increased electricity bills and because of heavy loss the company is forced to close approximately 10 exchanges every month.

The telecommunications sector was declared as "Industry" by the Ministry of industries and Production, Government of Pakistan dated 20-4-2004. PTCL, therefore, was entitled to benefit from all the concessions available to "Industry" including industrial tariff of electricity for its exchanges and other installations, said PTCL in its tariff petition for revision of tariff from commercial to industrial category.

The existing tariff of PTCL connections was industrial tariff, B-1, and B-2 up to November 2001, then the Ministry of Water and Power, on August 08, 2001 revised the tariff A-2(a) up to 20 kW and A-2(b) above 20 kW separately.

TM net profit hit by impairment

Telekom Malaysia Bhd's (TM) net profit for the fourth quarter ended Dec 31, 2021 (4QFY21) dropped 69.2% to RM79.94m from RM259.44m over the same period of the previous year.

The operator attributed the drop in profit to a RM122m impairment of the group's mobile assets, the accelerated depreciation that the group commenced in the current quarter as well as provisions recognised for restoration of services and network affected by floods at the year end.

These were in addition to a RM37.9m lower foreign exchange translation gains on borrowings, and the application of the 33% Cukai Makmur tax rate on the group's deferred tax liabilities.

However, quarterly revenue, was up 5.06% to RM3.15bn from RM3bn over the same period the year before with strong increase in revenue from internet and data.

TM group chief executive officer Imri Mokhtar said the telco's revenue growth is expected to remain intact, in line with its market guidance, which is between low- and middle-single-digit growth. Earnings before interest and tax (EBIT) are projected to be more than RM1.8 billion, driven by TM's three lines of business: Unifi, TM ONE and TM Wholesale.

"We expect to invest between 14% and 18% of our revenue this year on capital expenditure, reflecting our continued commitment to reinvesting in growth areas, capability, and capacity building, as well as enhanced customer experience," Mokhtar said.

For full FY21, TM's net profit slipped nearly 12% to RM895.21m from RM1.02bn in the previous year, although its revenue grew 6.35% to RM11.53bn from RM10.84bn.

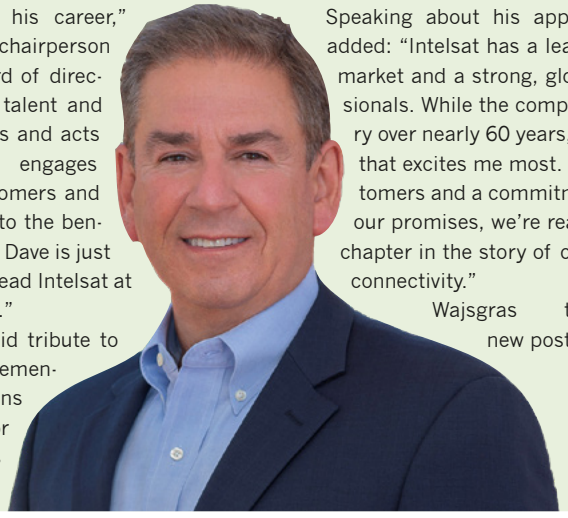
Intelsat names Wajsgras new CEO

Intelsat, the international satellite services provider, has tapped David Wajsgras as its next chief executive officer (CEO). He succeeds Stephen Spengler, who announced his planned retirement in October 2021.

Wajsgras has two decades of experience at the senior executive management level, providing operational, strategic and financial leadership in both the commercial and defense industries. He most recently served as president of the global, US$7.5b, advanced-technology Intelligence, Information and Services (IIS) business at the former Raytheon Company, now part of Raytheon Technologies. Before joining Raytheon as chief financial officer, Wajsgras was executive vice president and chief financial officer at Lear Corporation and held other key operations and leadership roles.

"Dave Wajsgras is a results-oriented leader with a great track record of performance throughout his career," said Lisa Hammitt, chairperson of the Intelsat board of directors. "He develops talent and builds teams, thinks and acts strategically, and engages positively with customers and other stakeholders to the benefit of the business. Dave is just the right person to lead Intelsat at this important time."

Hammitt also paid tribute to Spengler "for his tremendous contributions to the company for 18 years and his steady and accomplished leadership over the past seven. His retirement is well earned".



Speaking about his appointment, Wajsgras added: "Intelsat has a leading position in the market and a strong, global team of professionals. While the company has made history over nearly 60 years, it's Intelsat's future that excites me most. With a focus on customers and a commitment to delivering on our promises, we're ready to write the next chapter in the story of communications and connectivity."

Wajsgras takes on his new post April 4.

Nokia 'to replace' Huawei in Vodafone Idea's India network

Nokia has is in talks to replace Huawei 4G radio equipment from parts of Vodafone Idea's telecom network in India, in one of the largest swap deals on record.

According to newswire Reuters, the deal will see Nokia deploying 12,000 5G-ready radio sites and 4,000 small cells in Vodafone Idea's network in India's capital Delhi.

Telecom operators in India have been reducing their dependence on Chinese firm Huawei after numerous security concerns. Vodafone Idea's move is a blow to Huawei's prospects in the country, telecom experts said, adding more operators may choose to replace the company as supplier.

Huawei said the company doesn't comment on specific projects. Nokia declined to comment, while Vodafone Idea did not respond to requests for comment.

Several countries, including the US, Britain and Sweden have blocked operators from using equipment made by Huawei over security concerns. Huawei has denied the claims.

In a swap deal, an operator changes an existing vendor and Nokia had earlier replaced Huawei gear in operators including BT, Orange Belgium, Proximus in Britain, Belgium and Luxembourg respectively.

Nokia's gear will allow Vodafone Idea to manage 2G, 3G, 4G and 5G networks from the same platform and deployment could start from next month, according to the sources.

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!

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

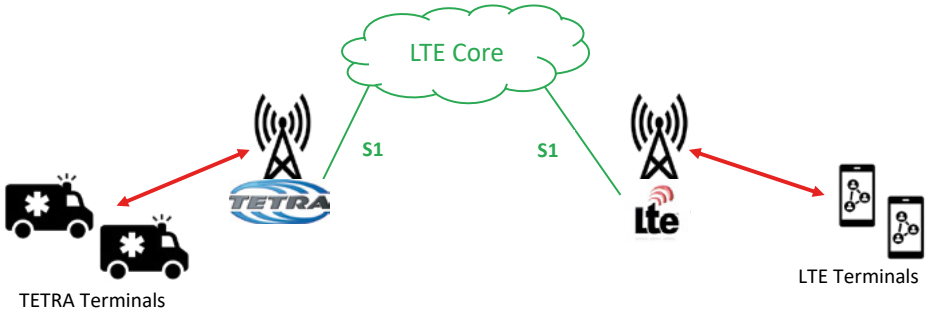


Figure 1: 4G Linked Basic Architecture

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

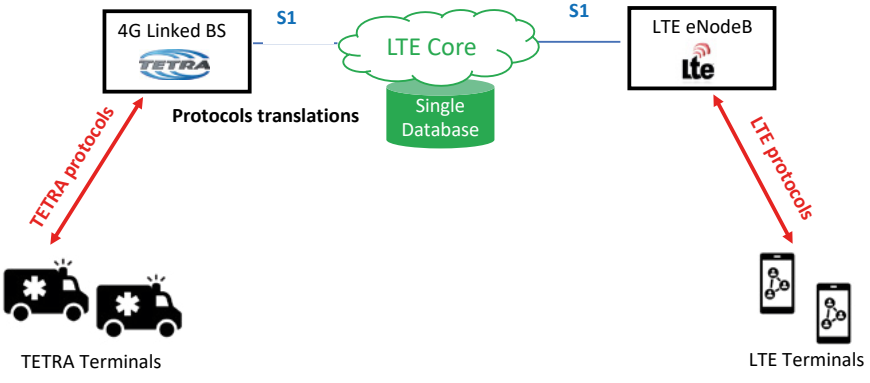


Figure 2: 4G Linked Protocols

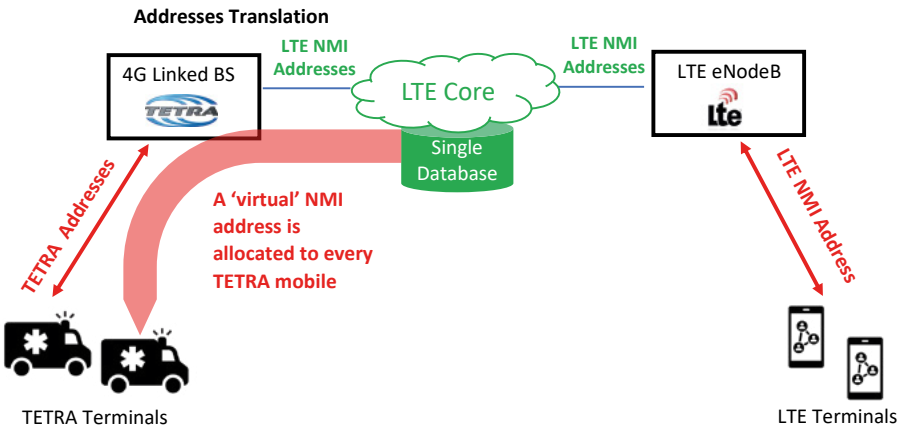


Figure 3: 4G Linked Addressing

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:

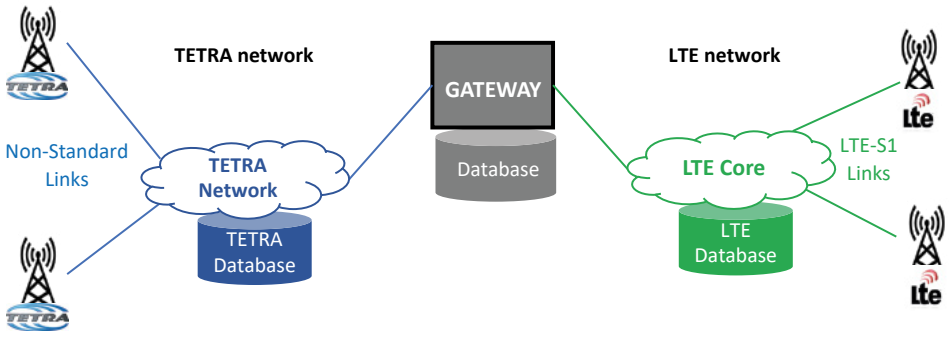


Figure 4: The Gateway Alternative

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.)

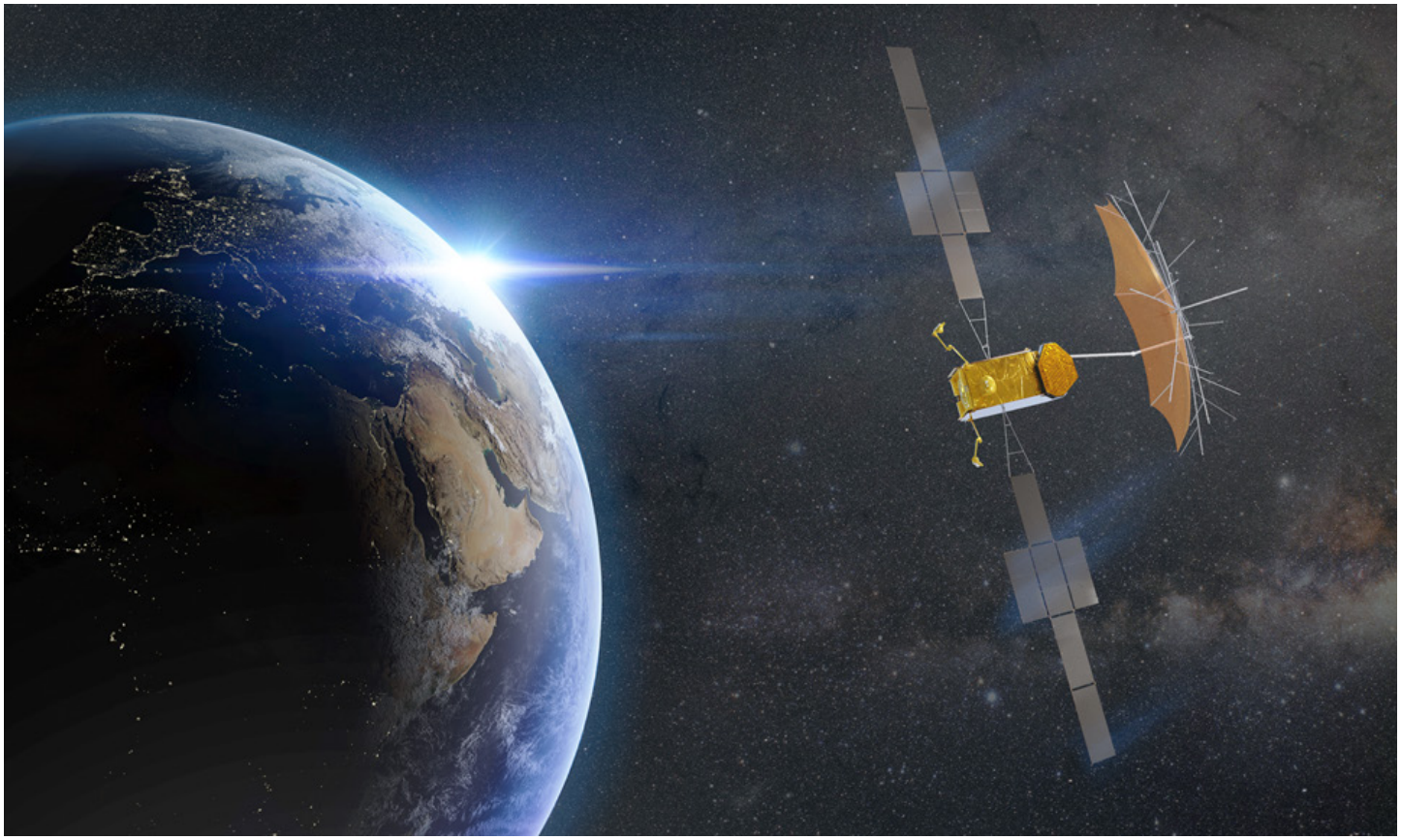
CONCLUSION

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.

Contact: Paul Ward, Sales Director, ETELM
paul.ward@etelm.fr



Is the 'space race' real? If so, how long will it continue?

In recent years, the night sky has changed faster than at any time in human history. But, are we really at the dawn of a space race and will the trend continue in 2022 and beyond? By Robert Shepherd

Readers of a certain age will remember a very different "Space Race" from their youth. You know, the 20th-century competition between Cold War adversaries the United States and what was then the Soviet Union to achieve superior spaceflight capability? For younger readers, the two superpowers were racing to put the first man in space and on the moon.

Decades later, while Russia is focusing more on terra firma and limiting NATO's sphere of influence, countless satellites continue to enter the cosmos at an incredible rate. Add to that the fact billionaire entrepreneurs Sir Richard Branson, Jeff Bezos and Elon Musk have all unveiled space strategies in the past year – be it internet connectivity, space tourism, or just going up there because they can – it has been described by media and those in the industry as a modern-day space race.

To list all the about to be and recently launched satellites – from the last 12 months alone – would require yards of text, but some have secured more press coverage than others.

Musk's SpaceX-operated Starlink is arguably the most talked satellite service in consumer media, but it hasn't been plain sailing for the South African-born American entrepreneur, especially where india is concerned.

Starlink registered its business in India via a local unit, Starlink Satellite Communications Private Limited, to provide broadband and satellite-based communication services. The then Starlink India director Bhargava said Starlink was planning an April rollout, targeting 200,000 devices by December 2022. Bhargava claimed SpaceX had a 100% owned subsidiary in India

and would be able to apply for licenses, open bank accounts and more. Starlink also planned to give 100 free devices to Delhi schools and nearby rural districts. The company offers a latency between 20–40 milliseconds and the internet speeds vary from 50Mbps to 150Mbps.

Post the announcement, Starlink received over 5,000 pre-orders in quick time. However, in late 2021, the Indian goverment said Starlink Internet Services doesn't have the licence to offer services in the country. The Department of Telecom has warned Starlink against taking further bookings. Soon after, Bhargava parted ways with Musk.

Yet while one big player is experiencing teething problems, one satellite service has been described by industry luminaries as the world's "most sophisticated commercial communications satellite" is Inmarsat's I-6 F1.

"Inmarsat has provided global coverage for many years and has put our most concentrated capacity in both L- and Ka-bands over Africa," says Peter Hadinger, chief technology officer, Inmarsat. "I-6 F1 launched in December 2022, will continue this commitment - serving most of Africa and all of south Asia plus the Asia-Pacific region. Inmarsat will publish I-6 F1's coverage map once it is operational in early 2023. I-6 F2 will be launched in early 2023 and will cover all of Africa - further increasing our capacity there."

But why is there so much hype surrounding it?

"Using greater bandwidth, combined with greater power and unlimited beam routing that can match demand second-by-second, even the most congested areas will experience enhanced connectivity," he adds.

Not only are more satellites being launched at a higher rate than ever before, but they are becoming more sophisticated. Is that the clearest indication that we are now firmly in a 21st Century space race?

"More than a space race, these launches and the plethora of satellite constellations indicates that the use of space-based assets as infrastructure for the deployment of broadband services is starting to become mainstream," argues Ali Ahmed Al-Kuwari president and CEO, Es'hailSat. "The erstwhile space race was driven by more of a military and cold war backdrop but this time around, it is commercial competitiveness combined with national pride that is driving this gold rush."

Sharyn Nerenberg, vice corporate marketing and communications, Hughes, "wouldn't call it a new space race" as much as an imperative to bring broadband to unserved markets. "These are large, unserved markets that can be well served by satellite because it reaches places where cable and fibre cannot," she continues. "Research firm ABI predicts the serviceable addressable market for satellite connectivity in Asia and Africa will grow to 169 million and 54.2 million, respectively, by 2026 – much larger an opportunity than in North or South America (29.1 million and 28.2 million, respectively). Africa and Asia have been important markets for Hughes for many years, as we supply satellite ground system technology to many operators in these markets (for example, Omantel in Oman, NCTS in Egypt, and DTP in Indonesia). Our India subsidiary is the largest VSAT operator in that market, and the changing regulatory climate there is opening up


Amit Somani, chief strategy officer, Yahsat

"In even the most advanced nations in terms of telecommunications infrastructure, significant gaps remain, so for those countries with less advanced infrastructure access to broadband is still very poor and therefore the digital divide is an unfortunate reality"

new opportunities for satellite services."

Another big player in the satellite universe is Middle East-headquartered Yahsat, which offers multi-mission satellite in over 150 countries worldwide.

Amit Somani, the company's chief strategy officer admits "it is a very exciting time for the global space industry," and that from space travel to earth observation to satellite communications, "we are witnessing a revolution of sorts, involving an increasing number of players – small start-ups, or larger players, either well-established players such as Yahsat or Inmarsat, or new entrants such as Elon Musk and Jeff Bezos".

That said, Somani, like Nerenberg, says he "would not consider it a race per se, but an opportunity to use space even more than before to provide critical connectivity to nations, businesses, communities and individuals on a global scale".

He continues: "Thanks to evolutions in technology, space is becoming more affordable, and nations and enterprises are realising the massive potential of space."

It's not just the wealthier nations that are behind these satellite launches. Uganda and Kenya have been behind some of the most recent ones. Even Iran harbours ambitions in this space.

So, if it's not a space race per se, why are so many countries investing in the technology all of a sudden?

Richard Swardh, senior vice president premium enterprise and mobile operators, Comtech Satellite Network Technologies believes the want and the need from governments to use space has always been there. "Whether it is for national security interests, earth observation or internet connectivity, what has changed over the last few years is that the cost of launching a satellite has dropped dramatically and there is a greater selection of satellites at price points that are now within reach for more sovereign nations. This is a trend that will continue and we will see more and more countries launch their own satellites."

Martin Jarrold, vice president international programme development, GVF says each country is likely to want to enter this new space race to meet their own particular policy objectives and national requirements (in terms of enhanced communications capabilities, access to nationally relevant Earth observation/remote sensing data, etc.), "and there can be a myriad of facets to this".

"More than a space race, these launches and the plethora of satellite constellations indicates that the use of space-based assets as infrastructure for the deployment of broadband services is starting to become mainstream"

Jarrold adds that the number of smaller space-active nations, many more than just 10 years ago when, among African nations, for example, Nigeria's space agency, NASRDA, was the continent's leading light in satellite remote sensing with the launch of NigeriaSat-2 and NigeriaSat-X. "With payloads of imagers for earth observation applications such as resource

"Whether it is for national security interests, earth observation or internet connectivity, what has changed over the last few years is that the cost of launching a satellite has dropped dramatically and there is a greater selection of satellites at price points that are now within reach for more sovereign nations"

management, mapping and agricultural and disaster management, these two satellites were somewhat prescient of today's even greater need for such orbital assets and have been followed by many other countries in Africa and elsewhere outside of the traditional space nations," he says.

In addition to the small matter of national prestige and competing with their neighbours, Somani thinks there are other elements at play.

"Space is back on national agendas worldwide," he says. "Firstly, from a security perspective, an increasing number of nations are looking to use space to enhance their military capabilities and national security, bringing sovereignty and autonomy in their critical communications. Secondly, from an economic perspective, they know that sovereign satellite infrastructure is required to provide critical communications and fast track digital development."

Lastly, he says, countries perceive the launch and operation of national satellites as important in establishing technological credibility internationally and as a means to showcase national accomplishment domestically, while in parallel nurturing local STEM talent that can subsequently lead to other industrial development.

"In even the most advanced nations in terms of telecommunications infrastructure, significant gaps remain, so for those countries with less advanced infrastructure access to broadband is still very poor and therefore the digital divide is an unfortunate reality," adds Somani. "Satellite increasingly is able to bridge this as part of a multi-technology national connectivity strategy and eco-system."

For Al-Kuwari, the rationale behind so many launches "is quite like what was the competitive nature of access to geostationary orbital slots", now governed by ITU and allotted to each country based on their needs.

"Every country wants to plant their flag in what is essentially a global common i.e. orbits both LEO & GEO being used for telecommunication and earth observation services," he says. "Each country wants to exert its sovereignty in terms of its ability to utilise space-based services and not be dependent on any other country for critical communications or remote sensing type services. Not every commercial venture succeeds and more so in a difficult environment such as outer space and time will tell how many projects truly make it to orbit in a sustainable manner."

So far, we have, thankfully, managed the area of space near Earth without major incident -- even when military tests suddenly produce thousands of new bits of space junk.

Al-Kuwari points to the fact that there are an increasing number of government and non-government organisations who are highlighting these concerns. "It is imperative that nations of the world take the onus to not clog space, much like there are international treaties and agreements to ensure that the waters of the ocean are not clogged by any one country's ships or fishing requirements," he adds. "Longer term, the sustainable use of space will ensure that investments made today are not at risk because of debris collisions and that the space resources, which are for all mankind, are utilized in a fair and equitable manner."

In any field, walk of life, industry, however, one wishes to describe it, the more entrants not only offer competitions, but also cause market saturation. In other words, there are far too many of them. The term synonymous with satellites in space is "clogging" or too much "space junk".

The average person not familiar with satellites would be forgiven for thinking space has infinite, well, space – but it appears clogging is a genuine concern. After all, the atmosphere near-Earth has finite room for satellites to manoeuvre.

But how much of a concern is it? Or do we need to wait until it's a tangible problem like the amount of plastic in the world's oceans and seas?

Jarrold claims there's an estimated 170 million man-made objects in space. Most is junk orbiting the Earth at altitudes that threaten humanity's essential access to useful space. With the density of objects in LEO high enough to cause collisions between objects, he opines that this could cause a self-sustaining cascade, risking exponential

"This is the most exciting time in the space and satellite industry since the 1960s"

increase in the amount of space debris as each collision generates more debris and leads to yet more collisions. "This – the 'Kessler Syndrome' – describes rendering impractical many space activities and the use of satellites in LEO for generations to come," he adds.

As things become more of a problem, international government intervention becomes the norm - just look at the unsuccessful COP26. However, the satellite universe doesn't seem to be panicking just yet and instead focused on more satellites floating above.

Somani says the fact the number of active satellites has more than quadrupled in the last decade is indicative that "this is only the beginning (of a more heated and crowded atmosphere) – as LEO constellations materialise and new applications and uses cases are enabled, we could see thousands and thousands of active satellites".

Jarrold envisages that the space race will be exemplified in multiple spheres, for example: "In the commercial sphere (in satellite communications and Earth observation), government sphere (in increasing numbers of national space agencies), the military sphere (in various types of anti-satellite – A-sat – technology), the research and technology sphere (in satellite future technology demonstrator projects, orbit-based industrial product development and manufacturing in pharmaceuticals and other sectors), the space resources management sphere (orbital debris removal and other debris mitigations, mission extension missions and automated satellite repair, orbital tow trucking) and not forgetting in the entertainment sphere (multi-million-dollar-ticket sub-orbital joyrides and space hotels)."

Al-Kuwari concurs but warns that as we are starting to see with some of the early SPACs, "there will be a certain reality check" that will have to apply to ventures that are trying to solve a problem that may not exist in the first place. "If stock markets are any indication of the availability of funding, it is obvious that there is a good amount of investment out there that is looking for high growth ventures, something that space-based companies promise," he says. "However, the ground realities tend to be very different and when it comes to getting market access, clearing local regulations and dealing with technology limitations of non-standard telecom equipment, a lot of ideas need more work than is initially anticipated."

Jarrold also argues that the international policy discussion and regulatory environment will also become more "heated" during the next year. "Nations, international agencies and organisations and commercial entities [will] become further embroiled in dialogue about not only long-standing issues concerning spectrum access rights and radio frequency interference issues, but also regulation on orbital debris and mitigating the potential of the 'Kessler Syndrome', as well as attempts to prevent A-sat activity," he adds.

Like the others, Nerenberg says she "would not be surprised to hear about new entrants" because "this is the most exciting time in the space and satellite industry since the 1960s".

She concludes: "The innovation that we're seeing realised today is truly remarkable – from the new Low Earth Orbit (LEO) constellations like OneWeb, to our JUPITER 3 satellite, expected to launch in the second half of this year, with more capacity (500 Gbps) than any other commercial satellite to-date."

In the last few weeks, Russia's invasion of Ukraine has, quite rightly, dominated the headlines across the globe.

The race is most definitely on. What's more, it has only just begun.

Nepal initiates 5G trials with commercial services expected mid-2022

Sébastien de Rosbo,
research manager, BuddeComm

Efforts to expand Nepal's telecom sector have faced many challenges over the years. For one, the country's mountainous topography makes it extremely difficult (and costly) to build out the necessary infrastructure. Nepal has also struggled with a series of adverse economic situations, largely caused by political instability.

Because of the first major hurdle, Nepal's fixed-line services are mainly concentrated in the Kathmandu area. Here, teledensity is substantially higher than the relatively meagre coverage available in rural regions. There has been some progress in recent years towards growing the national PSTN, based on a network of digital microwave links. Nepal Telecom has also been active in rolling out a fibre network between the major business areas and various district headquarters around the country. That being said, the overall penetration rate for fixed-line telephony services is still less than 3%. Most voice traffic is channeled via Nepal's mobile networks.

Fixed broadband penetration has also been kept at a low level due to the lack of fixed-line infrastructure. While the government has initiated several programs (as part of the Digital Nepal Framework and the Optical Fibre Backbone Network Expansion Project) in an attempt to address this, however these initiatives have been plagued by delays and a general level of political apathy towards public investment in the sector. The private sector is now starting to take things into their own hands, with telcos investing in a range of fibre networks around the country, and competition is beginning to intensify. For example, low-cost fibre services launched by CG Net during 2021 prompted other ISPs to suddenly be able to provide faster and more competitively priced offers.

As fixed broadband coverage gradually improves, so too has demand for broadband services. This was particularly strongly felt during the Covid-19 pandemic, leading to an additional focus on international internet capacity. Most internet traffic is provided via India, with a few supplementary connections to China. But given Nepal's difficult topographical conditions, these international connections are often disrupted by cable breaks. Pricing and availability is also at

Table 1 – Growth in the number of mobile subscribers and penetration – 2011 – 2026

Year	Subscribers (million)	Penetration	Annual change
2011	13.605	50.3%	47.9%
2012	16.796	62.2%	23.5%
2013	19.865	73.8%	18.3%
2014	23.196	86.2%	16.8%
2015	27.857	103.1%	20.1%
2016	32.498	119.2%	16.7%
2017	37.406	135.4%	15.1%
2018	39.178	139.4%	4.7%
2019	40.793	145.2%	4.1%
2020	38.768	138.0%	-5.0%
2021 (e)	38.302	137.5%	-1.2%
2022 (f)	38.647	137.8%	0.9%
2023 (f)	39.072	139.3%	1.1%
2024 (f)	39.970	141.3%	2.1%
2025 (f)	41.050	142.8%	2.7%
2026 (f)	42.323	144.9%	3.1%

Please note: All $ are US$ unless stated otherwise

Source: BuddeComm based on regulator data

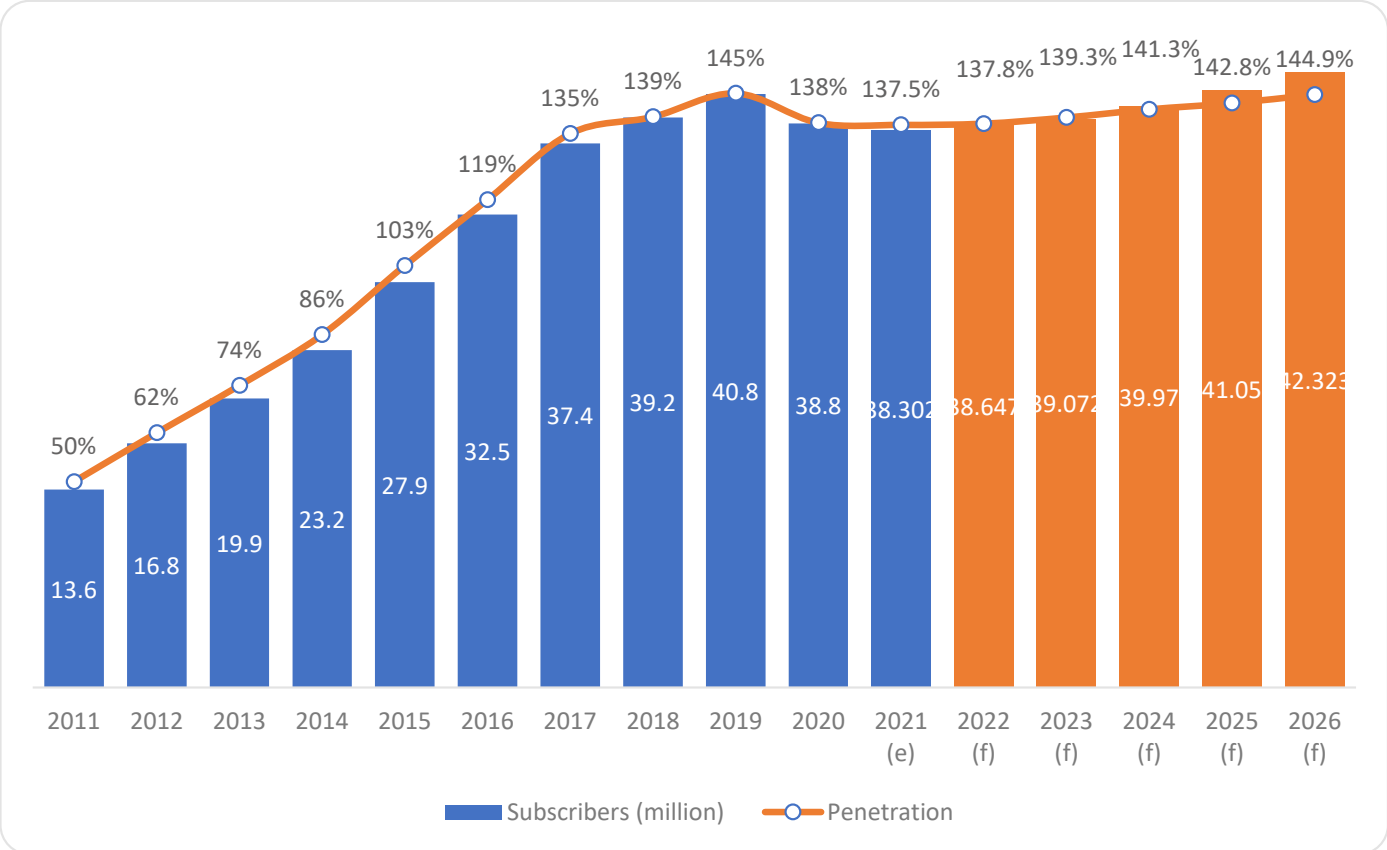
the whim of the Indian and Chinese telcos that are providing the capacity on the cables.

In contrast to the fixed-line market, Nepal is blessed with a relatively well-developed mobile segment. To date, the mobile operators have primarily been focusing on developing LTE networks. But in November 2021, Nepal Telecom received regulatory approval to begin trialing 5G services using spectrum in the 2600MHz band. According to telecom officials, commercial services could be launched as early as July 2022 (assuming those trials are successful).

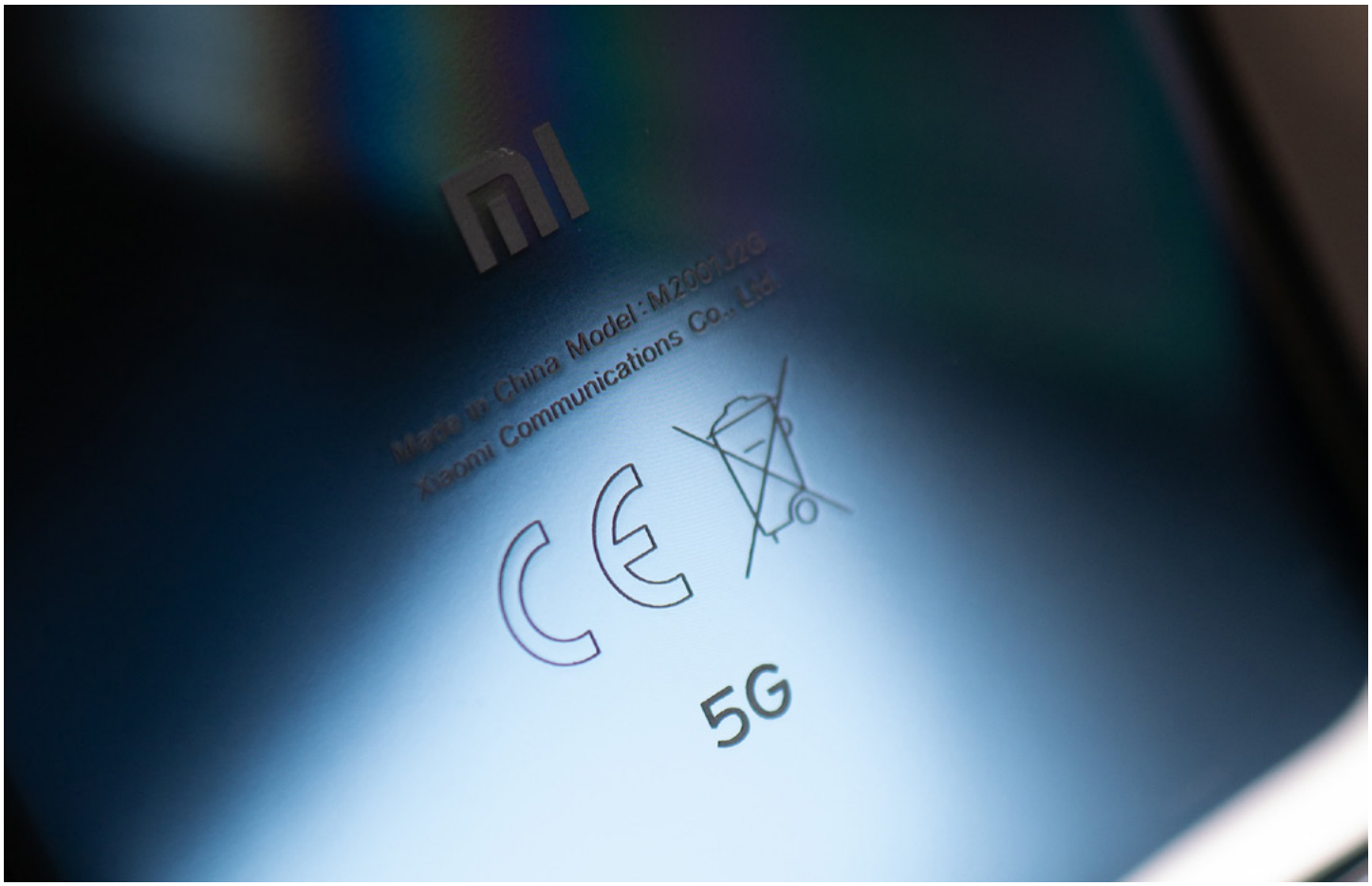
Key developments:

- **Nepal Telecom begins 5G trials in five cities.**
- **Nepal Telecom secures additional 1800MHz spectrum, and reveals plans to close down its WiMAX and CDMA networks.**
- **The regulator allows telcos to re-farm 900MHz spectrum for LTE use.**
- **Nepal's first national satellite will be launched in 2022.**
- **Nepal Telecom launches VoLTE services over its 4G network.**

Chart 1 – Growth in the number of mobile subscribers and penetration – 2011 – 2026



Source: BuddeComm based on regulator data



Starting your journey to 5G core: insights from Asia-Pacific

Before rolling out 5G, every service provider needs a clear network evolution strategy that takes their business objectives and market conditions into account.
Ludvig Landgren, head of digital services, market area southeast Asia, Oceania and India, explains how customers in Asia-Pacific region began their journey to 5G and how individual objectives shaped their path

At Ericsson, we have already deployed 94 live 5G networks across the world, with predictions indicating that there will be more than half a billion 5G subscriptions by the end of 2021. This means on average one million subscriptions are added every day.

It's clear the next generation of networks has arrived. 5G Core (5GC) architecture and 5G radio will open up a new universe of possibilities for communications service providers (CSPs). Yet, the journey from Evolved Packet Core (EPC) to a cloud-native 5G Core will most probably begin from a 4G standpoint.

One of the key advantages of transitioning early to dual-mode 5G core technology is the flexibility for CSPs to achieve their 5G ambitions without disrupting their existing 4G services. 5G and LTE services can then coexist within the same core platform, achieving optimal total cost of ownership (TCO) without the need to run different platforms for multiple technologies.

I previously spoke about how co-creating with our customers is bringing us closer to a 5G future. Having worked closely with two early-

adopters in market area southeast Asia, Oceania and India, I will now share valuable insights about the different ways you can start your journey towards dual-mode 5G Core and how that path can vary depending on your objectives and market maturity levels.

The 5G first mover

For CSPs who are yet to secure 5G spectrum, one way is to focus on the transition to cloud native: infrastructure, applications and operations.

My first example is from a tier one service provider in southeast Asia who needed to improve the operational efficiency of their network. Their existing 4G mobility management entity (MME) deployment was quite brittle and couldn't easily be expanded to meet the demands of their dynamic market. Making all of the preparations so that they could handle both 4G and 5G traffic efficiently and reducing capital expenditure (CAPEX) was a key priority for this customer.

They decided to initiate the modernization of their core network by implementing a cloud native MME that is part of Ericsson's dual-mode 5G Core solution. While introducing the required agility in their 4G network, they were taking their first step in their journey to a cloud-native implementation of 5G core. The dual-mode 5G core deployment will now allow them to smoothly migrate their 4G traffic to 5G functions once the spectrum becomes available in their market.

The established 5G market leader

For CSPs who've secured 5G spectrum, one option is to future-proof their networks by leveraging the inherent benefits of a 5G core implementation.

My second example comes from Australia where Telstra, the country's leading operator, is continuing to push the boundaries of technology. By simplifying its network architecture Telstra is ensuring future competitiveness and reinforcing their market position. Their recent decision to successfully deploy the industry's first live cloud-native container-based Evolved Packet Core for 4G and 5G services is a significant milestone in network orchestration and automation.

Telstra's took up the challenge to build a 5G Core network without duplicating the cost of a separate network while their customers are making the transition from 4G to 5G. In addition, they wanted to offer 5G standalone functionality that would enable them "to create innovative new services and solutions and deliver these much quicker than in the past", according to Nikos Katinakis, Telstra's group executive networks & IT. Ericsson's dual-mode 5G Core solution met these needs by leveraging the duality of the cloud-native network functions during implementation. This enables faster time to market and agile lifecycle management, allowing Telstra to drive new use cases for the enterprise

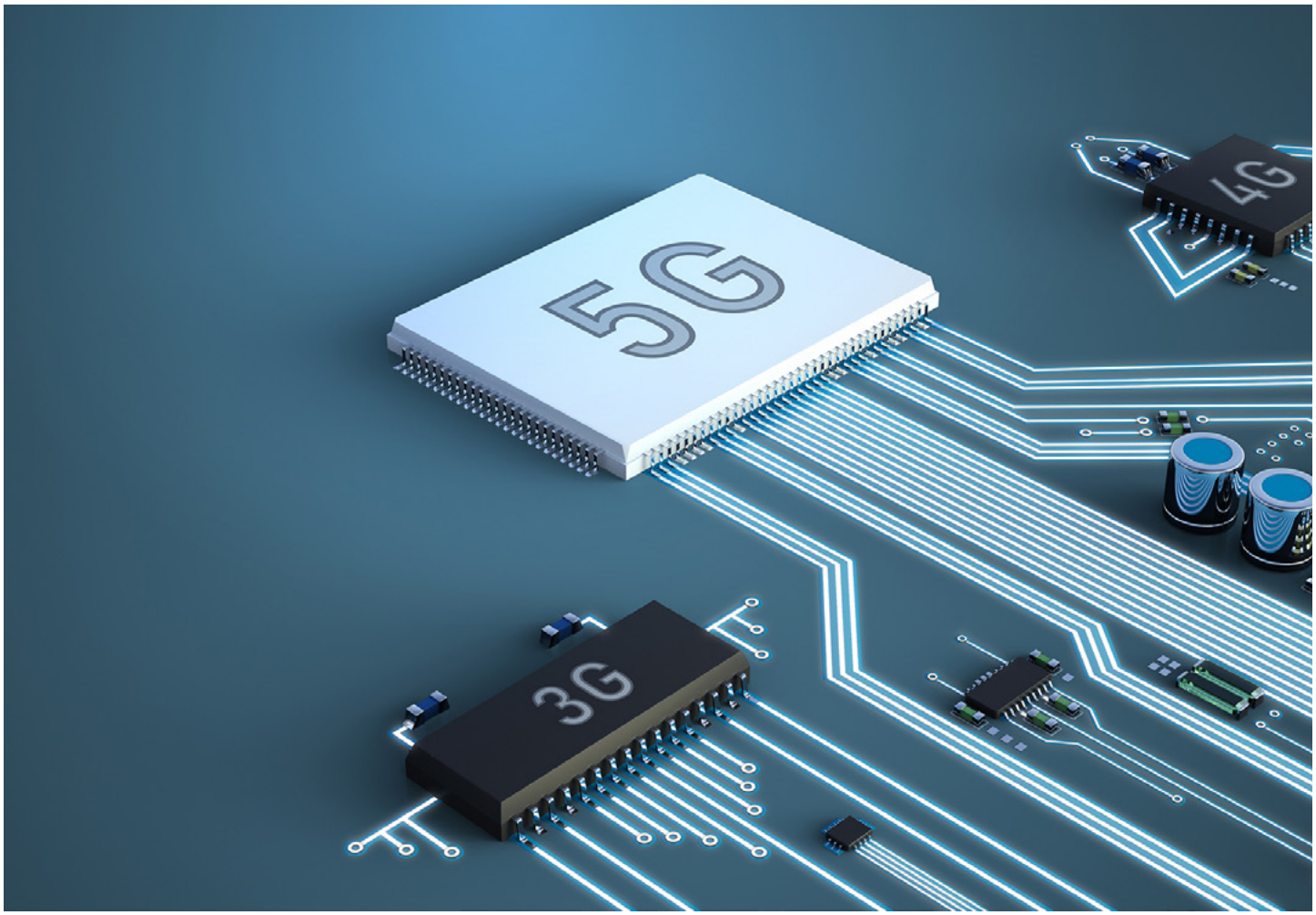
> "My first example is from a tier one service provider in Southeast Asia who needed to improve the operational efficiency of their network"

and dynamic consumer market in Australia. Telstra's recent announcement of a world first record 5G-download-speed highlights their ability to execute on their 5G strategy.

As you can see, even though the different paths to dual-mode 5G Core may vary, there is no doubt about its deployment benefits. Built on cloud native principles in open source and operating across multiple data centres, 5G Core is a fundamental piece of the 5G network that will open up a multitude of opportunities for mobile users and industries.

While an early start will help CSPs ease into a seamless transition, there remains to be flexibility in the implementation of dual-mode 5G Core. It is therefore crucial for CSPs to address their own set of challenges in order to reap the full benefits, which include an increase in operational efficiency with advanced network functionalities as well as a faster time to market for new end-user services.

I hope these journeys that I've shared have inspired you to develop your own unique path to cloud-native 5G Core.



Mining tools HERE

HERE Technologies, the location data and technology platform has partnered with Swedish gear-maker Ericsson to provide the global mining industry with custom mapping capabilities.

The mining industry is in rapid modernisation phase, with smart mining operations projected to increase threefold until 2025. A key driver of this transformation is the access to private cellular networks, enabling safer, more productive, and more sustainable mining operations, through reliable and low latency connectivity. Ericsson's high-performance 5G private networks are purpose-built for mining operations. A business can deploy an on-premise cellular network for its exclusive use. For mining this includes facilities in very remote areas and underground tunnels, both of which are not typically within public cellular range.

The combination of Ericsson connectivity and HERE location services, the companies say, "deliver true smart mining capabilities, from mapping private terrain, to pinpointing and navigating assets in real-time". By using location data to build continuously updated private maps on the HERE location platform, mining companies can create a canvas to improve operational efficiency and safety. The living map can then be used to search or track, and deploy routing powered by HERE, as well as custom-built applications and services.

"We are partnering with HERE because of the breadth of their location services – ranging from mapping to routing, positioning and asset tracking," says Thomas Norén, head of dedicated network and vice-president at Ericsson. "Combining our advanced private network solutions with HERE services will give mining firms a head start on their digitalisation journey."

Gino Ferru, general manager EMEAR and senior vice-president at HERE Technologies, adds: "We look forward to increasing the productivity and safety of the mining industry by bringing location services to Ericsson's customers. With our private mapping capabilities, we enable mining companies to unleash the power of their location data in many important use cases." *here.com*

'High-end routers'

German network-infrastructure and security supplier LANCOM Systems is expanding its range of routers. The new high-speed business routers LANCOM 1926VAG-5G and LANCOM 1900EF-5G for the first time combine 5G mobile communications with state-of-the-art SD-WAN. They alternatively operate on a G.fast or fibre-optic gigabit connection, or with a cable modem. The 5G module guarantees maximum availability for both routers. The routers are optionally managed highly automatically by means of software-defined networking (SDN). They are ideal for installations with high bandwidth requirements at medium-sized companies, public institutions, or branch infrastructures.

With high speeds and low latency times, the new 5G standard supports a wide range of applications. The new high-end routers from LANCOM optionally use their 5G module as a backup in the event of failure of their wired access, or even as a high-performance stand-alone primary connection. They also offer improved bandwidths through load balancing on the network. They are ideal for temporary Internet connections, such as for seasonal pop-up stores, or for high-performance mobile access at construction sites. Extensive company premises in large-scale industrial scenarios are ideal for campus networking, i.e. closed cellular networks with their own 5G infrastructure. This "private 5G" guarantees exclusive access with maximum capacity, availability, and data security for business-critical data traffic.

The 5G module used in the new LANCOM routers also supports LTE in case a 5G network is not (yet) available on location. The prevalent 5G and LTE frequencies are supported, including the new 5G frequencies in the 3.5-GHz range and dynamic spectrum-sharing with 4G. This guarantees high-performance and stable connectivity for uninterrupted business operations both in today's non-stand-alone 5G cellular networks and future stand-alone 5G networks.

According to the vendor, the LANCOM 1926VAG-5G is the first 5G router on the market with two integrated VDSL Super Vectoring modems for an overall 2 x 300 Mbps. Alternatively, it operates using one of the two modems at up to 1,000 Mbps on G.fast, or on fibre-optic connections by means of an SFP port. It also operates with any external DSL or cable modem via WAN Ethernet.

On the LAN side, four Gigabit switch ports provide a comprehensive range of connectivity options for network devices. Two ISDN and four analogue interfaces ensure that existing telephony components seamlessly integrate into all-IP scenarios.

Apparently, the LANCOM 1900EF-5G dispenses with physical telephony interfaces and, with its Gigabit Ethernet WAN ports, connects directly to high-speed fibre-optic networks and external modems.

For this model, too, LANCOM offers a number of optional SFP modules: The new LANCOM SFP-GPON-1 module enables direct fibre-optic connection to a GPON (Gigabit Passive Optical Network). The LANCOM SFP-AON-1 module supports the connection to an AON (Active Optical Network). Both modules save you the need for a separate provider modem, including of course the necessary cabling and power supply. *lancom-systems.com*

'Breakthrough next-gen VSAT platform'

Comtech Telecommunications unveils Comtech Elevate, which it describes as "a breakthrough next generation" very small aperture terminal (VSAT) technology solution. The company also reckons it's designed to meet the evolving communications demands of a broad range of markets.

Comtech Elevate "is a smart software-defined VSAT solution bringing together the best of Comtech's Heights Dynamic Network Access (H-DNA) and its UHP MF-TDMA waveform flexibility and efficiency". It features a new D-RAM ("Dynamic Return Access Modes") protocol with seamless switching between H-DNA and MF-TDMA waveforms using the same pool of bandwidth and data throughput in both Forward and Return channels. The Comtech Elevate solution, Comtech says, is designed to enable private or shared VSAT networks of any size and topology, "has unlimited potential" for future development and can be deployed for every application imaginable. The solution's features also include the ability to scale from very small networks to very large networks, such as supporting more than 500,000 remote sites, as well as compact remote VSAT handling up to 200,000 packets per second. In addition, Comtech says this product has "an advanced and highly efficient Network Management System that can support a rich variety of Operations Support System (OSS) and Business Support System (BSS) interfaces.

"Our new Comtech Elevate VSAT platform delivers unprecedented network flexibility and scalability to support a broad range of applications and markets, from broadcast and government to mobility and enterprise, using a single intelligent system," says Michael Porcelain, chief executive officer and president, Comtech. "Elevate is the next step in Comtech's long-term plan to exploit the growing business opportunities in the satellite ground station market. *comtech.com*

Software-defined Wi-Fi 6E AP triples Wi-Fi capacity, adds 6 GHz support

Cambium Networks introduces its new XE series Wi-Fi 6E software-defined access points with intelligent migration assistant in all three Wi-Fi bands (6, 5 and 2.4 GHz). The company says its software-defined radios (SDRs) enable cost-efficient migration to the newly available 6 GHz band, with its multi-radio architecture scaling to support high device density deployments.

"The expansion of Wi-Fi into 6 GHz opens up a lot of capacity we can take advantage of across our campus wireless network. It will help in particular in dense areas like lecture halls and libraries," adds Donna Hayden, chief information officer at Alcorn State University. "Cambium Networks' new Wi-Fi 6E access points are a great fit for campus environments and enable us to strategically move to 6 GHz over time."

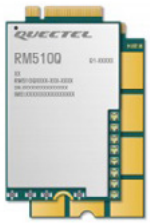
Cambium Networks says its Wi-Fi 6E solutions enable network operators to not just add support for 6 GHz to their networks, but to optimize how and when it is used. Service providers and enterprises such as education, hospitality, healthcare, public venues, and more will benefit from the new clean spectrum, enabling more streaming video, voice and data experiences that expand and improve their customer service.

The access points were developed with Qualcomm's Networking Pro integrated Wi-Fi 6E platform. *cambiumnetworks.com*

Optimised for IoT applications anywhere in the world

RM510Q-GL is a sub-6GHz and mmWave M.2 5G IoT module measuring 52.0mm × 30.0mm × 2.3mm, which, Quectel reckons meets the 3GPP Release 15 specification and is optimised for IoT/eMBB applications anywhere in the world. It supports both standalone (SA) and non-standalone (NSA) modes and also supports LTE category 22 connectivity. The RM510Q-GL is compatible with Quectel's LTE-A category 6 module EM06, category 12 module EM12, and category 20 module EM20, enabling customers to migrate from LTE-A to 5G.

The module optionally features integrated GNSS (GPS/GLONASS/BeiDou/Galileo) "for rapid and precise positioning", while integrated eSIM optionally allows remote account provision without needing to open the device. The RM510Q-GL supports nearly all major carriers worldwide and is ideal for globally deployed mobile devices including industrial routers, industrial PDAs, rugged tablet PCs and digital signage. *quectel.com*



New tool suite enabling dense deployments and satellite connectivity for LoRa

Semtech Corporation brings to market a software upgrade for LoRa integrated circuits (ICs) and gateways that significantly increases network capacity, robustness to interference and enables a low power and reliable direct data links from sensors to satellites. The software enhancement, the company says, can be leveraged by second generation LoRa ICs to enable the LoRaWAN standard new data rate, Long Range Frequency Hopping Spread Spectrum (LR-FHSS), recently ratified by the LoRa Alliance.

"As the smart cities trend continues to proliferate globally, the new capability is a step for Semtech's LoRa platform toward massive Internet of Things (IoT) deployments in densely populated areas," says Marc Pégulu, vice president of IoT product marketing for Semtech's wireless and sensing products group. "In addition, the enablement of direct IoT to satellite services revolutionizes the industry with affordable ubiquitous connectivity for remote areas, ultimately creating a smarter and more secure planet."

The new suite of tools will be specifically enabled on Semtech's LoRa transceivers: SX1261, SX1262, LoRa Edge™ platform and the V2.1 gateway reference design. For LoRaWAN networks where V2.1 gateways are deployed, operators can enable the new capability with a simple gateway firmware upgrade. In addition to expanded capacity, LoRaWAN networks will be more robust in harsh radio conditions (deep indoor) and in some regions will offer the possibility to increase terrestrial coverage. *semtech.com*

Look out for...

Tracking inside moving car via 5G IoT nanosatellite

5G satellite operator OQ Technology successfully completed the in-orbit commissioning (IOC) of its Tiger-2 nanosatellite and is ready to begin customer demonstrations.

The company said it is already in talks with several potential customers interested in using the company's satellite-based 5G IoT services and will start commercial services for "latency-tolerant" low-power devices beginning this year.

"Completing the IOC phase and the successful tests with our terminals in remote locations was a crucial step to start generating revenue via the satellite and progress the constellation with more satellites to be launched in early 2022," said Omar Qaise, founder and CEO, OQ Technology. "In addition to potential customers, we are also negotiating with cellular chip partners to scale up the satellite access capability to existing cellular IoT chips globally. Our next step is starting service demonstrations with our potential customers and their use cases."

OQ also tested and calibrated its working terminals in different fixed and mobile environments in the desert and for indoor usage. During tests, OQ sent the terminal's GPS location to the satellite from inside a fast-moving car without having a direct line of sight to the sky. Even when buried in the desert sand, the terminal was still sending signals to the satellite, making it ideal for many agricultural applications. While the high level of signal to noise ratio surpassed OQ's high expectations.

"Being able to track our terminals even indoors and covered by soil adds further possible services that we can offer to our customers," Qaise added. "It opens the door for many potential use cases other satellite operators cannot provide. Over the next few years, OQ Technology is planning to launch a constellation of 72 satellites, providing 5G IoT and machine to machine (M2M) communication."

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."

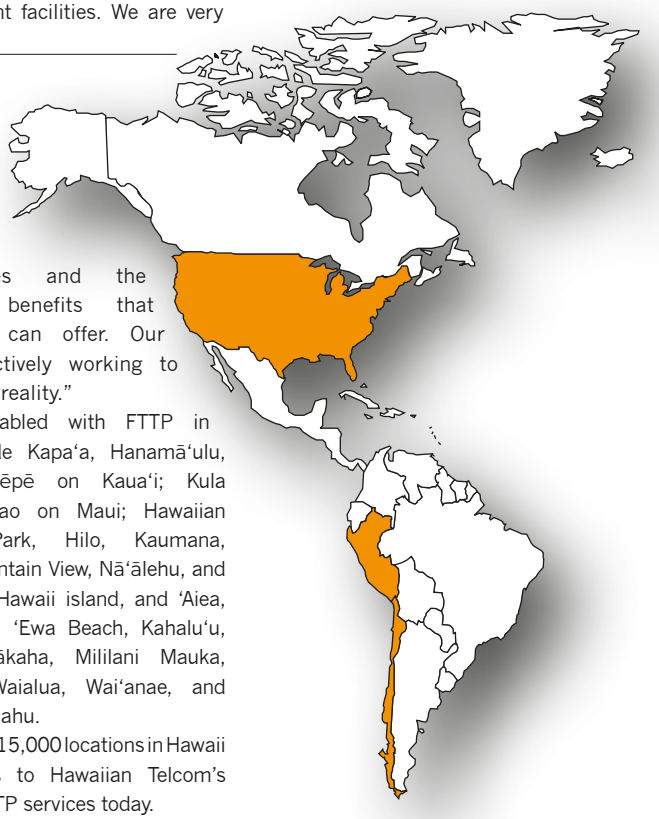
Hawaiian Telcom invested US$100M for state-wide fibre deployment

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

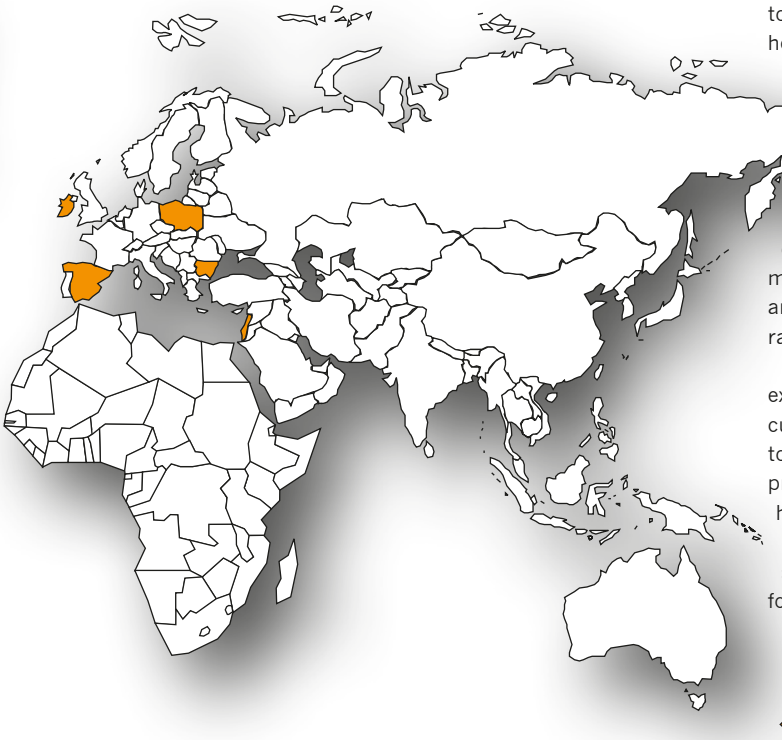
Cellnex Telecom is targeting 80% coverage of Ireland with the country's first national Internet of Things (IoT) network by the end of 2022.

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 Cellnext 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.

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.

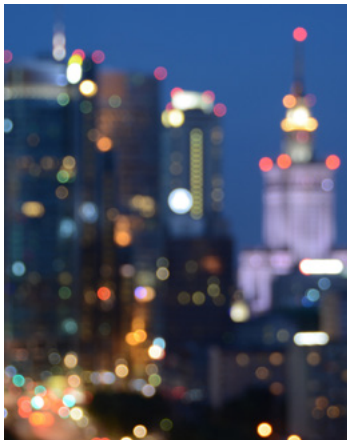
Explaining its decision, the executive branch of the European Union said it will see only minor overlaps in the selling of mobile, broadband, audio-visual services and multi-play services.

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 be made into a subsidiary of Play once the acquisition is complete.



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.

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.

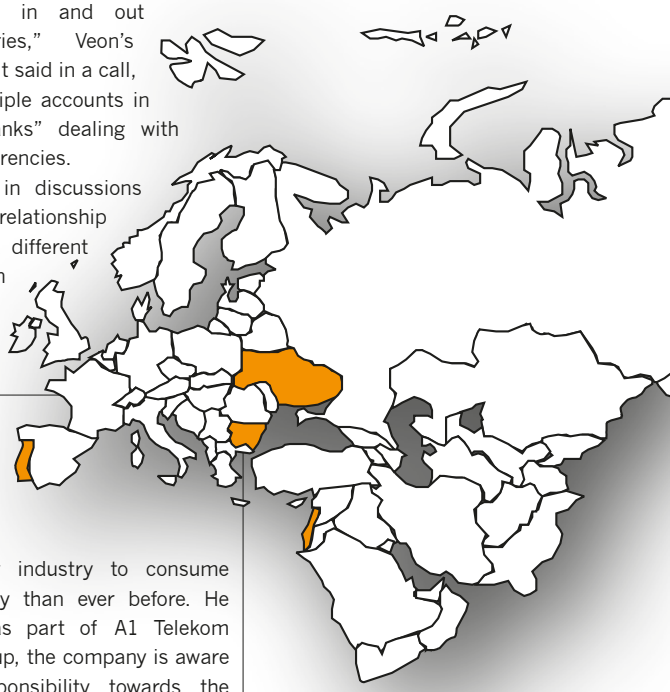
Russia and Ukraine, where Veon operates the Beeline and Kyivstar mobile networks respectively, are the company's two biggest markets, followed by Pakistan and Kazakhstan.

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 includes 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.

Q&A

Richard Jacklin
director of sales
ViaLite

What was your big career break?

When I became a ghostbuster and I don't really believe in ghosts! My career was going along quite nicely; apprenticeship, degree, graduate engineering, engineering manager etc., probably similar path to many folks. One night I was watching television and a programme called "Most Haunted", an entertainment show where ghost hunters scare themselves stupid in a spooky house, and they showed these bright white sparks being captured on video. At that time I was working on a project for a very large US automobile company and I'd invented a simple device that measured negative ion fields from electric discharge – a spark. The available negative ion detector units on the market at the time were priced at approximately $1,000, but I could produce and sell a unit for $50. I phoned up a few ghost clubs and bingo, I had the start of my own business. I ran this business for about 3 years and covered all aspects of marketing, sales, production, new product development, logistics, shipping – basically everything. The business was totally bonkers and I became the number one supplier in the UK, supplying all the paranormal investigative clubs, presenting at conferences, appearing on ghost TV programmes. I then finished the business and licenced the products to a couple of contacts in the wireless business – one of them being a senior Director in T-Mobile. Anyway it taught me so much about what it takes to run a real business at grass roots level and it gave me the knowledge and confidence to leap across fully into the commercial side. I then took business development and sales management roles in companies including UL, Keysight and my current role heading up Vialite Communications. If you're serious about business, doing an MBA is perhaps one useful way, another way is to just start a business.

Who was your hero when you were growing up?

As a nerd and amateur inventor growing up in the early eighties, I was a Sinclair computer fan. Christmas 1981 I came down with chicken pox so I spent the holiday in bed with my brand new Sinclair ZX-81 complete with pressure sensitive keyboard trying to work out what a program was for the first time; best Christmas as a child ever. Sir Clive Sinclair was the man of the time with his ZX-81 and then Spectrum computers, but I never got my hands on the Sinclair C5 electric bike. He was so far ahead of the time as proven now by the proliferation of electric vehicles. If only we kept the faith in what he was doing; just look at Tesla!

Which law would you most like to change?

In the late nineties I was involved in radio equipment test and approval. In 1999, the Radio equipment and Telecommunications Terminal Equipment (R&TTE) directive was introduced across the Europe Union, basically ending national type approval. Harmonising approvals across nations is no bad thing, but the implementation dropped many performance and protocol requirements effectively lowering the bar to cheaper, more poorly designed and manufactured imports. In my opinion it massively harmed the technical manufacturing capability of Europe and we ended up with lower performing wireless products as a result. So I would support raising the bar again. Anyway, just after this regulatory change happened in 1999 we had the UK 3G mobile phone spectrum auctions, where the government raised over £20 billion from five licences. Then a little bit later Motorola closed their West Lothian flagship mobile phone factory; shame the auction monies couldn't have been used to support the UK wireless industry; just saying!

What's the strangest question you've ever been asked?

I was stood in front of a group of executives from AT&T in an office in Seattle and one of them asked "Do you realise what you've presented is possibly a career limiting move?" It was one of those bottom clenching moments that only happen fortunately a few times in your career. Basically this was in the early days of the development of 4G cellular. At that time Verizon had released its infrastructure rollout plan and the frequency bands it was going to occupy; AT&T had not released their plan yet. My presentation showed support for the Verizon frequency plan, and no frequency plan for AT&T. Perhaps the AT&T executive thought I was a mind reader about what they were planning to do, but it taught me an important lesson about how competitive information should be presented on product roadmaps!

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

During your career you meet some absolute gems and few years ago I was working with a Global Sales Director called Mr Pax Andersson. Pax was a loud, brightly dressed, gregarious, Swedish, demanding, funny gentleman who made a big impression on anyone he met. When he joined the company I had the job of training him about our product line up and how we go to market. Before I wheeled out my standard presentation spiel he just said to me "Look Richard, don't bulls**t me with a long slide-deck, I just want to know three things; (1) Why does the customer buy this type of product? (2) Why should the customer buy the product from this company? (3) Why should the customer buy it now?" He wanted these three simple questions covered off in every piece of communication to the customer, whether in a presentation, chat, exhibition stand, press release, basically everything that is communicated. It's a simple mantra, but crikey it really focusses your messaging. Sadly Pax passed away just as he retired, and he is missed a lot. Pax also had another interesting mantra, one given to him from his Swedish grandmother about eating fruit; "When you get a piece of fruit, wash it. Then wash it again. Then wash it again. Then wash one more time. Then put the fruit in the bin."

What would you do with US$1m?

Well obviously this starts with buying the Mrs Jacklin something nice, probably a cruise somewhere when the pandemic has been overcome. I suppose I would also put some money down for house deposits for the daughters. Getting your first property in the UK is becoming increasingly hard for first-time-buyers, so bank of mum and dad will probably be needed. Then I have a list of guilty pleasure purchases based mainly around my love of analogue synthesisers; Sequential Circuits Pro-One, Roland TR-707, Oberheim Matrix 12. Oh, and I almost forgot, a Sinclair C5 electric trike. Can't say at this stage in my career I would necessarily invest it or start a new business, I think I would rather enjoy spending it more frivolously.

If you could live anywhere, where would you choose?

I've been lucky to see a lot of places around the globe through work travel, and some of my favourite places include Austin Texas, Oulu Finland, actually most of Scandinavia is great. But really this is a weird question for me, I'm quite happy living where I am which is a modest sized village in Hampshire, England. One thing I've learnt is that it is not all about the buildings, history or how pretty a place can look; it's about the community in it. Friends that you can share good times with, and help each other out through good and bad times. It also helps to have some good pubs too!

Where must you visit before it's too late?

Although I've been close to the Arctic Circle many times, I still haven't seen the Northern Lights.

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

Well it's getting a lot of attention now, but space launch vehicles and the aerospace industry still excites me. The physics of getting these huge pieces of metal into the air and also into space is fascinating. I still can't get my head around how a Boeing 747 can actually fly. Anyway I'm not quite ready for putting out to pasture yet, so there may still be time for me to get into it. ■

Do you want to be involved with the 2022 edition of the African Wireless Communications Yearbook?

We're looking for the usual quality of comment and opinion from thought leaders, industry influencers and technological experts within the African marketplace.
For all editorial enquiries contact Robert Shepherd – roberts@kadiumpublishing.com

We have key sponsorship options within specific technology chapters and on primary positions.
For all advertising enquiries contact Kathy Moynihan – Kathym@kadiumpublishing.com

See the latest edition on www.africanwirelesscomms.com