For communications professionals in the southern Asian region

SOUTHERN ASIAN WIRELESS COMMUNICATIONS

Q2 2023

Volume 16 Number 2

- eSIMs: next generation IoT connectivity
- Revolutionising connectivity via 5G
- Keeping kids safe with AI

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About PowerX

PowerX, a UK-based company, is redefining tower performance using advanced data science and Artificial Intelligence - the first solution dedicated to tower passive infrastructure that embeds data intelligence into the heart of tower management decisions, facilitating resilient and sustainable mobile connectivity growth. With PowerX, tower operators can monitor, control and apply continuous site-level efficiencies at scale for thousands of towers across entire networks.

PowerX solutions help Tower companies and Mobile Operators globally harness data intelligence driving timely actionable insights with automated workflows managed through to resolution. Proven across thousands of sites, the solution builds infrastructure resilience, improves assets efficiency and optimises tower operations. PowerX functionality delivers: reduced site inefficiencies; optimised energy usage; reduced diesel consumption and greenhouse gas (GHG) emissions; targeted predictive maintenance; reduced operational costs and increased revenue assurance.

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Kerala becomes India's first e-governed state

Kerala has become India's first e-governed state, paving the way for transparent and efficient services.

According to Kerala chief minister Pinarayi Vijayan, the southern state has successfully digitised an extensive range of government services, ensuring prompt and transparent delivery to its citizens. Vijayan said that this significant milestone would not only establish a strong network between government offices and citizens but also leverage technology to drive Kerala's development and bridge the digital divide. He added that total e-literacy would fast track the journey towards a knowledge society and economy.

"By the term governance what the present government means is total commitment to fulfil the promises it has made to the people. The government and governance are reaching out to the people more and more," said Vijayan. "The service delivery has been made people-oriented and corruption-free and public utilities have become people-friendly. These transformative changes have been felt by people in the last seven years."

Under this comprehensive e-governance initiative, the Kerala government aims to bring services directly to the masses, eliminating the need for citizens to visit government offices in person.

"This can be ensured by leveraging new technology, and that is exactly what the government is focusing on," said Vijayan.

One step in this direction is the implementation of the Kerala Fibre Optic Network (KFON) project, which will make the internet affordable or even free for the residents of Kerala. The government has also launched a single-window portal called e-Sevanam, offering an extensive array of 900 services which would soon be extended to taluk-level offices.

To bridge the digital divide and propel e-governance, Kerala has

established the country's first digital university and embarked on the ambitious digital science park project. These strategic initiatives are aimed at fostering a knowledge-based society and economy, promoting e-literacy, and ensuring that the benefits of e-governance reach all sections of society.

Chief Minister Vijayan emphasised that the government's commitment to e-governance extends beyond this milestone, with a continued focus on expanding service accessibility to the masses. By leveraging technology, the government aims to ensure that services are readily available, eliminating the need for citizens to navigate bureaucratic hurdles.

New mobile chatbot helps Indian farmers access government assistance

Microsoft and AI4Bharat at the Indian Institute of Technology Madras have created a new generative AI-driven chatbot – called Jugalbandi - that is helping Indian farmers access government assistance on their mobile devices.

Jugalbandi can understand questions in multiple languages, whether spoken or typewritten. It retrieves information on relevant programmes and relays it back in local language.

While the Jugalbandi chatbot is still new, it could one day offer all Indians easy access to information in the local language through a mobile phone, instead of having to

head to the local community service centre and stand in line just to get basic information.

"We saw this Jugalbandi as a kind of 'chatbot plus plus' because it's like a personalised agent," said Abhigyan Raman, a project officer at AI4Bharat. "It understands your exact problem in your language and then tries to deliver the right information reliably and cheaply, even if that exists in some other language in a database somewhere."

Jugalbandi was introduced to villagers in Biwan, Haryana, in early April. It has expanded to cover 10 of India's 22 official languages and 171 of a total of approximately 20,000 government programmes, according to Smita Gupta, a lawyer who works for OpenNyAI - a collaborative whose mission is to bring greater access to law and justice through AI - one of several groups working on the chatbot.

Jugalbandi is powered by language models from AI4Bharat and reasoning models from Microsoft Azure OpenAI Service. It is accessed through WhatsApp; a user sends a text or audio message to a WhatsApp number, which initiates Jugalbandi. That is transcribed to text using the AI4Bharat speech recognition model. That, in turn, is translated to English by the Bhashini translation model trained by AI4Bharat. Based on the prompt, Azure OpenAI Service's model retrieves information on the relevant government scheme. The answer is translated to Hindi. That is then synthesised with the AI4Bharat text-to-speech model and sent back to WhatsApp.

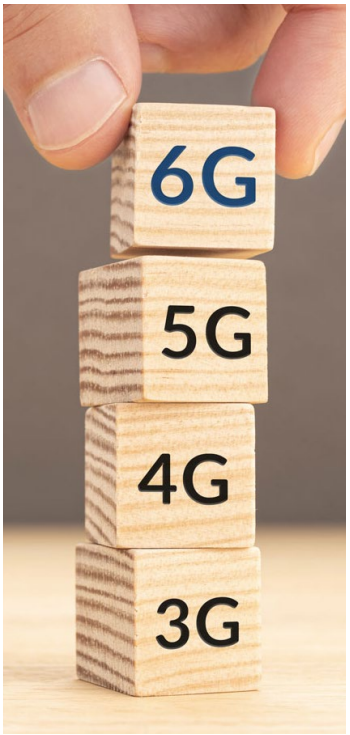
Pratyush Kumar, co-principal investigator at AI4Bharat and a principal researcher at Microsoft Research India, said that the team initially explored how to translate legal judgments, working with the Supreme Court of India. They also worked with schools and colleges to transcribe videos and add subtitles, which can help children learn more effectively.

Gurugram gains 6G research lab from Capgemini

Capgemini has launched a 6G research lab in Gurugram, India. The lab will build advanced test beds and simulators to explore use cases for next-generation wireless networks, 6G ideation, and the creation of energy-saving solutions.

"The 6G lab will enable us to prototype, simulate, and test solutions, leveraging next-generation connectivity and silicon technologies along with advanced AI to address the wireless communication challenges presented by 6G," said Shamik Mishra, chief technology and innovation officer 'connected futures' at Capgemini. "As we take a lead on leveraging the potential of this emerging technology, we will also contribute to harmonising efforts for 6G technology across the industry."

In May 2022, Capgemini announced a joint research project with King's College London to explore the possibilities of 6G, focusing on the development of architecture frameworks that enable low-latency, AI-generative, and sustainable 6G networks. The new lab will build on this initial work by taking a step towards developing and showcasing the extensive possibilities of 6G, as a key lever of energy efficient and data-driven 'Intelligent Industry.'



RailTel targets public WiFi monetisation with new mobile app

RailTel Corporation of India has partnered with a consortium including 3i Infotech Limited, FISST and Yellow inc. to monetize its public WiFi across the Indian Railway network with a new mobile app, PIPOnet.

The Indian Railways is the largest railway network in Asia with a daily count of 23 million passengers. More than 1.5 million users log in every day to the WiFi network provided by RailTel across 6,109 railway stations. The PIPOnet app will help the users with integrated services like e-ticketing, travel and stay reservations, porter booking, music, infotainment, edutainment, OTT channels and various helpline services.

PIPOnet will also provide an e-commerce platform for Bharat's artisans to sell their wares across India. As NuRe Bharat Network through its digital marketing efforts will increase the number of logins from 1.5 million today to more than 11 million, the commercial opportunities for sellers from Bharat will increase manifolds, changing their economic profile.

NuRe Bharat Network through its AI/ML-based data analytics capabilities will provide deep dissected analysis of the viewers' demography and preference profile. Advertisers will also be able to execute targeted communication in English and eight regional languages to reach specific audiences across the demography. Also, integrated with leading SSPs & ad networks for programmatic guarantee, direct, and real-time bidding, and PMP buys, the application will offer the advertisers an opportunity to host programmatic ads.

"With the launch of the NuRe Bharat Network, we plan to serve a bigger goal for the good of the country," said Sax Krishna, chief executive officer, NuRe Bharat Network. "WiFi access will be secured; hence, we can facilitate services like healthcare, education and more to the Indian populace. Especially in the Tier 3&4 towns, we want to empower individuals by giving them access to democratized Internet, thereby opening their doors to greater opportunities. Internet brings with itself a hundred possibilities, and we aim to lead with an example of a secured and thought-through method for all who are currently unable to access a high-speed internet to access it on the go."

"We are elated at the launch of PIPOnet and the initiatives we are working towards to bring India together through a platform with immense potential," said Sanjai Kumar, chairman and managing director, RailTel. "Bridging the digital divide between urban and rural India is one of our core missions. Our station WiFi network covers the country's length and breadth, and this collaboration will further unlock its true potential. We congratulate 3i Infotech and the other members of the consortium for their diligence towards this socio-economic inventiveness."

PIPOnet, facilitating the captive WiFi portal will have a four-step process for WiFi connectivity. Furthermore, with an average of 4-5 touchpoints for WiFi access, the platform will be able to generate 180+ million monthly pageviews and 500+ million impressions monthly, thereby providing advertisers with a mega platform to proliferate deep into the Indian populace and offer their services.

PIPOnet mobile App will be available for public use from August 2023.

Singtel and Azure to expand IoT

Singtel has partnered with Microsoft Azure to grow IoT and industrial applications.

Through this partnership, Singtel becomes the first operator outside of the US to offer Azure public multi-access edge computing (MEC) for data processing and storage to be moved closer to end-users to significantly reduce latency and enhance overall network performance.

From advanced manufacturing to public safety, IoT and edge computing power real-time connectivity and insights to help transform operations and support mission-critical communications. With this latest offering, enterprises can deploy secured applications and process data on the edge or public MEC to address dynamic needs. Enterprises can capitalise on Singtel's 5G network to explore high bandwidth and low latency use cases via Paragon, an orchestration platform that aggregates 5G networks, edge computing, public cloud, and application ecosystems.

"We have been steadily building our public edge product ecosystem with our partners and have now expanded to include low-latency AI capabilities at the edge that our customers will find useful in taking their business to the next level," said Bill Chang, chief executive officer, group enterprise, Singtel. "With Singtel 5G and Paragon and Microsoft Azure public MEC, customers can rapidly develop, test and deploy 5G applications such as autonomous guided vehicles, drones, immersive virtual reality and real-time digital twin use cases."

In the first commercial use case, the National University Health System (NUHS) taps into Azure public MEC technology and augmented reality to generate high-resolution 3D holograms via a mixed reality headset. Real-time data is sent via Singtel's high-speed, low latency 5G for surgeons to view and analyse these holograms to better visualise patients' organs and plan for operating procedures. This also creates a more intuitive and immersive environment for surgery and research with 5G.

"Singapore is at the forefront of innovation as its enterprises and public sector embrace new technologies like 5G, AI and security for its future," said Yousef Khalidi, corporate vice president, Azure for operators. "Our deep ecosystem collaboration with Singtel provides a unified compute solution from the cloud to the edge that will help organizations and developers build more Singapore-born innovation as we empower every person and every organization on the planet to achieve more."

First draft of digital India bill imminent

The first draft of the digital India bill, which will replace the existing information technology act as the main legislation governing the space, is set to be released for public consultation in early June, according to Union minister of state for electronics and information technology Rajeev Chandrasekhar.

Chandrasekhar said that the bill has been drafted after several rounds of discussions covering several areas that it will address, including expanding the number of categories of intermediaries and differentiating between them based on risk of user harm and number of users.

"The internet is evolving and the legislation to govern it must be dynamic to meet the future challenges of emerging technologies," said Chandrasekhar. "The digital India bill will aim to address the gaps in the policy segment."

The bill proposes ways to deal with things that could harm users such as revenge porn, cyber flashing, defamation, cyberbullying and doxxing (the intentional revelation of a person's private information online without their consent, often with malicious intent). It also suggests age-gating addictive technologies and protect data of minors on social media and gaming applications. The bill may additionally contain ownership standards for anonymised data stored by intermediaries, disclosure norms for the data collected and monetisation rules for user and platform generated content.

Chandrasekhar said that devices and IT have empowered users but also thrown up challenges of new user harms, ambiguity of user rights, safety and security of women and children, organised information wars, radicalisation and circulation of hate speech, misinformation and fake news and unfair trade practices.

Intercloud enters India with two Mumbai Edges

InterCloud has announced the opening of its first point of presence in India, with the deployment of two connection points (Edges) in Mumbai.

The opening of the new connection points will allow InterCloud to support its existing customers with connectivity in what is a key region for several of its clients.

InterCloud has chosen the Equinix MB2 and TATA LVSB sites in Mumbai to host its Edges. It will provide connectivity to Amazon Web Services (AWS) and Microsoft Azure, with onramps from either Equinix MB2 or LVSB sites.

AWS and Azure are the first cloud service providers (CSPs) to connect with InterCloud in Mumbai, and the company anticipates forming several more CSP connections here in the near future. With a fully compliant strategy in place, a large multinational in the electrical and sustainability business will be InterCloud's first customer to be onboarded through the new Edge in Mumbai.

"We are delighted to be expanding our presence to India. India is a hugely important location for many of our existing customers and the move will allow us to offer enhanced connectivity services to those who are operating in the region," said InterCloud's COO, Amine Gharbaoui. "We've seen the demand for new connection points grow rapidly in recent years, driven by an uptick in cloud adoption and the need for enhanced digital services. With these new Edges, we can provide customers with faster and more reliable connectivity to continue to support them with their own expansion plans. We believe expanding our footprint in the region will give us a significant competitive advantage and demonstrates our commitment to delivering our solutions worldwide. We look forward to continuing to provide our customers with connectivity services both in India and throughout the rest of Asia."

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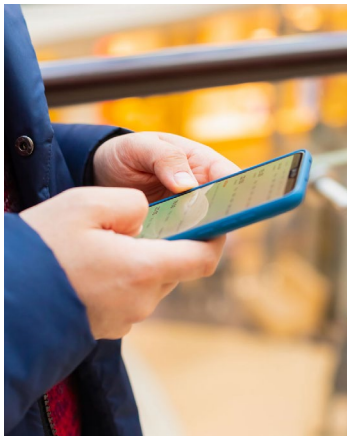
DoT uses ASTR to detect dubious mobile connections

India's Department of Telecommunication (DoT), with the help of ASTR, an artificial intelligence and facial recognition-powered solution, has detected 40.87 lakh dubious mobile connections and blocked 36.61 lakh connections to date.

As per the DoT, West Bengal holds the top position for the largest number of SIMs disconnected (12,34,111), followed by Haryana (5,24,287), Bihar-including Jharkhand (3,27,246), Madhya Pradesh (2,28,072), and Uttar Pradesh-East (2,04,658). Similar actions were also taken in other states like Gujarat, Assam, Punjab, Uttarakhand, Odisha, Tamil Nadu, and Andhra Pradesh. Himachal Pradesh has the lowest number of cases of disconnecting SIM connections, the number is 3,491.



Bad actors obtain mobile connections using fake or forged documents to conduct cybercrimes, so DoT developed the AI-powered tool ASTR, which also includes data analytics techniques to identify SIMs issued using such documents.

In the first phase with paper-based KYC, the authorities analysed more than 87 crore mobile connections. The Param-Sidhhi Supercomputer was employed for the big data processing. During the investigation, there were several cases when bad actors used a single image to get hundreds of connections. Apart from the detected and blocked dubious connections, the service providers have blacklisted 40,123 Point of Sales (PoS) — where a customer makes the payment for the services — involved in selling such mobile connections, and more than 150 FIRs have been filed across India.

Uttar Pradesh-East has the highest number of blacklisted PoS (13,067) followed by West Bengal (10,915), Kolkata (3,937), Haryana (3,024), Bihar-including Jharkhand (2,904), and Odisha (2,417).

"In one case, a person made 5,300 connections using the same image with various names, while in another, a person made 6,800 connections in a similar fashion. These are some extreme examples of such incidents," said union minister for railways, communications and electronics & IT, Ashwini Vaisnaw.

Indosat Ooredoo Hutchison consolidates for improved performance

Indosat Ooredoo Hutchison and Nokia have completed a consolidation programme to improve network performance, boost capacity and optimise the operator's base station footprint across parts of Indonesia, targeting digital transformation and economic gains.

The programme covered major cities in Java, and the regions of Sumatera and Kalimantan.

Nokia has helped Indosat Ooredoo Hutchison reduce the number of physical sites across its sub-brands IM3 and Tri by 30% and deploy sites in new regions for better indoor coverage and data rates.

Nokia explained combining the spectrum assets of the two former operators (Ooredoo Group and CK Hutchison merged in 2022) with its AirScale RAN equipment improved the performance for IM3 by up to 42% and up to 170% for Tri.

Indosat Ooredoo Hutchison president director and CEO Vikram Sinhaoting said that the competition of its network integration in just one year is the springboard to achieving its mission to "deliver world-class digital experience." He added that it will continue expanding its network "because we believe inclusive internet access will unlock various untapped potentials and improve the nation's economy."

Vietnam's top MNOs apply for spectrum licences for 4G and 5G services

Viettel, MobiFone, VNPT-Vinaphone, and Vietnamobile, four of Vietnam's major MNOs, have applied to compete for three spectrum licences at the country's next auction, according to local media.

Three 15-year licences for mobile spectrum in the 2300MHz to 2400MHz band for the development of 4G and 5G services will be available in the auction. Successful bidders will be limited to 30MHz of spectrum each in the following slots: 2300MHz-2330MHz; 2330MHz-2360MHz; and 2360MHz-2390MHz.

The auction will be held by the Ministry of Information and Communications.

India's smartphone shipments lowest in 4 years

IDC has become the second research company in recent weeks to reveal a downturn in smartphone shipments in India during the first quarter of 2023, issuing a figure it stated was the lowest for the period in four years.

The research company said that consumer demand remained muted due to macroeconomic uncertainty, with the situation exacerbated by high levels of inventory carried over from the second half of 2022.

It placed shipments at 31 million units, down 16% year-on-year. The trends are in line with figures issued by Canalys in April, which showed a 20% drop to 30.6 million.

Navkendar Singh, associate VP of devices research, predicted full-year shipments will be flat despite the potential for growth in the second half of the year "if brands can bring attractive festive offerings," along with possible boosts to consumer confidence from events including local elections and the ICC Men's Cricket World Cup scheduled to commence in the nation in October.

DNB picks Ericsson for automated cybersecurity

Digital Nasional Berhad (DNB) has tapped Ericsson to provide a cybersecurity platform covering Malaysia's wholesale 5G network, seeking to increase protection by automating operations.

Ericsson reported in May that its security manager product is designed to help operators protect their networks and data by providing visibility and automating processes. The company said that the continually changing threat landscape and dynamic networks require automated security orchestration, with threat management seamlessly integrated with the 5G network.

Alex Ooi, CISO at DNB, said that 5G network security required a big-picture approach covering standards, development, deployment, and operations.

Vietnam's smartphone market down 30% yoy due to weak demand

Vietnam's smartphone market declined 30% year-on-year (yoy) in the first quarter of 2023, according to Counterpoint Research's Vietnam Smartphone Channel Share Tracker, marking the industry's worst Q1 decline ever.

Poor macroeconomic conditions and weak consumer demand constrained the country's smartphone market as people delayed their smartphone purchases during the period.

Vietnam's GDP grew 3.3% during the quarter, one of its lowest numbers in recent years. Investment into the country declined as FDI volumes were reduced. Citing poor business conditions, retailers had to scale back their expansion plans and re-evaluate their business strategies. Retail stores operated for fewer hours, which reduced the employees' working hours and their incomes as well. Footfall in the retail stores was also quite low after Vietnam's Tết festival in January.

"The demanding situation in the Vietnam smartphone market is unlikely to be resolved in Q2 2023. It will take some time for the smartphone market to recover in light of the difficulties that the economy has suffered. Vietnam, being one of the top global exporters of smartphones, will also look for the global economy to stabilize. When the situation starts to improve by the end of 2023, the market may benefit from the pent-up demand, especially in the lower-price segments," said senior analyst Glen Cardoza.

The Vietnamese government considers 5G connectivity as a crucial factor in the pursuit of digital transformation. It aims to have 100% of the population's devices connected to a 5G network by 2030. 5G smartphone shipments are on the rise, climbing 18% yoy in the first quarter of 2023. Although shipments of 5G smartphones in the below $200 retail price segment are yet to pick up pace, 5G smartphone shipments in the $200-$400 price band doubled from that in the year-ago quarter.

SLT-MOBITEL targets digital education

SLT-MOBITEL has launched MYFIRST Connection, a fully comprehensive communication solution to meet students' ever-increasing connectivity demands. It aims to empower students to enhance their knowledge in the digital world.

MYFIRST Connection will allow young people to expand their educational curriculum by connecting them to the digital world, allowing them to study, grow and shape themselves to become important assets to Sri Lanka.

The product is designed for students aged 16-24 to provide unique features at an unrivalled market price. The MYFIRST Connection bundle features unlimited free data for e-learning platforms including Zoom, MS Teams, Office 365, and Google Meet.

SLT-MOBITEL recognises that the current macroeconomic issues have resulted in considerable hardships for families and livelihoods, particularly for young people who have limited disposable income and frequently rely on their parents. The development of cost-effective MYFIRST Connection meets a critical market need, assisting students, scholars, and other information seekers to ease financial burdens while remaining connected and productive.

The MYFIRST Connection ensures that students have continuous access to educational platforms, allowing them to concentrate on their studies without being distracted by network concerns. Furthermore, the bundle is complemented by SLT-MOBITEL's exceptional network quality and island-wide coverage, providing consumers with a seamless experience.

JazzCash and CBA team up for MoMo

JazzCash and Community Business Agent (CBA) have formed a partnership to provide Cash-In and Cash-Out services to JazzCash customers through CBA's retail network.

The collaboration is expected to have a significant impact on the digital financial services industry in Pakistan, making it more convenient and accessible for customers.

JazzCash is a leading mobile wallet and branchless banking services provider with a significant market share in mobile money activity in Pakistan. CBA is the country's largest digital distribution platform, promoting micro-entrepreneurship in the country.

Ghazanfar Ali Khan, CBA's CEO, emphasised the company's commitment to elevating micro-entrepreneurship and helping small and medium-sized enterprises (SMEs) to scale upwards and achieve financial sustainability.

"This partnership is a significant step towards promoting financial inclusion in Pakistan. By joining forces, these two leading companies are making it easier for people to access and use digital financial services, which will positively impact their lives," said Khan.

Murtaza Ali, the head of JazzCash, meanwhile, highlighted the importance of strategic partnerships in building new verticals and avenues that will result in building an ecosystem for payments.

India passes 200,000 5G mobile sites

India's 5G network has surpassed 200,000 mobile sites after Union minister for communications and IT Ashwini Vaishnaw and Uttarakhand chief minister Pushkar Singh Dhami recently inaugurated the latest 5G site at Gangotri.

"Today practically every minute one 5G site is getting activated. The world is surprised. It is a matter of pride for us that 200,000 sites have been installed in Chardham," said Vaishnaw.

The first 100,000 5G sites were rolled out within the first five months of the launch of the service in October 2022 and the next 100,000 sites were added in the next three months.

"Today, devotees of Chardham have received a present in the form of a 5G site. Now, our border area will also get wrapped up with mobile connectivity. The dream that we saw of high-speed connectivity in the hilly area of Uttarakhand has been fulfilled today," said Dhami. He added that the start of high-speed service will help in relief and disaster management, and surveillance while boosting the economy.

Indonesia's fixed comms market to hit $1.7 billion by 2027

GlobalData has forecast that Indonesia's fixed communications services market revenue will increase at a compound annual growth rate (CAGR) of 7.6% from $1.2 billion in 2022 to $1.7 billion by 2027.

The growth is expected to be driven by a strong uptick in fixed broadband service adoption, with GlobalData's Indonesia Fixed Communication Forecast (Q1 2023) forecasting that circuit switched subscriptions are expected to drop at a CAGR of -2.6% over 2022-2027 as users continue to shift towards mobile and internet-based communication services.

The overall fixed voice service ARPU levels in both residential and business segments are also expected to drop from $0.36 to $0.27 and $2.75 to $2.05, respectively, between 2022 and 2027, which will lead to a considerable drop in total fixed voice service revenues.

Meanwhile, fixed broadband accounts will grow at a CAGR of 10.6% over the forecast period, led by the rising adoption of high-speed fibre-optic broadband services. Fibre-to-home/business (FTTH/B) lines will account for 93% of total fixed broadband accounts in the country by end of 2027, driven by the rising demand for high-speed broadband services and further expansion of fibre-optic networks in the country.

"Cable and DSL's share in the overall fixed broadband lines will decline to reach 5.2% and 1.8%, respectively, by the end of forecast period. Telkom Indonesia is expected to lead both fixed voice and broadband service segments, by subscriptions over the forecast period 2022-2027," said Pradeepthi Kantipudi, telecom analyst at GlobalData. "Telkom Indonesia's strong footprint in the traditional circuit switched segment as well as in the VoIP segment will support its leadership position in the fixed voice services market. The operator's strong position in the fixed broadband segment can be attributed to the ongoing modernisation of its fixed infrastructure with fibre-optic networks across the nation."

Talking critical

TCCA's TETRA Applications Group – led by Hannu Aronsson

TETRA – the benefits of both voice and data

TETRA is recognised as a leading mobile communications technology that is delivering mission-critical voice services to public safety organisations and mobile workers worldwide. However, TETRA data capabilities are often under-utilised. There are many automation-related examples of TETRA data applications that are available from a wide ecosystem of innovative developers.

TETRA can be used for automation, control including Internet of Things (IoT) and Internet of Life Saving Things (IoLST), machine to machine (M2M) and supervisory control and data acquisition (SCADA) solutions as TETRA is a mission critical network.

IoT in a narrowband radio network context means using the radio network for data communications for control, reports, alarms, etc. and leveraging the features of the narrowband radio network for control, i.e., security, encryption, private network, and quick reliable small data delivery. TETRA is very efficient in delivering small pieces of data with a very fast round-trip time, and provides high security and encryption options, which enable its use to control and automate critical systems.

Public safety, fire and ambulance operators can securely deliver alarm and task information to field units over the public safety TETRA network. For example, task information, destination address and priority information can be sent as data over TETRA and shown to the users using their in-vehicle device. The users can provide progress updates from this device which can be updated in the emergency call centre via TETRA.

In some countries, millions of TETRA Packet Data IP transmissions, data SDS and status messages are used every day to deliver key information to and from the field units, providing exceptional situational awareness for both the field units and the control room.

For automation and control, bandwidth is not the most important feature. Often having a guaranteed data rate and response time is most important. Reliability and quick delivery of small pieces of data enables most automation and SCADA applications with TETRA.

Today's IP based SCADA protocols like IEC60870-5-104 or DNP3 are optimised for small bandwidth technologies like TETRA. A short heartbeat packet over TETRA to each field unit every few minutes is enough; in case something changes in a field unit it will be reported automatically to the server in the control room. With these protocols and Packet Data Channel Sharing active on the infrastructure, up to 800 field units can be handled per base station and traffic slot using a 15 minute heartbeat.

TETRA with its quick round-trip times is especially suitable for alarms and alerting systems, such as public siren systems which are used to alert the public about potentially dangerous situations, as well as for monitoring, IoT sensors, and environmental sensors. For example, a water utility can monitor measurements from numerous points in its water treatment facility using TETRA-enabled RTUs with alarm functionality. By monitoring the whole process in real time, the utility can provide safe drinking water efficiently. TETRA solutions can also work along broadband solutions for those applications that require high data bandwidth, such as surveillance cameras, video and high-speed data streaming.

There is a wide variety of handheld TETRA radios available, but there is also a wide variety of other kinds of TETRA terminals and devices. Industrial TETRA terminals can include automation RTU (Remote Terminal Unit) functionality in the same device. These terminals often have I/O (input/output) and local networking ports for easy integration with SCADA and other devices. This means that a single device can solve both the automation, SCADA and communications needs in a remote location.

Industrial processes can be monitored using SCADA running over TETRA packet data. This is a suitable solution for outstations and remote locations from which SCADA information is needed for the operational processes. TETRA SCADA-enabled terminals can be part of a standard SCADA solution.

Some of these TETRA terminals designed for automation also include programmable business logic functionality, allowing a portion of the automation to be handled locally on the device itself. TETRA can provide information updates to public transport station displays while also providing a high-quality voice audio channel for audio notifications in special situations.

TETRA data communications capability is also relatively simple to integrate in the back-end office IT system world. Using a TETRA data gateway, TETRA's efficient narrowband radio optimised data communications can be connected with standard IT protocols and IT systems. TETRA packet data is standard IP networking, but the SDS and status messages and group-addressed data delivery allow for even more efficient communications over the network.

TETRA can be used as a private network totally under the owner's control. As a private narrowband radio network, frequencies can be available even in most built-up areas. A private TETRA network enables the owner to control coverage, capacity, availability, resilience, and security to fit specific requirements. Network coverage can be optimised to cover an oil or gas pipeline with low number of base stations and enable pipeline monitoring and control using a secure wireless network in addition to providing secure and reliable voice communications along the length of the pipeline. The lower number of base stations also makes it easier to provide battery or generator backup power for a business or mission critical network.

> "TETRA network enables the owner to control coverage, capacity, availability, resilience, and security to fit specific requirements."

When buying a TETRA network, consider both voice and data benefits, which can improve the ROI. An existing private or shared TETRA network can also be used to deploy data and automation, extending its value and lifetime.

Communicate Smarter

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Going further in critical communications

Indonesia's communications minister arrested over 4G base station projects

Indonesia's Minister of Communications and Information Johnny Plate has been arrested for corruption charges related to nationwide 4G base station deployment projects, allegedly costing the state IDR8.32 trillion.

The charges relate to the base transceiver station (BTS) phase two project in 2021 and 2022, which aimed to deliver connectivity to 7,904 remote villages. The project has yet to be completed, the budget overran IDR17.3 trillion and only 985 base stations were built out of the planned 4,000.

An initial loss of IDR1 trillion was expected, however, this expanded after further investigation by the Financial and Development Supervisory Agency.

"There is sufficient evidence that he [Plate] was allegedly involved in the criminal act of corruption in the 4G BTS infrastructure development project," said Kuntadi, attorney for special crime of the Attorney General's Office.

If Plate is formally charged, it may further damage president Joko Widodo's credibility when it comes to fighting corruption. Most recently, his social affairs and fisheries ministers were jailed in 2021 on corruption charges.

Malaysia to sell DNB once 80% coverage achieved

The Malaysian government will sell its wholesale 5G network company Digital Nasional Berhad (DNB) once it reaches 80% coverage, as the new administration continues to dismantle the previous government's efforts of a single 5G network.

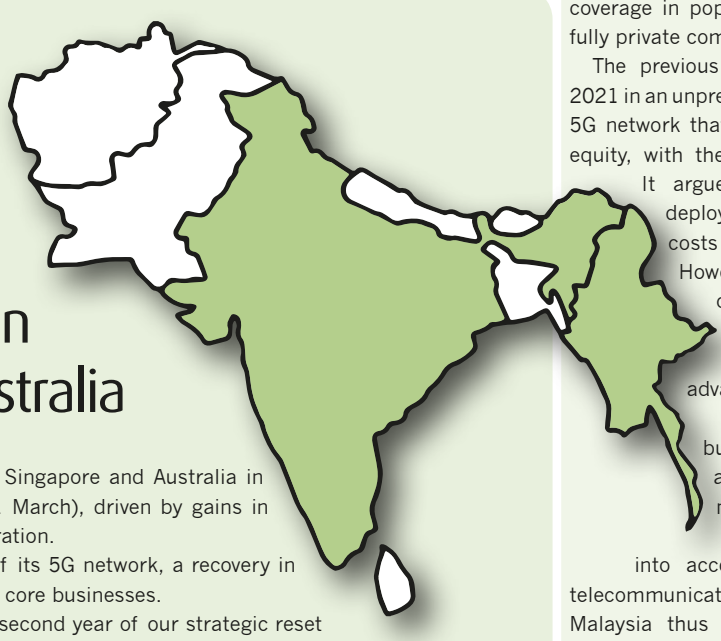
Malaysian Communications and Multimedia Commission chief operating officer Mohammed Ali Hanafiah Mohd Yunus said that another entity will take over DNB once it reaches 80% coverage in populated locations and make it a fully private company.

The previous government launched DNB in 2021 in an unprecedented move to have a singular 5G network that operators equally shared 65% equity, with the rest held by the government. It argued this would streamline the deployment of infrastructure, keeps costs low and accelerates coverage. However, as Malaysia wrangled with operators on how to conduct its 5G strategy, southeast Asian neighbours have advanced further.

Now, the government plans to build out a second 5G network and abolish the single 5G network policy.

"This model also takes into account the sustainability of the telecommunications industry ecosystem in Malaysia thus ending the monopoly element that is often associated with DNB," said communications minister Fahmi Fadzil.

Singtel notes solid performance amidst uncertain macroeconomics in Singapore and Australia



Singtel has reported growth in mobile in Singapore and Australia in its fiscal first half 2023 (which ended 31 March), driven by gains in prepaid subscribers, roaming and 5G migration.

CEO Yuen Kuan Moon cited the reach of its 5G network, a recovery in roaming and focus on costs for reviving its core businesses.

"Our solid financial performance in the second year of our strategic reset reflects the tangible progress we have made against our business priorities in spite of the uncertain macroeconomic environment," said Kuan Moon.

Net profit increased 6.1% year-on-year to SGD1.1 billion. Operating revenue fell 4.2% to SGD7.4 billion due to the loss of NBN migration revenue in Australia and contributions from Amobee, along with a 7% depreciation in the value of the Australian dollar. Its regional associates' pre-tax contributions increased 3.7% to SGD1.1 billion. The company attributed a decline in growth to significantly weaker currencies in the region.

Mobile revenue in Singapore grew 12.7% to SGD431 million on higher roaming income, 5G adoption and prepaid customer growth. Equipment sales were up 5% to SGD227 million. Prepaid subscribers rose 9.5% to 1.4 million. Post-paid users were up 2% to 2.9 million. Blended ARPU grew 9.3 % to SGD26.

Monthly data usage increased 9.3% to 26Gb. Pay-TV revenue dropped 21.9% to SGD68 million due to a decline in customers and price reductions. Fixed broadband rose 2.8% to SGD140 million.

Indosat Ooredoo Hutchison reports 621.6% increase in net profit attributable to owners

Indosat Ooredoo Hutchison reported gains across all business lines in Q1, with subscriber and ARPU gains driving mobile growth.

President director and CEO Vikram Sinhaoting said that Indosat Ooredoo Hutchison completed network integration at the end of March, using multi-operator core network technology on 460,000 sites across Indonesia to expand coverage and improve download data rates.

Net profit attributable to owners grew 621.6% year-on-year to IDR929.1 billion and revenue rising 9.9% to IDR11.9 trillion. It booked IDR96.5 billion in interest income, with total expenses dropping marginally. Mobile revenue increased 9.4% to IDR10.3 trillion. ARPU grew 2.8% to IDR32,900. Multimedia, data communication and internet revenue rose 11.2% to IDR1.5 trillion. Fixed-line turnover rose 24.4% to IDR232.1 billion. The operator added 3.9 million mobile subscribers to end March with 98.5 million. LTE users increased 5.1 million to 73.4 million. Capex was 2.9% higher at IDR2.4 trillion, with its 4G base station count increasing 26.7% to 152,000 sites. The company said 91.4% of capex went to its mobile network.

EdgePoint Infrastructure activates first colocation tower in Rizal

EdgePoint Infrastructure has activated its first tower colocation tenancy site in conjunction with DITO Telecommunity through its subsidiary, EdgePoint Towers Inc. (Edgepoint Philippines).

According to EdgePoint, in less than two weeks after acquiring ownership of the 48m, ground-based tower located in Tanay, Rizal, the company successfully made the tower ready for installation (RFI).

DITO Telecommunity can now serve over 139,000 residents in the area with the new location. The activation also marks the beginning of a collaboration between EdgePoint and DITO Telecommunity that will see the implementation of planned colocation projects throughout Luzon.

"With the Government — via the Department of Information and Communications Technology — encouraging the installation of shared telecommunications towers via Independent Tower Companies, EdgePoint Philippines is focused on making its tower network available to all operators for fast-track deployment," said Suresh Sidhu, chief executive officer of EdgePoint Infrastructure. "We are committed to ensuring the ready availability of accessible and reliable wireless telecommunications infrastructure to support all mobile network operators and Internet service providers in the Philippines, thereby improving service quality to their customers."

BSNL to spend big for 4G network

BSNL is preparing to issue a 24,500 crore purchase order for equipment for 100,000 4G sites after an empowered group of ministers approved the operator's request to set up a 4G network.

The network will be deployed by a consortium headed by Tata Consultancy Services, government owned C-DoT and Tata Group-owned Tejas Networks. BSNL is aiming to provide 4G services across India within 18 months.

"The GoM has approved the proof of concept and BSNL will give the purchase order in a couple of days. TCS-led consortium has to accept the order, issue performance bank guarantees and provide the equipment for deploying 4G," said one of the ministers.

"BSNL has already started 4G pilots in Punjab, and they plan to take 4G pan-India over the next 18 months. We believe that they should be able to ramp up faster and complete the installations within a year," said the second minister.

BSNL has already placed orders for 12,000 sites for early deployment.

Axiata delayers for optimum business configuration

Axiata Group has announced plans to position its two operating units in Indonesia as a converged service company and a specialist wholesale fibre company, with the goal of improving joint asset utilisation and operating efficiencies.

Axiata said that the restructuring will enable mobile unit XL to take advantage of opportunities in fixed mobile convergence (FMC) and fixed broadband, with its Link Net business to provide wholesale fibre access.

As an infrastructure partner, Axiata said that Link Net will be positioned to "capture the wholesale opportunity of an underpenetrated fixed broadband market."

Meanwhile, transferring its fibre infrastructure assets to Link Net and focusing on its FMC service offerings positions XL "to unlock the next phase of growth with an asset light business model."

Hans Wijayasuriya, CEO of Axiata's telecommunications business, said that the strategy aims to capture the growth opportunities in FMC and fixed broadband access sectors. He noted its delayering approach featuring a fibre company and converged service company "will lead to the optimum configuration for value capture."

Airtel reports higher profit in Q4

Bharti Airtel's MD Gopal Vittal has credited a focus on subscriber additions for gains in its fiscal fourth quarter 2023 (ending 31 March), with profit up despite high domestic capex as its Africa and mobile businesses fared well.

Vittal highlighted the net addition of 7.4 million 4G customers during the period and reiterated a goal of covering all major towns and villages with 5G by the end of calendar 2023.

"We are also pleased to see the increased velocity of our digital deliveries across all parts of our business," said Vittal, pointing to a focus on related platforms and "talent."

Net profit attributable to owners of the parent company grew 50% year-on-year to INR30.1 billion, with revenue up 14% to INR360.1 billion.

Mobile service revenue in India increased 12% to INR195.5 billion, with its user base up 2.9% to 335.4 million, 224.1 million of which were 4G, up 11.6%. Average data usage per customer rose 8% to 20.8Gb a month. Airtel Business revenue increased 14.5% to INR47.9 billion and Home Business 25.2% to INR11 billion. Fiscal 2023 capex was up 37% to INR280.6 billion and its base station count rose by 80,200 to 832,000 sites.

Grameenphone achieves impressive eighth consecutive quarter of yoy revenue growth

Grameenphone - the largest MNO in Bangladesh by revenue, coverage and subscriber base, and part of Telenor Group - booked revenue gains in the first quarter of 2023 attributed to higher data usage, while its bottom-line fell due to elevated capex.

CEO Yasir Azman said that its continued network investment resulted in it doubling fibre connectivity and deploying more than 2,400 4G base stations for a total of 20,100. Azman said Grameenphone's "ongoing modernisation and transformation journey" is starting to show results.

Net profit declined 3.7% year-on-year to BDT7.8 billion, impacted by higher depreciation from spectrum purchases, new site rollouts and higher finance costs. Revenue rose 2.8% to BDT37.3 billon, with data up 14.2% to BDT10 billion. This marks Grameenphone's eighth consecutive quarter of year-on-year revenue growth.

Azman said that with the resumption of SIM sales in early January following a six-month government ban, Grameenphone's subscriber base returned to growth, with the sum up by 1 million to 80.1 million. Year-on-year, its user base was down by 3.6 million subscribers.

Capex increased 77% to BDT6.9 billion, while ARPU grew 7.5% to BDT153.

AIS sees 20% rise in data usage

AIS started off 2023 with profit and revenue gains driven by a modest recovery in consumer purchasing power and tourist-related consumption, along with an increase in 5G subscribers.

Net profit grew 7.1% year-on-year to THB6.8 billion, attributed to lower finance cost and a net foreign exchange gain.

The company's revenue increased by 3.2% to THB46.7 billion, aided by 11% growth in fixed broadband sales, and a 5.2% increase in enterprise and other revenue.

Mobile service revenue increased 1.4% to THB29.3 billion, and SIM and devices sales 7.1% to THB9.9 billion. Prepaid average revneue per user (ARPU) fell 6.7% to THB129 and post-paid 2.6% to THB460.

Its 5G subscribers rose from 2.8 million in Q1 2022 to 7.2 million. The operator added nearly 1 million post-paid subscribers for 12.7 million in total. Prepaid subscribers increased 1.8% to 33.5 million. Average monthly data usage per subscriber rose 20% to 26.6Gb.

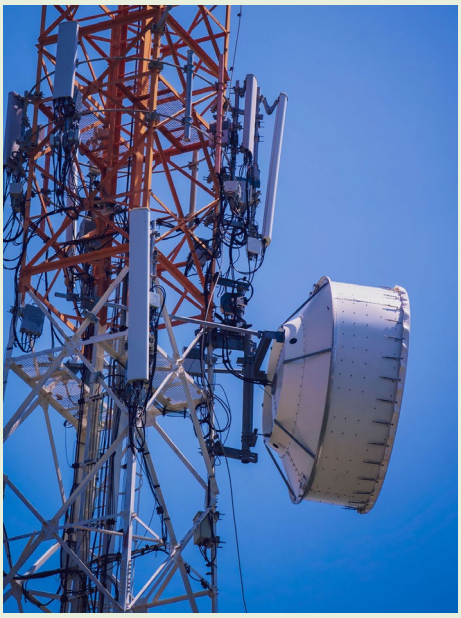
CelcomDigi announces 4G expansion plans to increase coverage to 98% of population

CelcomDigi has outlined a three-year network integration plan designed to expand 4G coverage while reducing the number of base stations by as much as a third. The operator plans to decommission 7,000 sites and build 2,000 new ones to increase population coverage by 2 percentage points to 98%.

Celcom and Digi each owned about 12,000 sites, which the merged company aims to cut to between 16,000 and 18,000 in total.

The moves are expected to reduce network operating costs by MYR5.5 billion over three years and IT expenses by MYR1.1 billion.

CelcomDigi booked net profit of MYR321 million in the first quarter of 2023 compared with a combined figure of MYR499 million in the comparable period of 2022, due to a spike in depreciation and amortisation costs. Service revenue remained at MYR2.7 billion. Capex dropped 83% to MYR108 million. The MNO March with 20.3 million mobile subscribers.



Maxis converts pre-paid to post-paid subscribers, boosts profits

Maxis has credited a campaign to convert prepaid users to post-paid for boosting mobile service revenue in the opening quarter, with profit growing as costs fell.

CEO Goh Seow Enh said that Maxis is pleased with its strong start to the year: "as we strengthen our position as an integrated player, we will focus on sustainable and predictable growth."

Net profit attributable to shareholders rose 7.4% year-on-year to MYR320 million on cuts in network and spectrum costs, and lower taxes. Revenue grew 5% to MYR2.5 billion. Post-paid subscriptions increased 6.5% to 3.4 million, with revenue from the segment up 10.1% to MYR864 million. Prepaid revenue was flat at MYR661 million.

Total service revenue grew 4% to MYR2.1 billion. Enterprise sales rose 5.5% to MYR365 billion. Home connectivity revenue increased 11% to MYR222 million. Capex dropped 24% to MYR130 billion, but Maxis expects full-year outlay of MYR1.1 billion, about the same level as in 2022. Maxis forecast flat or low-single-digit full year service revenue growth.

PLDT closes first 135 tower deal with Unity Digital

PLDT has closed the sale and leaseback of 135 towers with Unity Digital Infrastructure.

This is the first closure of a deal for 650 towers in total for PHP9.2 billion, first announced in December 2022.

PLDT said that it will receive PHP1.9 billion for the 135 towers that are being transferred over to Unity. The master service agreement leaseback arrangement for 10 years had also begun. PLDT will transfer the additional towers over the next few months when closing conditions are met, all towers are expected to be sent over this year.

PLDT converts base stations to LTE

PLDT stopped deploying new 5G base stations in early 2022 and is now converting some sites to LTE as part of on-going network optimisation programme initiated after an internal review prompted by a massive capex overrun. The operator closed the quarter with 76,500 base stations, including 38,800 4G sites.

In its first quarter earnings release, PLDT revealed it is repurposing underused 5G sites based on traffic analysis to improve the customer experience and to increase operational, capex and spectrum efficiencies. Its 5G base station count peaked at 7,200 at the end of 2021.

Head of networks Eric Santiago said a halt in base station deployment was "a natural consequence of the deep-dive review of internal processes related to capex." He added that PLDT started to reaccelerate its network rollout, taking into consideration recommendations to improve project monitoring and related processes.

During the first quarter, PLDT's net profit was flat at PHP9 billion, attributed to higher capex and a PHP1.5 billion charge for a voluntary staff reduction programme. Consolidated service revenue rose 4% to PHP49.7 billion. President and CEO Alfredo Panlilio noted inflationary pressures forced it to push for improved cost-efficiency.

Operating expenses dropped 8% to PHP22.8 billion, while depreciation and amortisation charges fell 7% to PHP11.7 billion. Wireless service revenue declined 1% to PHP23.4 billion, with gains in mobile data offset by declines SMS and voice. Prepaid ARPU at mobile unit Smart Communications rose 8% to PHP107 and post-paid fell 13.7% to PHP678. Average monthly data use per customer increased 15% to 10.6Gb.

Its prepaid user based dropped by 5.2 million to 63 million, due to a SIM registration push. Post-paid subscribers remained at just more than 2 million. Fixed-line service revenue dropped 12% to PHP29.9 billion, as a 10% rise in home broadband sales was erased by weakness in voice and corporate data. Enterprise revenue increased 5% PHP11.8 billion. Capex grew 22% to PHP19.3 billion.

The company maintained 2023 capex guidance at PHP80 billion to PHP85 billion, compared with PHP96.8 billion in 2022.

Talking research

Amy Saunders, editor,
Southern Asian Wireless Communications

Driving wireless communications in APAC with FWA, network automation and IIoT

According to **Rethink Technology Research**, fixed wireless access (FWA) will be a major source of new revenue for operators globally over the next seven years - but with sharp regional variations. APAC will drive substantial FWA subscriber growth, while populous APAC countries led by China and India will roar ahead in subscriber numbers.

This dichotomy between revenues and subscribers reflects stark differences in monthly ARPU generated by FWA, as for broadband services generally, ranging from $7 for APAC to $2 in India. Such low ARPUs pose a challenge to operators by themselves and mean that fibre can only penetrate deep into rural areas with the help of government incentives. Low ARPUs can also make FWA an attractive proposition for operators as an additional revenue source, with opportunities for follow up added value services such as video and cloud gaming.

There is a very different picture for FWA revenues, however, where Europe will take a strong lead with 35% of the global $62.9 billion in 2030, followed by North America on 24% and APAC only third on 16% - reflecting the low ARPUs.

FWA is being driven by three parties – consumers, operators, and governments – all acting in response to rising demand and improved technology capabilities.

Consumers in areas unserved or poorly served with wired broadband are demanding broadband service more comparable with those offered to their urban peers, and these can now be provided increasingly by FWA.

Mobile operators are interested in the potential for new revenue streams or services that can exploit unused spectrum. In developing nations, FWA has emerged as the most economical option for extending broadband services to users previously denied internet access at acceptable speeds, or at all.

Governments want to reduce digital divides, and many have been offering incentives for digital levelling-up, to remove deficiencies in rural areas. FWA is increasingly on their radars as one element of the broadband mix for underserved communities.

Meanwhile, the global network automation market is to reach US$34.8 billion over the next decade, according to **Future Market Insights**. The market is assessed to be US$4.4 billion for 2023 and is likely to progress at a compound annual growth rate (CAGR) of 23% from 2023 to 2033.

The market is expected to see rapid expansion, due to rising connected device usage, the emergence of hybrid workspaces, and 5G-driven applications. Moreover, it is projected that an increasing focus on using network virtualisation may accelerate network automation market growth. The usage of network automation-enabled services across new industries and sectors, including BFSI, manufacturing, and retail, is favouring market growth.

While the US is the leading region in the adoption of network automation solutions and services, contributing almost 30% of the global revenue, India and China are the two remarkably growing economies for the network automation market in APAC.

Until 2022 and the preceding years, the network automation solution segment dominated the market with a 70% revenue share. However, the services segment is picking up rapidly and is estimated to progress at a rate of 25.5% during the forecast years. The on-premises segment for the deployment of network automation held a market share of 55% in the year 2022. Meanwhile, the deployment of cloud network automation solutions is getting rapidly popular and is expected to register a CAGR of 25% through 2033.

In other news, the **International Data Corporation (IDC)** report 'Industry 4.0 and Beyond: How 5G-IoT Integration Enables Sustainable Operations' illustrates the current environment of how Industry 4.0 is assisting enterprises in APAC to reach their sustainability goals. According to IDC's '2022 Telecom Carrier Transformation Survey,' 12.4% of telecom carrier respondents in APAC saw Industrial Internet of Things (IIoT) as a key rationale for initiating 5G services.

The promise of IIoT has piqued the interest of businesses, governments, and technology experts alike, as it promises to boost efficiency, productivity, and sustainability in areas like manufacturing, logistics, energy, and healthcare.

According to the United Nations' Sustainable Development Goals, sustainability is the essential business strategy for the future. Smart manufacturing, energy-efficient construction and low-impact industrialization are examples of supporting activities. Industry 4.0 bridges this gap by integrating traditional industrial processes with digital technology, artificial intelligence, and the IoT.

According to the IDC, 5G connections in APAC will increase from 574 million in 2021 to 3,234 million in 2025, rising at a five-year CAGR of 87.9%. According to the IDC 'Carrier Transformation Survey 2022,' the most crucial use cases for the advent of 5G include vital industries such as manufacturing, smart cities with smart mobility, and smart buildings.

5G plays an important role in delivering a whole new set of ecosystems for businesses, which can help them achieve their sustainability goals much more easily and robustly. Private or dedicated networks have been established in manufacturing plants around the APAC to control various pieces of equipment on-premises. Unstable wireless communication and latency are challenges to digital transformation adoption in every organization that can be overcome with the help of 5G. IoT devices demand extremely reliable connections, which can be easily delivered via a private 5G network.

The integration of IIoT applications with 5G networks is transforming industries and forging the APAC region's digital transformation path. Regional telecom providers recognize the vast potential of IIoT in promoting innovation, efficiency, and competitiveness. Telecom operators are paving the path for seamless connectivity and opening up new options for businesses to exploit IIoT solutions by implementing 5G networks.

The collaboration between telecom carriers and industrial partners is hastening the development of customized 5G solutions that answer specific business needs and unlock the far-reaching potential of IIoT applications. The advantages of 5G-enabled Industrial IoT, such as increased efficiency, huge device connectivity, remote management, and improved safety, are propelling businesses into a future of digital transformation and unparalleled connectivity.

Scaling your tower infrastructure with AI

Digital transformation is progressing at speed across South Asia. The region is seeing the biggest increases in mobile internet adoption which accounted for, according to GSMA, more than 50% of new mobile subscribers globally in 2021.

From an infrastructure perspective, we see some of the largest telecom loads reflecting the increasing demand for mobile connectivity and data consumption with ongoing reviews of the infrastructure's resilience, fit-for-purpose status, efficiency and sustainability. The same questions keep coming up: 'are mobile sites right-sized for their load?', 'are the right assets in the right place?', 'with high CAPEX and low returns, can existing assets be better deployed?' 'what other energy efficiencies can be achieved to support more sustainable growth?'. These questions are very hard to tackle at the scale of large tower networks with scarce resources. Unlocking the value of the data that still sits underutilised in the passive infrastructure is key to managing the challenges above.

PowerX applies advanced data science, machine learning (ML) and artificial intelligence (AI) in its breadth of solutions for passive tower infrastructure. One of the most frequent questions I'm asked is "what exactly is AI?" and "how specifically will it help better manage mobile towers infrastructure?"

What is Data Science?

The data science space is phenomenally broad. Defining it has become something of a Rorschach Test depending on who's asking – and who's answering – the question. What are you looking for? Deep learning? Neural networks? Big data analysis? AGI? ML? AI?

AI is the most well-known, and I find it more productive to first chip away at what AI *isn't*, since there are many misconceptions associated with the term that simply get in the way of understanding and utilizing AI's practical power.

AI is still mistrusted, frequently and recently portrayed as technology that reaches a magical threshold of brute computing power that gains self-awareness, usually with malevolent intentions, or as a tool that will steal your job. Functional AI has nothing to do with the pursuit of machine consciousness or self-awareness. Whilst it will make you more efficient, it won't steal your job. Instead, leading edge advances in AI are better characterized by their application to diagnose health diseases, predict patient volumes in hospitals or customer demand in call centres. Applications closer to home include predicting power usage in an electrical distribution grid or balancing the load on electricity grids. In our industry, its potential in driving real-time predictive maintenance, power and site efficiency management remains largely untapped.

Data science in the telecom sector

As of today, the telecommunications sector has a somewhat unbalanced adoption of real-time AI technology. Data science and AI is used at scale in call centres, to determine consumers' propensity to buy and even on 5G active equipment management. On the passive infrastructure side though, the take-up of AI is far behind and yet to reach critical mass. It is incorrectly seen as a tech buzzword, rather than the highly effective tool for delivering tangible business and operational benefits that it is. Aside from early investments in maintenance prediction software, the complex operation of managing thousands of sites spread across large terrains with three or four collocating tenants and huge data demands has, to date, been left behind by this technological wave.

This is why understanding 'what AI actually is' becomes critical: it is a set of data science tools which help existing teams drive new efficiencies. It is an augmenter and enricher of people and processes, not a replacement.

So, returning to our earlier question: "What is data science and AI?", it might be more helpful to frame the question as "What can data science *do*?" Tower networks produce unimaginably huge troves of data, terabytes of potential insight into day-to-day operations that typically remain unutilised in archived spreadsheets and dormant data banks. With the application of data science, the more data, the higher quality the model, the more evolved, impactful and meaningful the predictions and the resolutions. The benefits are many: improved asset efficiency; reduced diesel, energy and other operational costs; optimised predictive maintenance; increased revenue assurance; improved resilience; and reductions in carbon emissions.

Data science, AI/ML algorithms sift through immense quantities of sterile data and uncover hidden patterns in the micro-operation of a single tower or across a sprawling network. A single generator in Pakistan, for example, may regularly run for 30 minutes after the site starts receiving power from the grid, while a site in Vietnam may consume excess energy due to a faulty rectifier. These inefficiencies, added up over a network, result in thousands of dollars of operational losses that could otherwise be invested in growth. Data science tools embedded in an organization's processes highlight the most inefficient towers and put a spotlight on the exact issues to be fixed, allowing NOC and operations teams to do what they do best with significantly greater scale, reach and insights.

Real world examples

PowerX was recently installed onto a network of 10,000 towers, and very quickly allowed the team to find over 70,000 previously unseen anomalies on the network. No human – or team of humans – can discover anomalies at that scale and prioritise them fast to ensure the biggest impact on improving operations. PowerX's AI and data science automation, combines phenomenal data crunching capabilities with pattern recognition algorithms to excavate issues buried deep in the noise. Whether it is detecting rectifier step change problems, reducing avoidable generator run times or spotting inefficient generator loads, data science works for the humans, not as potential replacements. In fact, the insights and alerts generated by AI can increase the efficiency of tower operation teams by a factor of 30 – 50x.

For a sector that has a well-deserved reputation as a technology innovator, the question: 'should I digitize tower infrastructure using AI?' cannot be shelved anymore. Embedding data science and AI into operational processes is now essential in order to support the increase in demand for connectivity and mobile data, alongside the need for greater operational efficiency, high resilience and sustainable growth. ■

Justin Head – Founder, Executive Vice Chairman – PowerX

Download whitepaper here

eSIM technology: the next generation of IoT connectivity

Marc Sauter, head of IoT product management, Vodafone Business

There's no doubt that businesses understand the importance of digital transformation; adopting new technologies and digital tools to enhance productivity and increase both customer and employee satisfaction. For many businesses, IoT has been crucial for survival, helping to manage assets and business operations, develop new products and services or improve efficiency in the supply chain.

IoT solutions are flexible enough to meet the needs of a range of different sectors so no matter what industry you're in, it has the power to transform your business. The great thing about IoT is that it can be integrated in many ways and continues to evolve alongside other technology solutions to fulfil customer demands. At the core of a cellular IoT solution is the SIM card, and like any other technology, SIM cards have developed to meet customer needs and use cases in both consumer and IoT markets.

Virtualisation of the SIM card

The SIM card is an integrated circuit that securely stores the subscriber identity number (IMSI) and the sensitive network authentication keys. The SIM, in a combination of hardware and software, provides secure identification and authentication for subscribers onto mobile networks (2G, 3G, 4G, 5G, LPWA).

Its main feature is to encrypt all the communications between the customer equipment and the operator to ensure that each user gets access to the contracted communication service and to support the integrity of the billing process. Mobile network users also recognise SIM cards as a key security element to choose the mobile network technology for the communication of their products.

Traditionally, SIMs have been available as a plastic card with a chip. Over the past decade, the SIM has evolved and is now available in different form factors and grades to meet the different requirements (such as size, memory, temperature range, etc.) from different use cases (e.g., automotive, utilities). The latest development is called an embedded SIM (eSIM or eUICC).

The eSIM is simply a capability that enables SIMs (of any type) to switch from one MNO to another without the need to physically change the SIM. The change of connectivity provider is done over-the-air (through a process called remote SIM Provisioning – RSP). With eSIMs, the profile of a chosen provider can be installed, activated, or changed via an encrypted communication over a mobile network, meeting the highest customer safety requirements.

What does this mean for IoT customers?

As products have a longer lifetime, eSIM capability removes the difficulty and cost to physically access and replace soldered SIMs. The flexibility of switching operators gives customers flexibility, enabling new use cases. eSIM capability is usually deployed in combination with automotive and industrial SIMs because of the longer lifetime of products, and the difficulty and cost to physically access and replace soldered SIMs. To remotely provision an eUICC, it is necessary to have some software loaded in a server, called subscription manager (SM).

The eSIM functionality allows the IoT customers to change the connectivity provider in cases such as the end of the contract, or using an alternative provider if the coverage is not good. The eSIM also enables new uses cases such as to manufacture off-the-self IoT devices with an initial connectivity provider that can be changed to another provider depending on where the service is going to be used. Or the option to add highly regulated markets to the customers footprint by using a single connectivity supplier that enables the switch to a local supplier to comply with the local regulation.

This capability will drive adoption of IoT, make it easier to deploy IoT solutions, and is opening new use cases and applications that were not possible before.

Creating new standards for eSIM

According to the GSMA, there is good progress being made in the adoption and awareness of eSIM technology. Related to IoT, we believe that about 25% of overall SIMs today are eSIMs and that eSIMs will grow with a 30% CAGR.

The GSMA has developed a standard that has been accepted by most of its member operators around the world. This allows the intrinsic 'digital signature' content of a SIM card to be downloaded 'over-the-air' (OTA). So, eventually most SIMs will be eSIMs with OTA switching capability.

The future of business connectivity

eSIMs are also crucial for industries looking to improve their sustainability practices. The streamlined production and distribution process for eSIM technology will have a more positive impact on the environment. As they do not require plastic packaging like traditional SIM cards, businesses will be able to reduce unnecessary waste and carbon emissions.

Businesses can rely on a global IoT network to deliver benefits and results. Most platforms are built to be scalable, accommodating growth and upgrade necessary requirements for businesses.

eSIM technology will increase the need for connectivity management platforms (CMPs) to help manage the state and levels of complexity on the platform. IoT management will be simplified for organisations – giving visibility and control of IoT devices anywhere. The entire IoT infrastructure will be centralised on one platform with transparency around the data and diagnostic of the devices.

With a resilient platform available from the touch of a phone, businesses can save money with secure and reliable data connectivity for all critical business applications on the IoT platform, which will help them to respond quickly to opportunities and threats. ■

Delivering a revolution – via 5G

5G is set to revolutionise the world with high-speed connectivity, enabling services the likes of which have never been seen. From smart cities and IoT to communications on the move, the future looks bright. Nonetheless, 5G rollout across southern Asia is fragmented – Amy Saunders finds out why

Affordable access to internet connectivity is considered a basic human right by many. Demonstrating its absolute necessity during the COVID-19 pandemic, wherein it became a lifeline for work, leisure, healthcare, learning, etc., the internet has surpassed all expectations in enabling modern life.

Despite this, coverage remains uneven across the globe, with many developing nations remaining at less than 50%. Even those nations with 'good' coverage are host to large digital divides between the inner cities – often home to high-speed connectivity – and remote regions, often poorly served or completely unconnected.

Data from Ookla's April 2023 Speedtest Global Index reveals that Singapore, The Maldives, Vietnam, Thailand, and Malaysia all boast mobile download speeds exceeding 30Mbps. At the other end of the scale, typical mobile download speeds in Nepal and Sri Lanka are less than 15Mbps – lower than the recommended speed to stream UHD content. Clearly, there's work to be done.

A call to action

"Ensuring 5G is fully available across the entire southern Asian region is of critical importance for the development and growth of these areas," states Eran Shalev, VP, head of product, Parallel Wireless. "The impact of 5G goes far beyond just faster download speeds or improved network performance. It has the power to transform industries, enable new technologies, and bring people closer together."

Indeed, 5G is not just the next generation in a line of mobile generations, but an entire ecosystem of technologies, products, solutions, and processes to facilitate the daily life of communities, explains John Tenidis, marketing director of Intracom Telecom's wireless solutions portfolio.

"5G has an impact equal and comparable to

that of the industrial revolution," asserts Tenidis. "5G is a tool for the population to improve quality and increase prosperity for its current and the future generations. It can be used in the economic, political, social, industrial, academic, professional life of the communities and its integration requires skills that must be developed locally for local needs."

Shalev agrees, citing that deployment across all parts of southern Asia can create new opportunities in different segments and bring progress to new areas. "People in remote and rural areas of southern Asia will be able to access the same high-speed internet and advanced technologies as their urban counterparts, and at the same time enjoy the advantages of new industries, more tourism, better education, and improved health care."

"Establishing equality to the right of communication is fundamental for the prosperity of communities," concurs Tenidis. "Things like smart education, smart agriculture, smart business, smart entertainment, and AI have their foundation on the 5G network. 5G is the tool to bring prosperity to the entire population. The rural and non-densely populated areas have always been the Achilles' heel of progress."

Vaibhav Magow, vice president, international division, Hughes, however, believes that "it's not important that 5G be fully available across the entire southern Asia region – or any region, for that matter. This is because there are still many places where 4G is not yet available!"

Indeed, according to the GSMA, in southern Asia some 70 million people are on the edge of coverage of mobile service and another 66 million people live without any mobile coverage at all.

"Rather, it's important that reliable connectivity be available to anyone who wants it, and that's where satellite plays such an important role – both for direct-to-home internet access and for backhauling cellular traffic to extend network reach beyond where cable and fibre connect the towers," says Magow.

Remote and rural communities

The natural landscape of southern Asia – spanning more than 4 million square km – features a wide array of physical characteristics, from deserts, mountains, and islands through to dense jungles and humid swamps. Delivering 5G connectivity to such regions, often remote and rural, poses significant challenges; however, with innovative strategies and partnerships, it is possible to overcome these and bring the benefits of 5G technology to even the most remote corners.

Some of the greatest challenges include lack of infrastructure like fibre and cell towers, which are costly and time-consuming to build; limited electricity supply, which makes operations and maintenance tricky; affordability for end users; lack of skilled personnel for deployment; and handset availability and pricing.

Magow agrees that delivering 5G (and even 4G) cellular service to remote and rural southern Asian locations is hampered by the lack of wired access to connect the cell towers. "It's the same challenge that has existed for years because the economics are such that it's cost-prohibitive for a mobile network operator to invest building out the infrastructure in areas of low population density."

"The topography and infrastructure of these areas combined with the nature of the majority of the 5G new spectrum bands - high band and short range - can make it difficult to deploy the necessary infrastructure and technologies to support 5G networks," concurs Shalev.

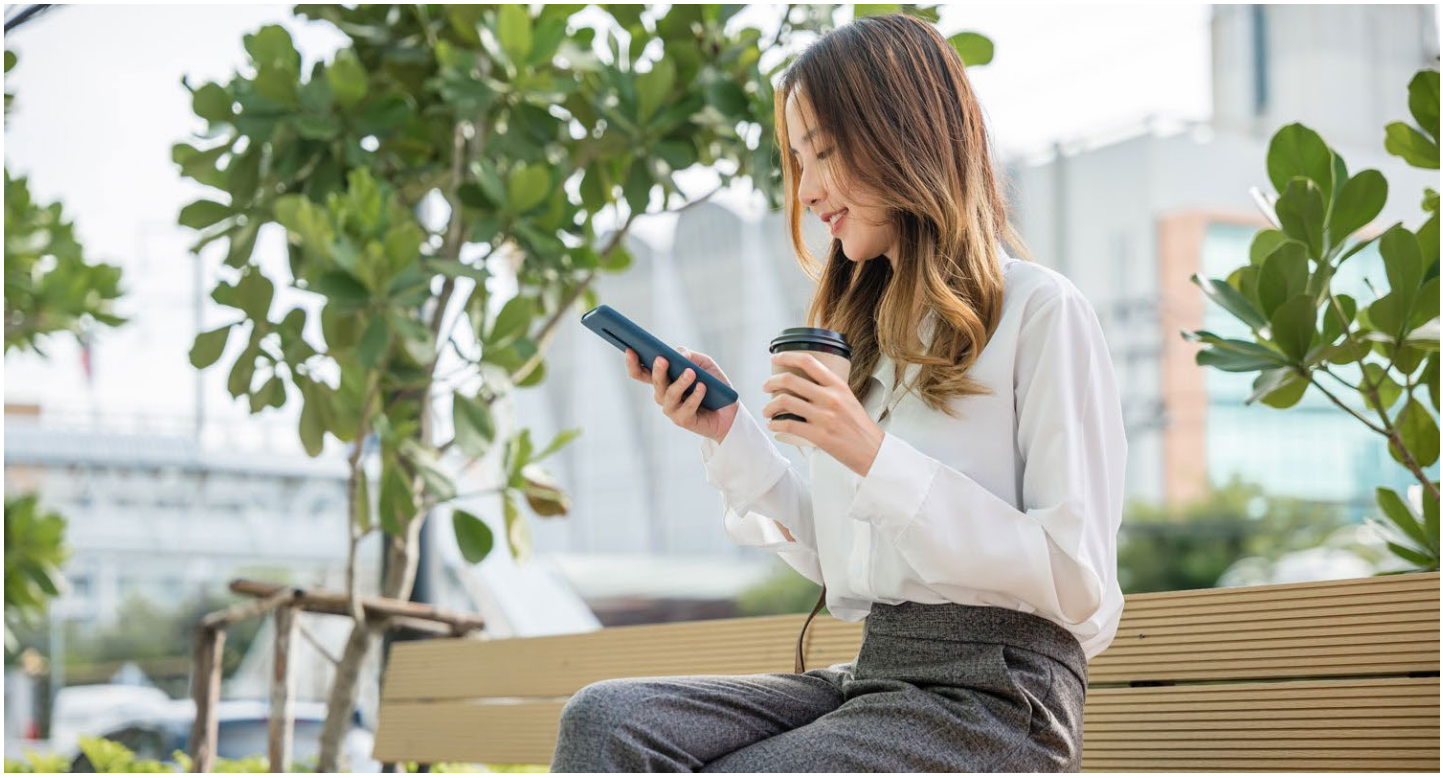
These challenges should be used as the driver to find innovative solutions to overcome obstacles, says Shalev, by exploring low-cost and high-performance equipment options, for example.

"Advanced antenna system technologies, Massive MIMO and beam forming technologies can be easily deployed and increase spectrum efficiency, increasing satellite coverage to reach remote areas, and utilising artificial intelligence and automation to optimise network deployment," says Shalev. "Local governments must allocate the maximum possible spectrum as well as collaborate with the stakeholders to ensure that all communities have access to the necessary infrastructure and resources to support the deployment of 5G networks. By working together and leveraging the latest technologies, it is possible to overcome these challenges and bring the power of 5G to all corners of southern Asia."

5G does present one important opportunity though, according to Magow: "and that is, in many countries, including Bangladesh, India, and Nepal, operators are required to extend broadband connectivity into rural areas as part of their 5G licenses."

With such a varied natural environment presenting a host of challenges, the best technical solutions for delivering broadband-speed connectivity also vary from country to country, city to city, and even town to town.

"There should be a combination of technologies to provide the greatest solution for remote and rural 5G access in southern Asia," says Shalev. "Small cell technology can be deployed in urban areas, while satellite-based solutions can be used to reach remote and rural locations."



Magow agrees that satellite has a key role to play given the often-remote locations: "shared VSAT solutions such as cellular backhaul and community WiFi hotspots continue to help bridge the digital divide in rural and remote areas and represent a reliable and efficient way to extend mobile network service – including 5G into these populations. With the launch of new low Earth orbit systems, such as OneWeb, mobile operators will have yet another option for powering these solutions – with lower latency and higher speeds."

Meanwhile, next generation fixed wireless access (ngFWA) combined with a reliable transport solution could also have a significant impact on the southern Asian market.

"This technology has the potential to provide high-speed internet access to even the most remote areas where traditional broadband is not available," outlines Shalev. "ngFWA is a cost-effective and easy-to-deploy solution that provides reliable connectivity for residential and business customers."

By leveraging this technology, the digital divide can be bridged, and the benefits of high-speed internet access felt across all parts of southern Asia. "This can help to unlock new opportunities for economic growth and development, while also improving the quality of life for people living in these areas," adds Shalev.

Money, money, money

The monetisation of connectivity services is essential for operators to continue to deliver high-speed internet services to the population of southern Asia, and indeed, the rest of the world.

Tenidis believes that, at first, 5G monetisation may be comparable with the challenges experienced during the rollout of 4G. The e□ective monetisation of 5G services and capabilities can be challenging and costly, "however, emerging business models, although they cannot be accurately predicted today, will lay the first stone for new synergies and cross-product offerings bringing enhanced commercial transactions. 5G will eventually enable numerous direct or indirect business relationships (e.g. B2B2X) among CSPs, third parties and the end customers. The most common of such models, also applicable today, refers to third party digital content offered to consumers by the CSPs."

Monetising remote and rural 5G offerings can be a particularly significant challenge for service providers due to the low population densities and island topologies involved. Shalev recommends:

- Providing customised services to niche markets such as agriculture or mining industries that are prevalent in these areas. These industries often have unique connectivity needs, and service providers can tailor their offerings to meet these needs.
- Service providers can explore opportunities to partner with local governments to provide connectivity to underserved areas, which can help to attract new businesses and stimulate economic growth. This can be performed in conjunction with promotions from the governments that would benefit from the rise in education, health, industries, and commerce in these remote areas.
- Leveraging the latest technologies such as advanced radio and automation to optimise network deployment and reduce operational costs. This can help to improve the profitability of remote and rural 5G offerings.
- Offering value-added services such as remote healthcare or online education, which can help to increase demand.

"Adopting these strategies will allow service providers to monetise remote and rural 5G offerings and bring the benefits of high-speed connectivity to all parts of southern Asia," concludes Shalev.

To promote the rollout of 5G connectivity throughout the region, governments can provide incentives for service providers to balance the shortfall in profitability in rural and low-density areas. Of course, each country has its own governing body with their own set of priorities, which may not be focused on digital enhancement and the positive impact on the economy as a whole.

Another option to help enhance the coverage footprint of 5G in southern Asia, also relevant to other world regions, is infrastructure sharing among providers. This can reduce the cost of deployment and increase the coverage area, which also cuts the risk of over-investing in infrastructure in areas with low population densities.

Leaving no one behind

It's clear that there is no single answer to ensure affordable access to 5G (or, indeed, even 4G) connectivity to the entire population of southern Asia. However, with broadband-speed connectivity now considered a vital component of modern life the world over, governments and service providers must act, through a variety of approaches, to ensure that no one is left behind. The direct and indirect benefits of internet access to the economy have been proven time and time again, making now the time for all those in the chain to collaborate to deliver 5G to where it's needed most. ■

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Connecting southern Asia from space

Plummeting costs per bit and ground segment advances are enabling nations to take greater advantage of satellite than ever before, says Amy Saunders

Satellites have been delivering essential services for the better part of a century. Use cases like national broadcast, navigation, weather forecasting, disaster recovery, telemedicine, remote learning, mobile communications, IoT, etc. have all proved invaluable the world over. But what it all comes down to is enabling connectivity.

"Connectivity for all has become a priority for governments across the world, with Asia Pacific potentially reaping an economic dividend from digitalisation of more than $8.6 trillion to 2025, according to the Asian Development Bank (ADB)," says Gaurav Kharod, regional vice president – Asia Pacific, Intelsat. "Yet, according to Euroconsult's latest report on Universal Broadband Access (UBA), APAC and sub-Saharan Africa alone hold 85% of the world's unconnected people, with a quarter located in India. This may be explained by factors like rural and remote communities, difficult and sometimes inaccessible terrains, and the economic viability of such connectivity solutions. The lack of infrastructure, long and costly to build, has a direct impact on countries' digital development. Satellite, with its ubiquitous coverage, is the only way to deliver an immediate, robust connectivity, everywhere and at any time."

Connectivity - by whatever means - is big business and is only expected to grow.

"The emergence of large low Earth orbit (LEO) and mega-medium Earth orbit (MEO) constellations and next-generation geosynchronous (GEO) very high throughput satellites (VHTS) in southeast Asia and Oceanic region will drive wholesale and consumer retail prices down further extending the price declines that began in 2015-2016," said Bill Rojas, research director for IDC Asia/Pacific, in a statement. "The wholesale price drops will further expand the number of use cases that will become feasible..."

Shaking things up – direct-to-device

With costs plummeting, new applications are becoming more accessible. Today satellite connectivity is joining with standard consumer devices to offer direct-to-device (D2D) services - which has been named by NSR as the 'largest opportunity in satcom's history.'

The NSR market forecast for D2D is US$66.8 billion in 10-year revenues versus US$38.5 billion for wholesale non-geo satellite services. NSR expects average monthly users to reach 386 million by 2030.

The ability to communicate via satellite through standard mobile phones will reduce barriers to entry and help bridge the digital divide, while MNOs stand to gain by boosting customer satisfaction, reducing costs, and unlocking new revenue opportunities.

"D2D can have both challenges and opportunities for MNOs," explains Martin Coleman, partner, Colem Engineering. "On one hand, it may pose competition to MNOs in areas where satellite connectivity becomes a viable alternative to terrestrial mobile networks. On the other, MNOs can leverage D2D technology to enhance their service offerings. They can integrate satellite connectivity into their networks, providing seamless handover between terrestrial and satellite connections. This hybrid approach can ensure continuous coverage in remote or underserved areas, offering a more comprehensive service."

"The D2D technology is interesting," agrees Kharod. "We think that High Altitude Platform Station (HAPS) could address a need from customers to achieve MNO D2D capabilities and performance (5G/6G) from the stratosphere. D2D is a nascent technology, and some technological and regulatory challenges need to be fixed, but this could, ultimately, help drive cost down and open new markets, helping respond to the needs of MNOs in the region."

While the technology is still developing, there have been many big partnership announcements in recent months, and the world's first seamless 5G D2D connection across different network layers into the stratosphere, space and back was achieved in Croatia earlier this year. Deutsche Telekom's mobile service provided from the stratosphere took the backhaul path via Intelsat's satellite and its ground infrastructure to the backbone network or directly to the ground station. The data transfer started with a standard 5G cell phone over a 20MHz channel. In the airspace above Pula, Croatia, Deutsche Telekom achieved data speeds of up to 200Mbps.

D2D is expected to unlock extraordinary opportunities, although adoption will depend on factors like cost, reliability, terrestrial alternatives, policy makers, and market dynamics.

"The impact of satellite-to-device technology in southern Asia can be transformative, enabling connectivity in remote areas, enhancing disaster resilience, and fostering IoT deployments," concludes Coleman.

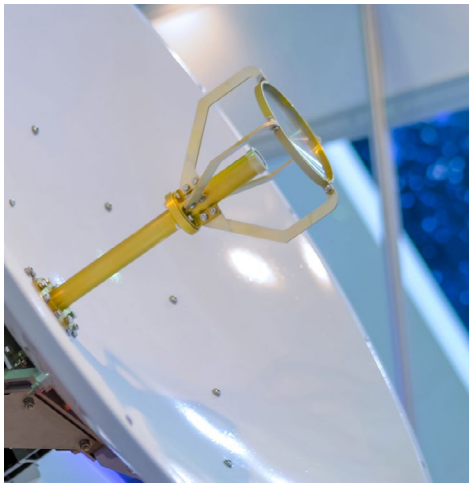
Cost is key

Satellite can play a huge role in enabling essential services, although its use has traditionally been hindered due to the hefty price tag. However, while terrestrial infrastructure remains less expensive on a cost per bit level, its deployment is often price prohibitive due to small, dispersed communities, or challenges arising from the natural landscape itself – such as southern Asia's many islands - rendering satellite the only viable option.

Recent advances in satellite and ground equipment technologies have led to better economics, says Kharod. "We have also developed cellular backhaul managed services for MNOs to back up and build out 2G, 3G, 4G, 5G, and IoT coverage anywhere, in less time and more cost-efficiently than when relying on terrestrial backhaul alone. Connectivity cost should not take over quality, and this is why we are working on innovations to make satellite more affordable."

The combination of plummeting cost per bit for satellite capacity, and reduced ground station equipment prices herald a new era for connecting southern Asia's more challenging locations. However, investments will still be significant in cost. A combined effort will be required from government and industry to ensure that growing connectivity demands are met, without breaking the bank.

"Responding to the growing connectivity needs of the region will require a concerted effort," concludes Kharod. "We believe that partnerships between satellite communications companies and governments will enable to bring together complementary capabilities, playing a crucial role in delivering the much-needed connectivity." ■



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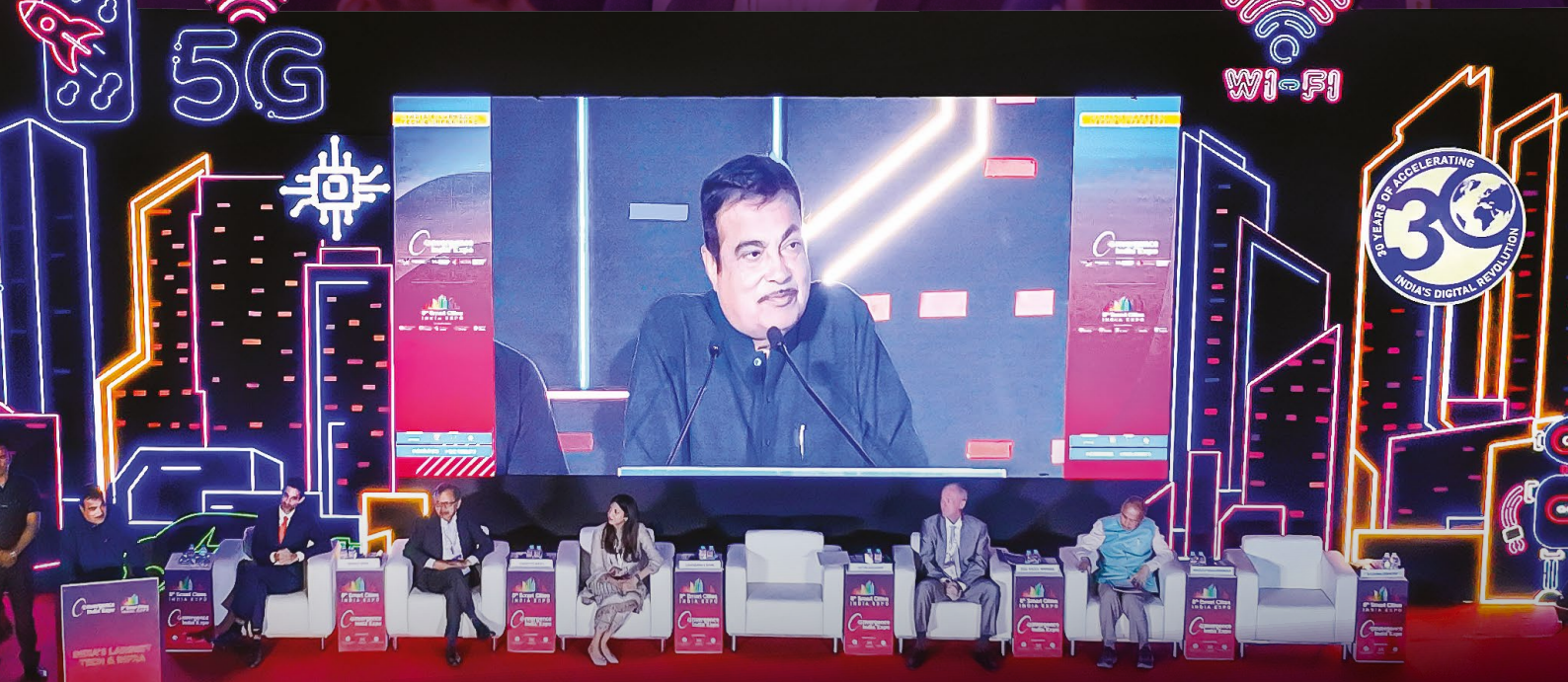

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Mission-critical comms

Rapid response in the wake of a disaster is the difference between life and death. Mission-critical communications underpins effective search and rescue response, says Winter Leng, ICT specialist and senior technical manager, Hytera

Southern Asia is prone to natural disasters which have caused overwhelming devastation in recent years. The 2004 Indian Ocean Tsunami, 2010 Pakistan and 2018 Kerala floods, 2015 Nepal earthquake, and recent Turkey earthquake are examples of these catastrophic events that have resulted in significant loss of life and extensive damage to infrastructure.

When disasters happen, immediate interventions are critical for PPDR agencies to support affected communities. The first step is to evaluate the situation and develop a response plan to coordinate resources promptly and effectively. The 'golden 72 hours' after a disaster are vital for search and rescue measures - dispatching personnel and equipment must be as fast as possible.

Real-time situational awareness is imperative to make informed decisions and share critical information among agencies, enabling incident leaders to plan and prepare for the unexpected by understanding dynamic emergencies promptly in ever-changing situations.

Communication is critical

Man-made and natural disasters alike have demonstrated, often through its failure, that the communications network is among the most essential components of critical infrastructure. Mission-critical communications play a vital role in making the world safer, and seamless connectivity is essential for responders to a moving threat regardless of place and time.

Delivering mission-critical communication, especially during a large-scale disaster, poses many challenges. A large-scale disaster, for example, requires the cooperation of multiple agencies and disciplines. However, the use of different communication technologies by agencies can hinder interoperability, making effective coordination the biggest challenge.

Meanwhile, although TETRA networks are typically hardened, the system is still prone to disruption in the event of infrastructure damage like transmission failure, power outages, and building collapse. Other problems also often arise, such as network congestion due to overuse by the panicked public, limited spectrum availability and interference, and road disruptions that make it difficult to reach the affected areas.

While the digitalisation of two-way radio has been ongoing for decades, about 90% of radios in south Asia are obsolete analogues. According to research by Hytera and OMDIA, 80% of worldwide MCC active radios will be digital by 2025. Accelerating the transition to digital radio

will overcome challenges and benefit responders with expanded capabilities, including optimal spectrum utilisation, decreased interference, better voice quality, wider-range coverage, and extended battery life with higher power efficiency.

Additionally, various information sources are becoming increasingly valuable and widely used, extending voice communication to assess the situation swiftly and accurately. These sources include CCTV footage, unmanned vehicles, satellite imagery, and various types of sensors (environmental, biometric, geophysical tracking and locations). However, managing the large volume of generated data can be daunting.

There is no one-size-fits-all solution to overcome these challenges. We need a comprehensive approach that involves advanced technologies, rigorous planning, and collaboration among all stakeholders.

Preparing for the worst

During response and recovery, mission-critical voice communication remains essential to first responders. The incorporation of real-time video (CCTV, satellite, airborne, carry-on cameras, etc.) and critical sensor data (environmental, biometric), combined with other data services (weather, social media, etc.), is playing an increasingly vital role in modernising public safety communication. By monitoring the situation in real-time and delivering critical information to incident leaders and first responders, they can quickly assess the situation and take appropriate action to minimise damage and protect lives.

To achieve these goals, we must develop a systematic methodology and leverage emerging technologies to connect, collect and compute data and create new applications (the '4Cs') intelligently, accurately, and timely. This is commonly known as cyber-physical system (CPS) systems from the long-term perspective. Of the key pillars of the 4C mode - robust, reliable, and trustworthy connectivity - is an essential precondition for the other three.

With the advent of the hybrid network era, modernising mission-critical communications involves more than just digitising radio systems or broadbandisation. Instead, it can be considered as integrating a range of technologies, including analogue and digital radio, LTE/5G/MESH, IoT sensors, control room, and cloud, to enhance situational awareness and decision-making and ultimately improve efficiency, effectiveness, and safety. While this transformation journey may be long, it promises significant benefits and can be the difference between success and failure.

Professionals worldwide have been exploring emerging technologies and developing technical frameworks, open standards, and future-proof solutions to revolutionise smart firefighting and rescue services. Based on best practices and commercial use cases, we can do more to help address the current challenge and prepare for the future in ICT fields:

"To achieve these goals, we must develop a systematic methodology and leverage emerging technologies to connect, collect and compute data and create new applications (the '4Cs') intelligently, accurately, and timely."

- We can improve voice-centric PMR communications by integrating LTE and 5G networks, providing mission-critical push-to-talk over cellular (PTToC), and incorporating smart sensors such as wearable and biometric sensors to enhance situational awareness and responder safety.
- The cloud can be an unexpected contributor to emergency services, reaching inhabitants on the front lines through social media and connecting digital volunteers when the primary communication infrastructure fails. Adding a comprehensive communication platform that converges vertical systems is key to achieving interoperable communication and information sharing among public safety organisations, enabling seamless collaboration, and overcoming information silos.
- Identify cost-effective technologies to develop a tactical communication system, including local area network (LAN) and personal area network (PAN), that can function as a backup option when the primary network fails. This requires an advanced communication solution that combines various technologies including, but not limited to, manpack ad-hoc DMO repeater, MESH, and deployable LTE/5G. It can also leverage other emerging technologies like unmanned vehicles to ensure critical service continuity, helping bridge the digital gap during emergencies by quickly and flexibly establishing a robust field network and command post in affected areas.
- To meet the challenge of coordinating incoming data at all levels, next-gen computed aid dispatch (CAD) together with communication networks and the cloud is set to unify a wide range of resources (voice, video, data and more) and properly coordinate across teams and agencies. Navigating through heavy traffic or finding the best route to the location often requires advanced control room guidance, vehicle location awareness and localisation service to pinpoint all personnel.
- Direct-satellite-to-smartphone devices allow responders and the public to send emergency messages via satellite at the initial stage when they are outside the coverage of cellular networks. This is a significant advancement beyond multi-mode devices for ground communication.

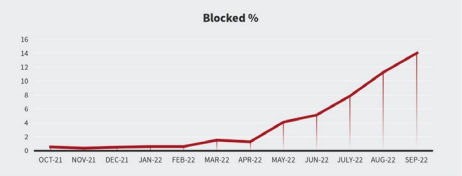
Natural disasters are increasing in size and frequency, with recorded incidents surging nearly five-fold in the past 50 years. These new extreme events demonstrate the pressing need to reexamine our mission-critical communication networks, today. ■

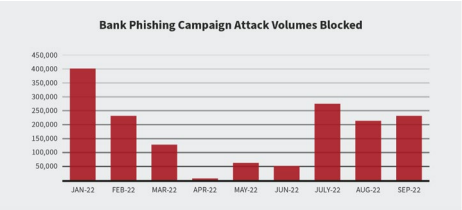
Securing the mobile network

Globe, one of the largest mobile network operators in the Philippines with almost 90 million subscribers, was targeted by cyber criminals executing an intensive financial SMS phishing campaign.

SMS phishing messages were arriving from both international and domestic operators, impersonating real sources, using plausible sender information as well as regular local phone numbers. Many of these messages resembled real bank messages and most used malicious URLs to entice victims to visit fake bank webpages.

Spam polymorphism (changing the attack to avoid detection and blocking) was used extensively for these attacks. Techniques ranged from subtly changing key words, adding unnecessary spaces, including special characters, using tokenisation, duplicating letters to frustrate word-based fingerprints, to more visible ones such as replacing numbers and punctuation with text. Also observed was URL Cycling Detection, where criminal senders dynamically change the URL domain through a large set of temporary sites – which is used by criminals to avoid detection or blocking of their messages by slow response firewall updates.





In addition to frequently changing the SMS text body and URLs, an additional challenge to dealing with these threats was that the hosts of the attack websites used in that campaign had little in common, i.e., there was no correlation between the host IPs of the URLs being used.

Globe already had in place Enea AdaptiveMobile's Network Protection Platform (NPP) for Messaging and Signalling Protection, which captured and handled the messages.

A sophisticated solution

Defensive techniques using a limited number of methods would be ineffective given the frequency and extent of changes by the attackers. No rules could work effectively against this campaign based solely on sender, URL, hosted IP, or text body.

Therefore, Enea AdaptiveMobile Threat Intelligence Unit (TIU), using the sophisticated and dynamic rules capability of the AdaptiveMobile NPP, developed and then applied a blend of security methods to address and control these attacks. TIU followed text pattern-based rules to manage the phishing attack campaign, along with other proprietary techniques, to capture the identified phishing messages.

The success and impact were reinforced by Globe's chief information security officer Anton Bonifacio, who described the blocking of malicious messages as a "major step that reflects our commitment to the country's economic recovery by ensuring that the accelerated digital adoption does not expose customers to worsening cyber threats."

Enea AdaptiveMobile Security TIU along with the NPP Messaging Security platform has now successfully been blocking these phishing attacks over the last year. From January to April, the criminals were thwarted, moving away from Globe, and targeting other networks instead.

However, blocked threat messages increased considerably over the last few months, July to September. This was a result of more frequent updates being taken from Enea AdaptiveMobile's managed Threat Intelligence service, contributing significantly to the effectiveness of the solution and allowing Enea to maintain detection and blocking rates even in the face of heightened volume and tactics of attackers.

Including these phishing attacks with all the other messages AdaptiveMobile NPP is blocking on Globe's network - other scam campaign messages and grey route messages - there has been a significant impact over the past year. The level of protection afforded by the NPP to Globe's customers has been critical in keeping them safe and protecting Globe's brand and reputation as a secure mobile communications provider.

"The protection of our subscribers is at the heart of Globe's cybersecurity strategy. Enea AdaptiveMobile Security understands that, and their strong cybersecurity background and intelligence allow them to go above and beyond in order to protect our network against both signalling and messaging attacks through their NPP," said Bonifacio.

Globe's next step was to apply strict rules to messages on domestic traffic, to target any person-to-person (P2P) messages containing URLs, without impacting commercial application to person messages (A2P). ■

Keeping kids safe with AI

Smart Communications - a wholly owned subsidiary of PLDT Inc. - provides mobile communications services, high-speed internet connectivity, and access to digital services and content.

For PLDT and Smart, keeping children safe online has become a key target. The legal and regulatory affairs group at PLDT is engaging with Congress to craft new laws pertaining to child protection. The corporate communications group builds awareness amongst the community on the same topic, incorporating a cybersecurity perspective to ensure that children across the Philippines are protected from harm online.

In line with their ethos, the cybersecurity operations team set out to build an AI-based fully automated platform to block traffic related to Child Sexual Abuse Materials (CSAM), demonstrating their commitment to securing not just users and network infrastructure but also keeping children safe online. The goal was to build a Child Protection Platform to block CSAM traffic, especially at a content level, without violating privacy laws.

As the country's largest fully integrated telco, PLDT and Smart are the only telco companies in the Philippines with the ability to block up to the content level instantly, keeping children safe, and preventing abusers from taking advantage of children online.

"This platform is built based on a concept. The primary challenge was to block all traffic related to CSAM, especially at the content level, as illicit files have filtered their way into legitimate domains," said Angel Redoble, group CISO of PLDT, Smart, and ePLDT (the ICT arm of PLDT Enterprise).

However, the law does not allow internet service providers (ISPs) in the Philippines to actively sift through information that passes through their network. PLDT and Smart employ open-source threat intelligence gathering, invest in available commercial threat intelligence, and depend on law enforcement agencies to share the links of CSAM materials posted on the internet.

PLDT and Smart were looking for a comprehensive fully automated solution to bring consistent security and visibility to their network. The team considered privacy laws, customer experience, and false positives so that they did not end up blocking access to sites that are deemed to be CSAM when they are not.

Taking control of the network

Smart and PLDT required a comprehensive and scalable solution alongside 5G expansion to provide granular visibility, control, and automated security to tackle an expanding attack surface due to the growing interconnectivity, speed, and scale of 5G networks.

"We needed a trusted cybersecurity technology company who would be at the centre of our platform and provide consistent security and visibility across our network. Since it was imperative that the solution needed to be tailor-built to suit our needs, we were on the lookout for an innovative cybersecurity partner, which we found in Palo Alto Networks," said Redoble.

Palo Alto Networks was equally invested in creating a safe online experience for children, being simultaneously invested in its own Cyber Safe Kids program.

Enabling PLDT and Smart Child Protection Platform with Palo Alto Networks, the cybersecurity operations team built the PLDT and Smart Child Protection Platform from scratch to satisfy not only the required functionality but also the processes that would successfully operationalise it across multiple groups within PLDT and Smart, leveraging automation and orchestration. The solution needs to be fully automated, and AI-based to span fixed line and wireless environments seamlessly.

PLDT and Smart then released a Request for Proposal, which challenged leading cybersecurity vendors, including Palo Alto Networks, for a live proof of concept (PoC) on how they will deploy and operationalise their Child Protection Platform within two months. After a two-month live PoC that included the integration with the network operational and security operational processes, the team was satisfied with how the Palo Alto Networks platform, comprising Machine Learning Next-Generation Firewalls (ML-NGFWs) and Cortex XSOAR, met the extensive integration, orchestration, automation, and security requirements of the PLDT and Smart Child Protection Platform.

Since the Philippine law does not allow ISPs to actively sift through information that passes through their network, PLDT and Smart needed to ensure that the Palo Alto Networks platform, consisting of ML-NGFWs and Cloud-Delivered Security Services, including Threat Prevention, Advanced URL Filtering, WildFire and 5G-Native Security, can block traffic related to CSAM. Palo Alto Networks scrutinises the content and converts URLs for redirection. Through matching the blocked URLs against the blocked listing policy, necessary steps are taken to alert PLDT and Smart that the user is trying to access CSAM.

Since the Child Protection Platform from PLDT and Smart extensively leverages automation and orchestration, it can be easily and proactively scaled and integrated to address future challenges as the organisations, and their requirements evolve. More than one billion access attempts blocked in real time to date Since November 2021, more than one billion access attempts to blacklisted URLs have been blocked in real time. The impact of this project is immense, given the objectives of this project. ■

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EXFO offers new field-testing tools for fibre link validation

EXFO has announced its new D-Series of OTDR solutions, advanced field-testing tools that deliver highly accurate measurements to characterise and validate fibre links. These tools support critical fibre deployments and network operations in FTTH and RAN mobile networks, as well as data centres.

EXFO's new OTDR series combines several advanced and unique features within a single solution to bring dramatic efficiency gains to OTDR field tests. These advanced field-testing tools enable versatility and flexibility, critical to field technicians for fibre network construction, activation, and maintenance.

Continuous testing of critical fibre links often results in worn device connection ports over time, which can degrade the quality of test results – an issue that can only be addressed by returning the device to the manufacturer for repair. EXFO's D-Series features an optical port connector health monitoring wizard, and field-swappable optical port connectors that can be simply replaced in the field once worn. This patented innovation allows operators and contractors to benefit from EXFO's optical performance throughout the entire life of the product without the extra cost and down time linked to returning units for changing worn connection ports. This translates into significant cost of ownership savings.

EXFO's D-Series OTDR also combines both optical link mapping and power measurement (optionally a dual-channel PON power meter) through the same optical connector port, allowing technicians to move between power checking to troubleshooting mode without having to disconnect the fiber under test to swap to a separate power meter unit. This feature again substantially improves testing efficiency.

EXFO's OTDR D-Series is part of a full ecosystem that connects to EXFO Exchange, a collaborative cloud-based software platform that unifies, automates, and optimises field-testing, reporting, workflows, troubleshooting processes and more. All test plans, data and reports can be stored, shared, and analysed collaboratively in real-time, bringing yet more field-test efficiency.

EXFO's OTDR D-Series features five models. Three are dedicated OTDR models in EXFO's MaxTester range, the 715D for last mile, the 720D for PON/access, and the 730D for PON/metro. Two further models are swappable FTB modules, the 720D for PON/access, and the 730D for PON/metro.

IIoT gains ultra-robust SPE and USB 3.2 Gen 2 connectors

Fischer Connectors has released ultra-robust Single Pair Ethernet (SPE) and USB 3.2 Gen 2 connectivity solutions to meet the specific requirements of Industrial Internet of Things (IIoT) applications in rugged environments.

With the increase in sensor density, actuators, and controllers in Industry 4.0 and IIoT operational settings, high power levels and massive amounts of data must be securely and efficiently managed through ultra-fast transmission lines with cables running over long distances. Miniature connectors and cables are needed to interconnect smaller and smaller devices and sensors in areas that are sometimes confined and hard to access. Connectivity must be ruggedised to resist shock, vibration, extreme temperatures, water, and corrosion when exposed to demanding environmental and chemical conditions, both indoors and outdoors.

To address these challenges, Fischer Connectors has developed new high-speed data and power connectivity solutions combining Single Pair Ethernet and USB 3.2 Gen 2 high-speed protocols with the rugged, high-density, and miniature features of its flagship product lines. They enable space-saving and cost-efficient integration in industrial automation and robotics, chemical plants, food processing, automotive production lines, outdoor sensing, and unmanned systems.

The Single Pair Ethernet solutions from the Fischer Core and Fischer UltiMate™ Series allow for 1Gbps data transfer per IEEE 802.3bp - 1000Base-T1. Exceptionally rugged, they outperform other suppliers' SPE solutions in terms of security, durability, as well as environmental and mechanical performance. Fischer SPE is compliant with MIL-STD norms (through Fischer UltiMate™) and offers 10,000 mating cycles, three locking mechanisms (push-pull, screw, quick-release), and hermetic sealing in addition to IP68/ IP69 ratings. SPE is also featured in the ultra-miniature Fischer MiniMax™ connector in 'size 06' (Ø 10 mm receptacle).

The demand for USB 3.0+ protocol is high in Industry 4.0 operations, as it offers high data transfer rates with low latency for IIoT control applications, nearly twice the power output than USB 2.0 (900 mA vs. 500 mA), better power efficiency due to lower consumption in idle state, and larger bandwidth. Fischer MiniMax™ connectors with USB 3.2 Gen 2 allow for 10Gbps data transfer, offer additional power contacts up to 8 A, and are half the size of some competitor connectors with similar speed but no power.

Mobile-first security platform offers dynamic protection from emerging threats

Zimperium has launched the Zimperium Mobile-First Security Platform, which unifies Zimperium Mobile Threat Defense (MTD) - formerly known as zIPS - and Mobile Application Protection Suite (MAPS), delivering powerful new features for teams who bear security responsibility across the entire mobile security spectrum.

Through a single pane of glass, customers now have centralised access to and management of both Zimperium's mobile application security and endpoint security solutions, providing them full mobile coverage to dynamically adapt to emerging threats.

The launch comes at a time when attacks against mobile devices and apps are increasing exponentially. Our world is becoming increasingly mobile, and the Bring Your Own Device (BYOD) trend that exploded during the pandemic has become a staple of business operations. At the same time, mobile applications are being used for everything from banking to managing medical devices and have become a critical part of many enterprise's business models. Unfortunately, this has opened the door to new attack vectors across devices and apps and has created an expanded, distributed attack surface for enterprises to manage and secure.

The Zimperium Mobile-First Security Platform uniquely combines capabilities across mobile threat defense (MTD) and mobile app security (MAPS) such as centralised management and access to device and app security through a single interface on any cloud and on-premises; protection for all devices against critical mobile threats; privacy-by-design to protect employee privacy on both corporate and BYOD devices; pervasive risk management for apps to find risks in apps you develop and third-party apps used by employees; advanced in-app protection to prevent reverse engineering, protect cryptographic keys, and create self-defending apps; an enhanced mobile ecosystem with enterprise integrations; deep forensics and enhanced search capabilities to enable advanced threat hunting.

In-building 5G augmented with indoor antenna from HUBER+SUHNER

The SENCITY Occhio Plus indoor antenna from HUBER+SUHNER offers mobile network operators a faster and more reliable way to ensure high data throughput in 5G frequency range in buildings.

The antenna provides coverage in buildings such as airports, train stations, shopping malls and sports stadiums which are hard to reach with traditional macrocell solutions. The latest addition to the HUBER+SUHNER antenna portfolio, the omnidirectional antenna builds on the SENCITY Occhio to offer high performance with a MIMO 4x4 configuration in 5G sub-6GHz frequency range from 617MHz to 6GHz.

The SENCITY Occhio Plus utilises the HUBER+SUHNER-exclusive smart connect-system which enables safe and secure installations. The self-locking adaptor and quick-lock feature make installations simple and efficient, saving time and, in turn, money.

"The SENCITY Occhio Plus combines contemporary design with innovative engineering to achieve discreet placement with

low visible impact, as favoured by interior designers and architects," said Cristina Olimpieri, product manager at HUBER+SUHNER. "It addresses the growing need for increased data rates inside buildings."

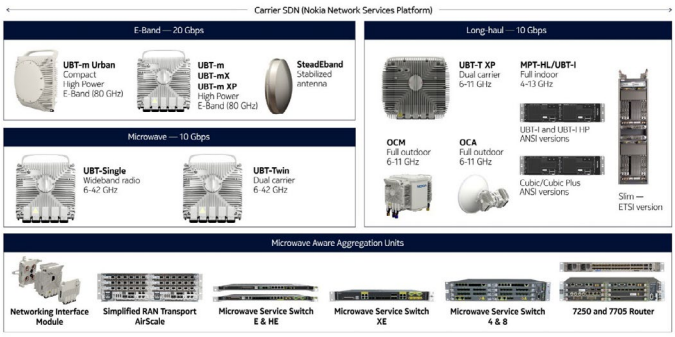
E-band radio delivers premium coverage in dense and rural environments

Nokia has released UBT-m XP, the latest addition to its Wavence product family designed to support mobile operators and enterprises with premium coverage in both dense urban and rural environments.

Nokia's newest E-band radio is a high-capacity outdoor unit with a small, light form factor and the highest transmit power available on the market, ideal for urban microwave transport applications. It is joined in an industry first by the launch of the Nokia SteadEband, a stabilized three-foot antenna that combats common E-band issues, which include tower vibrations and movements due to thermal effects. Combined with the UBT-m XP, it can increase the typical E-band link distance by up to 50%, helping MNOs deliver multi-gigabit 5G connectivity to their customers.

The UBT-m XP is a single ultra-broadband transceiver with an integrated modem and diplexer, offering best-in-class energy efficiency with twice the transmit power compared to the industry average. In recent tests, Nokia demonstrated a 12km-long link using the Nokia UBT-m XP and the SteadEband antenna.

Combining two UBT-m XP units with XPIC will allow operators to reduce spectrum fees, because of frequency re-usage and to go up to 20Gbps with 2000MHz channel spectrum. Additionally, XPIC 2+0 solution can be used to extend the link hop compared to a 1+0 solution, for a given capacity. Combined with Nokia UBT-S and UBT-T radios and a multiband antenna, using Layer-1 Carrier Aggregation, the UBT-m, UBT-mX or UBT-m XP enables the combination of E-band carrier with any additional microwave, achieving a compact, three-carrier solution (single-carrier E-band and two-carriers microwave), either in split-mount (combined with MSS-8 or MSS-HE) or all-outdoor.



Two new CPE devices deliver multi-gigabit connectivity

Broadband network operators can ensure a seamless smart home and business experience for users thanks to the release of two new multi-gigabit Customer Premises Equipment (CPE) devices.

The Iskratel Innbox X24 can operate as a bridge or router, offering a dual-box FTTH setup in both single or multi-operator deployments. In addition to a gigabit Ethernet LAN port, the Iskratel Innbox X24 has a 10Gbps LAN port which supports multi-gigabit speeds of 2.5, 5, and 10Gbps and provides an enhanced user experience. The device has an integrated fibre-termination unit (FTU), simplifying deployment and reducing operational expenditure.

The Iskratel Innbox M92 functions as an agent access point, mesh controller, and can also utilise its gigabit Ethernet WAN to act as a home gateway, excelling in single-box ETTH setups and dual-box setups with FTTH or 5G FWA. While supporting 1,800Mbps cumulative WiFi data rate, Iskratel Innbox M92 delivers full gigabit throughput over dual-band WiFi 6 and two gigabit Ethernet LAN ports. The device hosts the Innbox Premium Application Suite that enhances security and privacy of users and enables operators to increase revenue.

Look out for...

Unifying LiFi with QKD

Quantum technology opens up many new areas of application, however, it also harbours risks. Due to their enormous computing power, quantum computers could undermine even the most modern encryption methods.

In addition to today's quantum computers, quantum imaging and quantum clocks, developments are focusing primarily on quantum communication and quantum encryption for secure and private data communication.

Traditional encryption approaches based on computational complexity will be replaced by novel quantum key distribution (QKD) approaches in combination with post-quantum cryptography. This type of encryption cannot be cracked even with arbitrary time and computational power.

Previous research has focused on long-distance secure data communication for applications in the global data infrastructure, for networking government or military facilities, or for information exchange with satellites. However, the last mile connections to the end user have so far still been served by traditional technologies and remain vulnerable to attack.

To prevent this in the future, the Quantum-based Infrastructure Networks for Safety-critical Wireless Data Communication (QuINSiDa) project was launched. Partners led by KEEQuant GmbH are developing a new approach to secure optical data transmission in wireless networks using light and quantum keys.

Li-Fi allows users to network over short distances using optical signals which do not penetrate walls and can thus be designed for a defined area. Meanwhile, QKD makes it possible to distribute a cryptographic key whose security can be proven.

The QuINSiDa project is the first to combine both technologies into a 'QKD over Li-Fi' system.

This makes it possible to carry QKD, which until now has typically been thought of more in a building-to-building scenario, all the way to the end user.

Angola Cables and Orange team up on infrastructure sharing

Angola Cables and Orange have agreed to an infrastructure sharing agreement on the West African Djoliba Network.

The arrangement gives customers direct access to the Francophone markets of West Africa and gives both companies the option to extend their respective global connectivity by sharing inland networks and the subsea cable network and backbone infrastructure of Angola Cables.

"Getting access to efficient and secure digital and cloud services is an essential requirement for any business in today's gigabyte economy," said global commercial director of Angola Cables Rui Faria. "Access to the West Africa Djoliba network and our robust submarine infrastructure broadens the capability of businesses in accessing international markets and offers expanded traffic destinations across West Africa and other parts of the world."

Djoliba is the first network to offer complete security in West Africa with more than 10,000km of terrestrial fibre optic network offering, superfast broadband provision (up to 100 Gbps) at a 99.99% availability rate.

The expansion of infrastructure combining the Djoliba terrestrial end-to-end fibre optic network and Angola Cables' already established global network of WACS, SACS and MONET cables will offer clients secure, low latency connectivity - and additional redundancy options

to multiple destinations in South America, the USA and Europe.

Argentina to boost digital economy with 6GHz spectrum

The Ente Nacional de Comunicaciones (ENACOM) has opted to fully embrace the 5925-7125MHz band for unlicenced use, aiming to stimulate development across Argentina's digital economy, according to Dynamic Spectrum Alliance (DSA) Martha Suarez.

Unlicenced use of WiFi requires large amounts of spectrum to be made available to expand services and reach thousands of small and medium-sized enterprises (SME), internet providers, telecommunications cooperatives, and community networks. These are essential in connecting all types of communities, neighbourhoods, schools, hospitals, and other groups operating in critical sectors. With the decision to enable the entire 6GHz band for unlicenced usage, thousands of professionals across Argentina will be able to enjoy the benefits of reliable connectivity and new Wi-Fi technologies.

"The DSA welcomes the recent decision by ENACOM," said Suarez. "After a study process of almost three years and numerous consultations with both the general public and organisations within the industry, we will soon see a boom within the national industry. Ultimately, Argentina now has the tools export products and services of high value that can fully integrate into the global digital economy, placing the country at the forefront of technological innovation."

Several industry bodies, including the DSA and some of its members, have pledged to support the government and provide training to technicians and national SMEs found in the country. This will enable value-added equipment and services to be developed and oriented to the new connectivity models enabled through full use of the 6GHz band. Through the decision, digital tools designed to create software, skills training, or entertainment content – areas where Argentina is already a regional power – can be supported within newer concepts such as virtual and augmented reality.

Nine countries in the Americas region already enabled access to the entire 6GHz frequency band, providing 254 million households and 78% of the continent's population with reliable connectivity and the tools for further evolution in WiFi technologies. A recent study carried out by the Telecom Advisory Services indicated Argentina could enjoy a $63 billion economical boost by 2031 as a result of opening the full 6GHz band.

"Argentina's alignment with the prevailing trend within the region is a wise decision which will provide certainty regarding the evolution of connectivity solutions, services and technologies," said Suarez. "The promotion of WiFi will be essential in connecting all citizens, and enhancing the development of technologies within gaming, virtual and augmented reality, the Internet of Things (IoT) and the metaverse. The decision will lead to the creation of more jobs and help the country meet its high productive potential, while accelerating the digitalization and evolution of industries and production processes."

Unlicenced access for WiFi in turn will accompany the development of 5G within Argentina, as a large portion of mobile traffic is offloaded over fixed wireless access networks.

XConnect launches PoP in Sao Paolo to deliver new value

XConnect, a Somos Company, has expanded its global footprint in LATAM with the launch of its point of presence (PoP) in Sao Paolo, Brazil.

The PoP enables XConnect to improve its coverage and latency in the region. It will deliver faster responses to an increasing number of traffic queries from Tier 1 carriers, voice, messaging, e-commerce, social media and fintech providers.

The launch into LATAM allows XConnect to deliver its Global Number Range (GNR), Number Portability (NPQ) and Home Location Register (Live Status) responses with the lowest latency, highest quality, and highest precision into the South American market.

"South America is a highly developed and rapidly growing telecoms market and we want to be able to serve our expanding base of customers in the region so that they are able to deliver voice and messaging traffic with precision, performance and trust," said Tim Ward, VP, number information services at XConnect. "This is just one way we are continuing to grow our global presence and empower more regions to fight against the biggest telecoms challenges including OBR surcharges, robocalling and the artificial inflation of traffic (AIT)."

Over the past year, XConnect has also introduced PoPs in Mumbai and Singapore as part of its global expansion strategy, adding to its local presence in APAC, Europe, the US and LATAM.

"Our new PoP is moving us one step closer to empowering our customers in all corners of the globe. We want them to effectively build trust, gain control over their traffic, and grow their business with confidence and efficiency," said Ward. "The addition of this PoP allows us to build on our reputation for ultra-fast, accurate query responses and deliver new value for our GNR, Number Portability and HLR solutions."

The deployment of its latest PoP is part of XConnect's drive to support its growing customer base in LATAM. It has recently expanded its on-the-ground presence in the region with the hiring of Jose Augusto Vilhena and the onboarding of number portability query (NPQ) data for Uruguay and Columbia.

Ethio Telecom targets OTT entertainment services

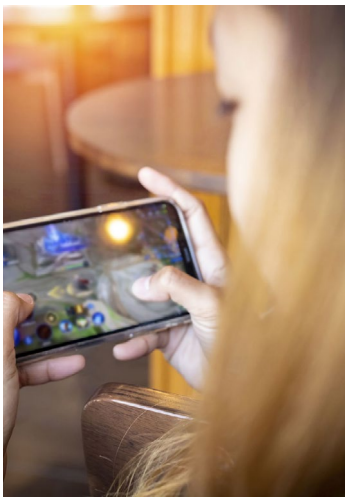
Ethio Telecom is establishing customer-driven digital solutions and inclusive platforms to empower the Ethiopian entertainment industry and ensure the availability, quality, and reliability of telecom services. The MNO aims to create a conducive and enabling environment for the content industry to encourage creativity and directly distribute content to the audience.

The company has launched new digital entertainment applications that will play a key role in digitalizing and revolutionizing the nation's entertainment industry. These applications will bridge the digital engagement gap, provide data-driven value additions to empower the creative industry, offer easy payment and access channels, ensure a single subscription with attractive data bundles, and make supporting technology and marketing resources available. This will empower users' creativity, expand their mental horizons, acquire new knowledge, and heal their souls with the contents provided with partners.

Four value-added services were launched, including IPTV/OTT video streaming service, which provides customers with a variety of content ranging from live TV programs, drama, series movies to various premium videos.

Sewasew Music Streaming is another value-added service that brings music fans a unique digital experience. It allows them to connect with local and international modern and classical music artists in one place.

Two new mobile games, Telegames Appland, and Telewin, have also been launched. These games offer a wide variety of options for both adults and children to download and play unlimited games at an affordable price, with no ads, in-app purchases, or viruses.



Zain and Omantel launch Zain Omantel International

Zain and Omantel have launched Zain Omantel International (ZOI), an unprecedented joint venture that will establish itself as the Middle East's premier international wholesale services provider. This partnership aims to revolutionise the wholesale telecommunications sector by offering a unique proposition that combines the strengths of both parties to deliver unparalleled service and support to customers worldwide.

ZOI signifies a substantial advancement in the telecommunications industry and is poised to become a global powerhouse due to Zain's extensive regional presence and success in the retail and digital arenas, combined with Omantel's exceptional wholesale capabilities and comprehensive international subsea and terrestrial networks. The joint venture will cater to the end-to-end telecommunications needs of operators in the Middle East, as well as international carriers, data centers, hyperscalers, content, and cloud providers seeking services within the region and beyond.

As a result, ZOI will manage all international wholesale requirements of Zain and Omantel operations in eight countries, serving over 55 million customers. Furthermore, ZOI will optimize the existing wholesale businesses of both companies by reducing operating costs and increasing competitiveness through access to state-of-the-art low-latency and high-capacity services over its extended footprint.

"This strategic value-enhancing partnership reflects the next stage of industry collaboration and advancement, and represents another significant milestone of our '4Sight' profitable growth strategy," said Bader Al-Kharafi, Zain vice-chairman and Group CEO. "It also demonstrates our commitment to transforming the business and creating synergies while extending our reach and capabilities to provide the highest quality services to our customers. ZOI is ideally positioned to evolve into a significant international player on the wholesale telecommunications scene that will benefit both Zain and Omantel on financial, commercial and operational levels."

"The joint venture with Zain is a testament to our unwavering commitment to transforming the international arm of Omantel group into a leading global provider, building on our existing position as a top regional wholesale player," said Talal Al Mamari, Omantel CEO. "ZOI is poised to become the primary gateway from our region to the rest of the world, leveraging the combined strengths of Omantel and Zain. With these differentiating factors, ZOI is the preferred partner with a truly unique presence in the international telecommunications landscape."

ZOI, in collaboration with the Omantel and Zain Group operating companies, will ensure that Zain and Omantel customers continue to experience supreme quality in international services such as internet connectivity, voice, roaming, messaging and more. Some noteworthy projects that ZOI will undertake, along with its consortium partners include the development of Blue-Raman; Africa-1; Jeddah to Marseille (J2M) subsea systems and an extensive terrestrial network connecting most of the regional countries to the landing stations and data centers.

Sohail Qadir has been appointed as the CEO of ZOI. Qadir has spearheaded the development and expansion of Omantel's international wholesale business. During his 13-year tenure as the vice president of wholesale at Omantel, he successfully positioned the company on the global map and increased revenues tenfold.

"The region has matured in terms of the scope and consumption of reliable wholesale services, and this strategic partnership in this integral part of the telecommunications business is well-timed to capitalize on global trends," said Sohail Qadir, ZOI CEO. "I look forward to leading ZOI in delivering differentiated services to regional and international customers alike, and providing increased value and enhanced customer-experience to all associated stakeholders across our extensive operational footprint."

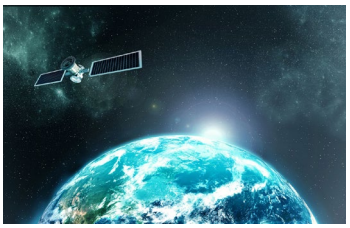
Intelsat expands in Africa with Azercosmos

Intelsat will rely on the capacities of Azercosmos' Azerspace-2 satellite to strengthen the coverage of its services in West Africa.

"We have been cooperating with Azercosmos since 2018, when the Azerspace-2 satellite was put into orbit. We trust Azercosmos to provide services in line with the needs of our customers in Africa," said Adam Troy, Intelsat vice president of business development and network partnerships.

This agreement is part of Intelsat's expansion strategy in Africa. The collaboration should help improve the quality and coverage of telecom services in West Africa.

The growing demand from African telecom operators for additional capacity to meet growing consumer needs should allow Intelsat to strengthen its revenues and accelerate its recovery strategy. The company filed for bankruptcy in May 2021 due to financial difficulties.



Cellnex and Airbus explore business and mission critical communications

Airbus and Cellnex have signed a Memorandum of Understanding (MOU) to explore collaboration in business and mission critical communications.

The MoU will be used to explore joint opportunities around mission- and business- critical communications in different countries around Europe.

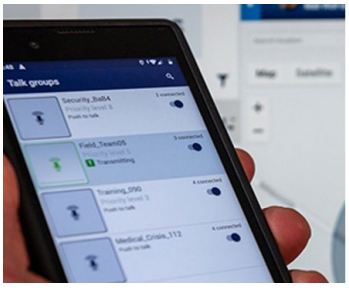
In the frame of the MoU, Airbus will provide both private and public end-user organisations with critical communication solutions using Airbus' Agnet platform which allows individual or group voice, video, and image communication as well as additional features such as geo-positioning and team mapping. Cellnex will provide services such as the deployment, operation, and maintenance of networks and applications.

Through this agreement, Airbus will be able to further address communication needs on key verticals such as public safety agencies, airports, healthcare, utilities, and energy in various European countries. Airbus will benefit from Cellnex's connectivity solutions and service capabilities in mission-critical private networks, as well as the company's presence in European countries where Airbus has not yet introduced its state-of-the art collaboration technology.

"The MoU should increase our chances to generate and grow joint business for both business- and mission-critical users from various vertical segments in different countries in Europe," said Eric Davalo, head of Europe for secure land communications at Airbus. "This will fully allow us to further address communication needs on key verticals such as public safety agencies, airports, healthcare, utilities and energy and – together with Cellnex - help companies embrace their technological evolution, with the use of our Agnet solution."

"We are proud to be working hand-in-hand with Airbus and are eager to contribute to transforming the market with a more cost efficient communication solution while meeting our customers' needs," said Mikko Uusitalo, global director of mission critical & private networks at Cellnex Telecom. "As telecom infrastructure market leader in Europe, Cellnex will benefit from Airbus' extensive experience and knowledge in end-user organisation's operations and needs, while continuing to provide next-generation solutions to our loyal customers around the continent."

The MOU will allow both companies to gain in positioning and market leadership through the implementation and delivery of intelligent solutions to solve public-safety and business communication needs.



Cuba and Dominican Republic to gain 700MHz spectrum for 4G and 5G

The Dominican Republic and Cuba are set to make 700MHz spectrum available for the provision of both 4G and 5G services.

In the Dominican Republic, regulator Indotel (Instituto Dominicano de las Telecomunicaciones / Dominican Telecommunications Institute) will put unused 700MHz frequencies up for auction within the next few months, with the process slated for completion by the start of 2024. This spectrum was previously put to auction in 2021 alongside 3.5GHz spectrum but was unsold. Indotel may sell additional frequencies alongside the unsold 700MHz spectrum, saying that the government "has focused on the reorganisation of disused radio spectrum, so that it can be used to improve the coverage of the services offered by the providers in the national territory."

"In the same sense, they have taken concrete measures, such as the closure of more than 50 stations that were operating illegally, the recovery of idle spectrum and the cleaning up of radio communication bands," said Indotel.

Meanwhile, in Cuba, 700Mhz spectrum is becoming available as the country undertakes its switchover to Digital Terrestrial Television (DTT). As analogue signal broadcasts cease on national channels, the 700MHz band is being vacated, with the Ministry of Communications noting that the freed-up spectrum would be used by regulator ETECSA to provide LTE connectivity.

NTT and Nippon Airport Radio partner for 5G critical comms at Narita International Airport

NTT East has partnered with Nippon Airport Radio Services to interconnect the operator's 5G service with the wireless infrastructure at Narita International Airport, claiming a breakthrough in integrated mission-critical communication.

NTT said that the companies used a Motorola Solutions system to integrate voice communication between 5G-enabled handsets equipped with a push-to-talk application and terrestrial trunked radio (TETRA) devices in the airport's ramp area. Trials are underway.

Interoperability between the systems is an important step, enabling airport staff to carry a single device instead of many.

The Motorola and TETRA systems consist of dedicated radio waves and closed networks, and are not affected by failures or congestion of mobile networks.

NTT East and Nippon Airport Radio Services plan to promote the deployment of 5G at other airports, along with developing new push-to-talk use cases.

Ucom and Ericsson Nikola Tesla target infrastructure upgrade

Armenia's Ucom is renewing its collaboration with Ericsson Nikola Tesla to upgrade its infrastructure across the entire market, bringing its operations into the future.

Ralph Yirikian, director general of Ucom, described the extension of the longstanding partnership as "a new era of strategic development," with a statement from the operator noting that the partnership "introduces a new model of green responsibility with less adverse carbon footprint in addition to the lowest energy consumption" to ensure "greater efficiency, readiness, and agility to meet the future demands of the network."

"Based on our mutual cooperation and the latest software solutions, Ucom's network will be even more efficient in the future and will bring greater benefits to their customers," said Gordana Kovacevic, president of Ericsson Nikola Tesla.

Latin America to gain e-health via satellite

Hispasat has reached an agreement with Comitas e-Health to market a satellite telemedicine solution in remote areas of Latin America.

The partners aim to provide early medical attention in emergency situations or routine monitoring such as pregnancies, allowing doctors and patients to avoid long and expensive trips.

This telemedicine solution consists of installing a teleconsultation, equipped with medical examination and diagnostic equipment, that is connected to a hospital centre where specialist doctors can care for the patient. Both locations will be connected via satellite by means of a high-quality videoconference capable of transmitting in real time the examination that the healthcare provider will perform on the patient with the help of various easy-to-use peripherals. This system makes it possible to know the patient's vital signs in real time, examine the skin, iris, throat, or ears, and perform electrocardiograms or ultrasounds, among other analyses.

Hispasat and Comitas-eHealth have worked together on several pilot projects that have demonstrated the effectiveness of this solution, including one in Ecuador at the end of 2021.

Comitas e-Health will provide the hardware and the software, while Hispasat contributes its satellite capacity over the Latin American region. The universal coverage provided by the satellite also allows this solution to be implemented on board vessels to urgently attend to health problems of the crew on board.

Portugal to gain public safety comms from Motorola for 40,000 first responders

Motorola Solutions has been awarded a five-year contract by the Portuguese Ministry of the Internal Administration to maintain and enhance the country's mission-critical public safety communications network.

The agreement enables 180 public safety agencies and 40,000 first responders including police, fire and medical services to benefit from a modern, highly reliable and secure TETRA communications network.

Built and deployed by Motorola Solutions and operated by Sistema Integrado de Redes de Emergência e Segurança de Portugal (SIRESP), the digital radio network continues to provide vital communications to public safety organisations in Portugal during day-to-day operations as well as during emergencies, such as wildfires, floods, and associated rescue missions.

Motorola Solutions will deliver a comprehensive suite of public safety services for SIRESP, including 24x7 local support and technical consultancy services, helping to keep technology up-to-date, secure and performing reliably in any situation or emergency.

"We value and respect the trusted partnership we have shared with SIRESP and Portugal's public safety organisations for many years," said Michael Kaae, corporate vice president at Motorola Solutions. "Public safety communications is an essential service that must operate at the highest levels and in the harshest environments. With the combination of our resilient, purpose-built technology and strong local team of communications experts, we're proud to continue supporting Portugal's public safety agencies in their mission to protect the nation's communities."

Uztelecom deploys AirPON for remote and mountainous regions

Uzbektelecom (Uztelecom) is pushing high speed fibre broadband access across Uzbekistan by deploying AirPON (Air Passive Optical Network) fixed-mobile convergence (FMC) technology.

The operator has to date deployed 12,288 AirPON devices, each designed to provide triple-play internet, telephony and IPTV to one end-user premise via last-mile fibre.

Uztelecom has completed AirPON deployments in the regions of Tashkent, Kashkadarya, Surkhandarya, Samarkand, Syrdarya, Jizzakh and Fergana. The operator plans to use the technology to connect a further 76,800 premises nationwide soon, noting that it will help to address Uzbekistan's digital divide as it is suitable for providing high speed connectivity in remote regions as well as mountainous areas.

Polembros Shipping to gain Starlink service via Marlink

Marlink is set to install the Starlink LEO service for Athens-based ship manager Polembros Shipping.

Polembros is already a user of Marlink's hybrid network, including guaranteed throughput VSAT services across its fleet. The deployment of the SeaLink NextGen service will bring much faster throughput and lower latency to the company's business and crew communications, enabling the deployment of digital solutions and crew welfare services.

Sealink NextGen combines GEO VSAT and MSS back-up with customers' required mix of LEO or MEO connectivity, 5G and digital solutions, all controlled and managed via Marlink's smart platform XChange. This hybrid solution integrates and protects critical maritime connectivity, powering new applications for business and crew.

"Polembros Shipping and Polembros Bulkers are companies with a reputation built up over many years for dedication to safety and quality; we value innovations like Starlink as a contributor to our performance," said Vasilis Kottas, IT manager, Polembros Shipping. "Our partnership with Marlink is a factor in our success as a company which delivers the high standard of communications required by our fleet managers and our shipboard teams."

"Marlink is proud to help Polembros Shipping take this next step in its journey with new digital services that enable a new generation of applications and tools to support fleet performance and safety," said Tore Morten Olsen, president, Maritime, Marlink. "Adding the Starlink LEO service to the Marlink hybrid network is a further strengthening of our valued and longstanding relationship that positions Polembros as a future-focussed company."

Q&A

Nash Chou
business development manager
Sepura

Which law would you most like to change?

I would most like to change the current state of patent laws, particularly in the realm of medical and pharmaceutical breakthroughs. I believe that life-saving treatments and medications should be accessible and affordable to all, regardless of their financial situation. The involvement of legal teams in the medical process is slowing down the speed that researchers can complete their studies, meaning products take longer to get to market, and ever greater amounts of funding are required.

Who was your hero when you were growing up?

Growing up, my hero was my older sister. I saw her produce groundbreaking work in her own field, and her resilience in the face of many varied challenges inspired me then and continues to do so today. Every day I channel her spirit to develop my own passion for innovation and discovery in life and in the workplace.

By constantly thinking outside of the box, we can continue to support our customers and build our business.

What was your big career break?

Joining Sepura was my big career break – it gave me responsibility and a huge opportunity to develop myself and my career. I am lucky in that Sepura is of a good size to provide the necessary organisational back-up to achieve this, but still allows individuals room to flourish. Together, our small team in Asia punches above our weight to secure outstanding solutions sales across the region, and we all have a key role to play in this. Sepura has supported me in moving forward and taking my sales skills to the next level, broadening my horizons not only in terms of work, but also in my lifestyle.

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

Ha! Well, I still see myself as young and not grown up just yet. Ask me in another ten years!

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

I would want to become a veterinarian because I love dogs and cats especially, but animals in general. I considered training in this area, but eventually chose sales and I haven't looked back (yet).

The Rolling Stones or the Beatles?

While I appreciate both bands, I'd have to choose Coldplay. They have a concert in Taiwan in 2023 which I have tickets for, and I can't wait to go and see them. Their music is amazing, but also their live show, with the audience participation and use of technology, is amazing.

What would you do with £1 million?

I would definitely need to consult with my wife before making a decision... I can imagine she wants to build a cat house and have hundreds of pets in our house. While I would love this, I would also look into holidays around the world – when you travel as much as I do for work, you get to see the inside of so many hotels or airports. There are so many places I have been that I want to see properly, as well as Europe and Africa... and everywhere else! We are fortunate to live in such a diverse world with such an opportunity to explore.

"Growing up, my hero was my older sister. I saw her produce groundbreaking work in her own field, and her resilience in the face of many varied challenges inspired me then and continues to do so today. Every day I channel her spirit to develop my own passion for innovation and discovery in life and in the workplace."

Where would you live if money was no object?

A: I could set up a colony on Mars and could become a neighbor of Elon Musk! Of course, we would have to take the cat house with us...

What's the greatest technological advancement in your lifetime?

Thanks to AirTag, I can now keep track of my belongings and avoid losing them anywhere. Again, when you travel, use remote offices, airports, and hotels, it is so easy to leave things behind. AirTag has saved me a fortune and reduced any anxiety about losing expensive technology. They are a brilliant tech addition! ■

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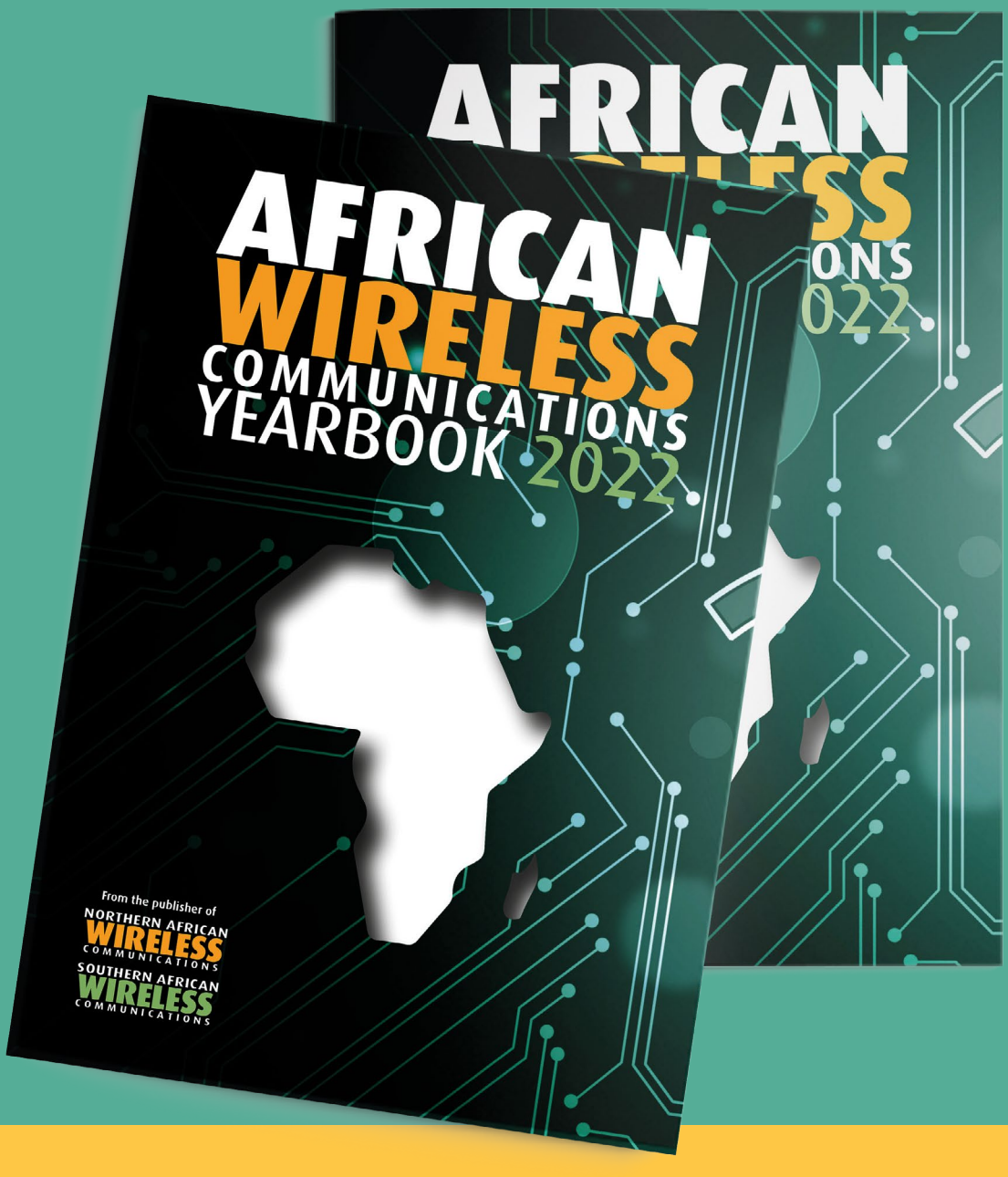

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