

For communications professionals in the southern Asian region

SOUTHERN ASIAN WIRELESS COMMUNICATIONS

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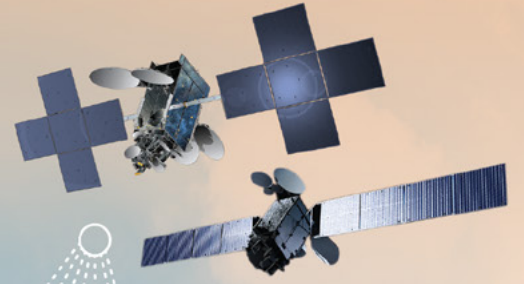
- How is southern Asia embracing renewable energy?
- Smart cities in the age of 5G and IoT
- India's government bails out struggling operators



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Airbus, BSNL deliver Tactilon Agnet 500 critical communication service in India

The Tactilon Agnet 500 developed by Airbus Secure Land Communications (SLC) is now fully operational in India in collaboration with Arubaito and Bharat Sanchar Nigam Limited (BSNL), following a phase of implementation and testing.

The state-of-the-art mission-critical communication Service (MCS) for business and mission-critical users is based on the mobile telecommunications standard of the 3rd Generation Partnership Project (3GPP).

As a future-proof modern, easy-to-use, flexible and scalable solution, Tactilon Agnet 500 can acquire and transmit data, video and voice to all relevant bodies at once – securely and reliably, the partners said.

It allows radio-device, smartphone, tablet, and laptop users to communicate individually, or in a group. With the support of BSNL, Tactilon Agnet 500 gives smooth access to customers in the critical

communications markets. As an end-to-end service, it is easy to integrate into operators' infrastructures and to their sales funnels, hence strengthening their enterprise and public sector portfolios. A futuristic solution for meeting all Critical Communication needs by leveraging the benefits of mobile broadband, LTE and Cloud technology.

BSNL and Arubaito, as first movers in the MCS market, will be working to address each and every vertical in order to tip over the entire market one customer at a time. It is expected a viral growth of subscribers, as well as the launch of new markets and an acceleration of AGNET engagement with an important network effects advantage due to BSNL reachability and reliability.

"Airbus is pleased to collaborate with BSNL and to put its expertise at the service of more agile and intelligent communications," said Selim Bouri, vice-president for



Airbus SLC in Africa, Asia and the Middle East. "Tactilon Agnet 500 is a complete solution and its deployment in India is a real success thanks to the strength of the BSNL network."

P.K. Purwar, CMD BSNL, added: "As one of the largest wireless telecommunications service providers in India, BSNL is proud to have enabled the deployment of Tactilon Agnet 500 in collaboration with Airbus SLC. This is a real breakthrough for Mission-critical communications offering to our professional/enterprise customers."

Bangladesh: nearly half of telecom towers still down in flood-affected areas

The Association of Mobile Telecom operators of Bangladesh (AMTOB) said 45% of the mobile phone towers of the four telecom operators were still down due to electricity crisis in Sylhet, Sunamganj and Netrokona districts.

A statement issued by the national trade organisation said: "Most parts of Sylhet, Sunamganj and Netrokona districts in the northeastern part of the country have been inundated by the flood waters, disrupting power supply to those areas."

Mobile service providers are trying

to keep the network running with generators in those areas, it added. However, due to the disruption of road communication, it is becoming difficult to reach the generators at the sites.

AMTOB also said that delivering generator oil to the sites has become challenging.

In this situation, the mobile operators in collaboration with the Bangladesh Army, local administration and Bangladesh Telecommunication Regulatory Commission are trying to keep the telecommunication

system running.

'Around 45% of the sites of mobile carriers including Banglalink, Grameenphone, Robi and Teletalk in Sylhet, Sunamganj and Netrokona districts are still down,' said AMTOB.

Due to lack of electricity, customers are not able to charge their handsets, in many cases, it said.

Several toll-free numbers have been introduced for those areas where customers do not have to spend any money to talk to these numbers, it said.

Asia-Africa-Europe-1 Consortium picks Infinera's ICE6 solution

Asia-Africa-Europe-1 (AAE-1) Consortium, which owns one of the world's largest consortium cable systems, has selected Infinera's ICE6 coherent 800G solution Infinera to boost connectivity across European, Asian, African and Middle Eastern markets.

Optical networking solutions business Infinera says AAE-1's submarine upgrade will double the current capacity, providing in excess of 100 Tb/s and making it the largest-scale submarine upgrade in history.

AAE-1's cable system spans 25,000 kilometres of submarine and terrestrial networks, connecting 19 countries led by a consortium of 19 leading operators. Infinera has been charged with increasing its submarine network capacity and provide diverse, resilient connectivity across the three continents.

Unlike other cable systems, AAE-1 terminates at two points of presence in Singapore for enhanced route diversity and is the only next-generation cable that extends farther into Asia via diverse terrestrial routes across Thailand to provide connectivity to Vietnam, Cambodia and Hong Kong.

This unique routing enables AAE-1 to deliver one of the lowest-latency routes between Hong Kong, India, the Middle East, Africa, and Europe.

Infinera further adds that by upgrading with its fifth-generation ICE6 technology on the GX Series Compact Modular Platform, AAE-1 can leverage a submarine optical network solution that features the highest level of spectral efficiency, long-codeword probabilistic constellation shaping (LC-PCS), Nyquist subcarriers, and the ability to seamlessly upgrade its line system to enable L-band transponders on some of its terrestrial network segments.

Thailand launches 5G alliance

Thailand established a new public-private partnership focused on using 5G to encourage economic growth across several industry verticals.

Prime minister Prayut Chan-o-cha announced the creation of the alliance at the recent Thailand 5G Summit 2022.

Led by Thailand's Digital Economy Promotion Agency, it brings together representatives from operators AIS and True Corp as well as Chinese vendor Huawei. Regulator the National Broadcast Telecommunications

Commission, the Federation of Thai Industries, the Office of the Digital Economy and Society Commission, the Thai IoT Association and the Telecommunications Association of Thailand make up the rest of the alliance.

The prime minister underlined Thailand's ambition to become a digital hub in southeast Asia and said that the alliance would aim to expand cooperation between the public and private sectors to "commercially drive Thailand's 5G technology

development in every industry".

Prayut said that the alliance would boost digital innovation and thereby make Thailand more competitive in this space, attracting overseas investment. The Ministry of Digital Economy and Society has been tasked with developing frameworks that promote the use of 5G, as well as managing the requisite infrastructure.

Agriculture, education, public health and transport are the sectors targeted by the alliance.

India wants 'homemade 6G by 2030' despite lack of 5G

India expects to launch homemade 6G networks by the end of the decade, even though it is yet to roll-out 5G services.

The Indian government has outlined plans to see domestically developed 6G deployed by the end of the decade, with prime minister Narendra Modi saying that the country would accelerate its technological development to match those international rivals.

Speaking at Telecom Regulatory Authority of India (TRAI) in May, he announced that work on 6G was already underway, having created an industry taskforce to focus on the new technology.

Modi said that in advancing to 6G development the country would seek to avoid the mistakes of the past, saying that the 2G era had been characterised by "corruption and policy paralysis". He added that

the telecom industry and regulatory environment has since greatly improved, growing more transparent and more effective, thereby making the 2030 deadline achievable.

Critics have called India's 6G plans "ambitious" because the country has yet to launch commercial 5G services. Operators are currently conducting 5G trials using temporary spectrum as the nation's initial 5G spectrum auction has proved highly contentious. Telcos have clashed with industry regulators over what they consider extravagantly high reserve prices for the spectrum.

According to an Ericsson report, 5G will represent around 39% of mobile subscriptions in India at the end of 2027, estimated at about 500 million subscriptions.

"4G is expected to remain the dominant technology in India in 2027," the report said. "However,



the 4G subscriptions are forecast to drop from 790 million in 2021 to 710 million in 2027, showing an annual average decline of 2%. Thus, 4G subscriptions are expected to reduce from 68 percent of mobile subscriptions in 2021 to 55 percent in 2027 as subscribers migrate to 5G."

Inmarsat completes first tests of integrated terrestrial networks in Singapore

British satellite operator Inmarsat has completed technology tests of terrestrial connectivity of its Orchestra network in Singapore, as part of a strategy to ease the congestion at busy shipping ports.

Orchestra combines geostationary orbit (GEO) satellites, highly targeted low Earth orbit (LEO) satellites and terrestrial 5G into a dynamic mesh network.

The operator said it completed the first-phase testing of ship-to ship connectivity in the island nation.

Inmarsat added that the tests proved the effectiveness of what it calls 'stepping-stone' connections, in the Orchestra maritime mesh. Singapore

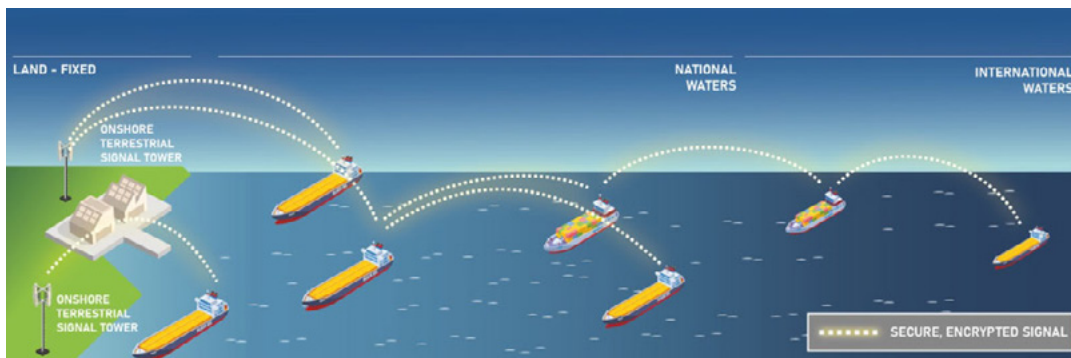
was selected because it is one of the world's busiest container ports and has taxing weather conditions, such as heavy rain and high humidity.

In one test, a land-based signal tower communicated with a ship at sea that moved between multiple common points daily. The vessel sailed patterns of varying distances from the shore, measuring performance during different weather conditions, the frequency of blockages between the test vessel and shoreline – including other ships and the impact of signal reflections off the sea's surface. Testing included validating the stepping stone aspect, connecting a ship to shore via another,

intermediate vessel.

"The demand for connectivity is growing constantly and Inmarsat continues to anticipate the needs of our customers, meeting future demand from them through the multi-network power of Orchestra," said Peter Hadinger, chief technology officer, Inmarsat.

Inmarsat first announced its network plans for Orchestra in July 2021. The system is designed to include close to 200 satellites built and launched between 2025 and 2030. At the time, the company said it planned to invest US\$100 million into Orchestra in the initial five years until 2026.



Telecom outage in Nepal for four days

Telecommunication services in Shuklaphanta Municipality-10, Jhalari Bazar in Nepal were disrupted for four days in early-mid June after telecom and internet services were disrupted because of accidental damage to the optical fibre line.

The loss of service was caused by the cutting of optical fibre in many places on the road, due to works being carried out by Ammarpur-Kaluwapur Drinking Water Users Committee and Urban Development Project in Jhalari.

The absence of a proper network caused problems with call services in GSM mobile phones.

Head of Mahendranagar branch of Nepal Telecom (NTC), Pritam Bhatta, told media that a breakage in the optical fibre caused difficulty in operating telecom services which has created trouble for the customers. According to senior engineer Prakash Bhatta, at the Attariya branch of NTC, where the optical fibres are located, the disruption occurred from the 10-14 June.

Local media reports claim that consumers have demanded legal actions against the Users' Committee and the contractor for the haphazard operation of heavy equipment, Bhatta stated action will be taken against those who cut the optical fibre line.

Meanwhile, NTC and Nepal Bank have reached an agreement through which the latter's customers can use the bank's app free of charge for a limited period. The deal is expected to help customers access mobile banking services more conveniently and on the move. Those benefitting from the partnership are those with an account at Nepal Rastra Bank, as well as NTC subscribers.

Both government-run companies signed the agreement at NTC's central office in the capital, Kathmandu.



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In expansive mining environments, where critical communications are essential both above and below ground, VHF TETRA offers the ideal solution to consolidate multiple networks into one mission critical solution.

Above ground, VHF signals carry further in open spaces, enabling a cost effective but powerful TETRA solution that provides crystal clear audio. Below ground, the greater signal propagation of the VHF frequencies proves ideal, providing complete coverage in dangerous environments where safety is paramount.

Murray Wales, Principal Consultant at DXC Technology – Connect, and an experienced integrator of

complex communication solutions, highlighted the value of the longer form frequencies: “When running large mines, organisations spread their operations across vast sites, often including ports or railway facilities, and across difficult or hazardous terrain. These could include mountainous and heavily forested areas, with variation between snow topped peaks and tropical vegetation. Torrential rain is a frequent operational hazard, as of course is the huge distance to first aid or maintenance support.

VHF TETRA offers an ideal solution to these organisations, improving coverage above and below ground and ensuring minimum risk to operations.”



VHF TETRA improves coverage in dangerous underground locations, ensuring operations can continue and downtime is minimised.

Ben Tabor, Product Manager at Sepura, explained how VHF TETRA radios improve outdoor coverage.

“Radio waves in lower frequencies have longer wavelengths meaning they travel further distances in open spaces. Because of this, operators can reduce the physical infrastructure required to support the solution, enabling significant savings in equipment and maintenance costs.”

The solution fills a notable gap in the market for quality VHF TETRA radios, complementing the reliability, security, and mission critical protocols of TETRA with the powerful audio processing of

sepura



Sepura's VHF solutions uses proven TETRA radios to enhance coverage in outdoor and underground environments.

the SC Series radios, ensuring crystal clear audio in loud, wet or dusty conditions. ■



Sepura's VHF TETRA solution enables users to take advantage of powerful mission critical solutions.

Why implement a VHF TETRA solution?

Extend coverage: Enhance coverage in expansive or remote outdoor environments and complex underground networks

Reduce costs: Save on operational costs with less infrastructure and reduced maintenance costs

Utilise available spectrum: VHF TETRA can be deployed on existing VHF licenses, easing transition to a mission critical capability

Advanced functionality: Benefit from TETRA's advanced functions, including data sharing, priority and group calls and improved audio quality

Proven solutions: Utilise Sepura's proven, robust radios and extensive ecosystem of accessories, applications and programming tools.

To find out more about Sepura's VHF solutions, visit www.sepura.com

Bladon sends 200 micro turbine generators to the Philippines

Bladon Micro Turbine has secured orders for 200 MTGs from connectivity system integrator One Commerce, its exclusive partner in the Philippines.

The first MTG has been installed at an off-grid telecom tower site, close to a residential area in Northern Luzon, where it is delivering reduced maintenance costs, lower noise emissions and improved air quality for the surrounding area.

With more than 27,000 telecom towers across the Philippines, serving three mobile networks and seven active TowerCos, it is difficult to maintain coverage across an archipelago of 7,107 islands and 100 million people. Thousands of sites have relied on traditional diesel generators to provide round the clock power, but these are often on islands that are difficult to reach.

They can be costly to run, or impossible to access, due to extreme weather events. Instability in the grid effects telecoms and all other markets relying on constant power. Bladon's MTG, with its microturbine technology, is designed to eliminate the need for frequent service visits, reduces fuel costs and delivers reliable power in a quiet, clean manner.

"Our clients demand from us reliable cost-effective power, but have now added a new set of challenges, to deliver that power in a more sustainable way," said Abbey Ng, CEO of One Commerce. "Bladon's fuel-flexible approach, in being able to use low or no-carbon fuels, reducing travel for servicing and operating in a clean, quiet way to reduce the impact on nearby residents, is a perfect combination for our teams to deliver to many markets, not just telecoms in the Philippines."

"Furthermore, we have enabled

our customers to reactivate once dormant telecom towers, that were too noisy and obtrusive to nearby residents. This is a true win-win for our customers and their subscribers, who benefit from better network coverage."

"We are privileged to have such a great partner in One Commerce. We have been working with them for over a year to ensure all the right support teams and applications, marketing and promotional effort has been planned for mutual success," added Philip Lelliott, director of Bladon Micro Turbine.



Pakistan's operators warn of outages

Pakistan's telecom sector has warned the government of phone network and internet service outages, amid long and frequent power outages in the country.

The country is facing an escalation of its power crisis after it failed to agree on a deal for natural gas supply next month. Tenders for July were scrapped due to high price and low participation as the nation is already taking action to tackle widespread blackouts.

"Telecom operators in Pakistan have warned about shutting down mobile and internet services due to long hours power outages nationwide, as the interruption is causing issues and hindrance in their operations," the National Information Technology Board (NIBT) posted on Twitter.

In a letter to Pakistan Telecommunication Authority (PTA), the telecom companies highlighted the challenges faced by the sector due to "unplanned and prolonged load-shedding nationwide" especially in rural areas.

"Despite having backup power available in the form of generators and batteries, cellular operators are finding it almost impossible to cope with the quantum of these power outages that are beyond our dimensioned backup capacity," cellular mobile operators Jazz, Telenor, Ufone and PTCL said in the letter.

They also urged the Pakistan government to take urgent measures "to enable the telecom industry to keep providing essential telecom services to the masses".

Pakistani prime minister Shehbaz Sharif warned the country that they might face increased load shedding in the coming month of July, according to local reports.

India and Japan discuss 5G partnership

Cooperation in 5G telecom technology was a key subject in the India-Japan cyber dialogue held June 30.

India's Ministry of External Affairs (MEA) said both nations discussed important areas of bilateral cyber cooperation and reviewed the progress achieved in the areas of cybersecurity and information and communication technologies.

The MEA also said the discussions included developments in the cyber domain and mutual cooperation in the area during discussions at the United Nations and other multilateral and regional fora.

"Both sides discussed important areas of bilateral cyber cooperation and reviewed the progress achieved in the areas of cybersecurity and Information and Communication Technologies (ICTs) including

5G Technology," the MEA said in a statement.

The Indian delegation at the fourth India-Japan Cyber Dialogue was led by Muanpui Saiawi, joint secretary in the MEA's cyber diplomacy division. Japan's delegation was led by Yutaka Arima, ambassador in charge of cyber policy at Japan's Ministry of Foreign Affairs.

India's delegation consisted

of senior officials from the MEA, Ministry of Home Affairs, Ministry of Defence, National Security Council Secretariat, Ministry of Electronics and Information Technology, Department of Telecommunications, Indian Computer Emergency Response Team, as well as the National Critical Information Infrastructure Protection Centre.



The Philippines welcomes Starlink

The Philippines has approved plans that will see it become the first country in southeast Asia to access SpaceX's Starlink broadband services.

Starlink Internet Services Philippines, a subsidiary of Elon Musk's SpaceX, will provide the satellite broadband to the archipelago.

In a statement, the National Telecommunications Commission (NTC) said approved Starlink's registration as a "value-added service (VAS) provider," enabling

the company to "directly access satellite systems and build and operate broadband facilities to offer internet services."

"The NTC is steadfast in helping ensure that roll-out of Starlink's internet access services will be done expeditiously and professionally," NTC commissioner Gamaliel Cordoba said in a statement. "The NTC's swift processing of Starlink's VAS provider registration was meant to expedite the service's immediate roll-out."

Cordoba said Starlink is expected

to cover villages in urban and suburban areas and rural regions in the Philippines that remain unserved or underserved with internet access services.

The country's internet penetration was 67% of the country's 110 million population as of January 2021, according to data from independent data collector, DataReportal.

Starlink's arrival comes after president Rodrigo Duterte signed legislation March 21 that allows up to 100% foreign ownership of public services in the Philippines.



AIS partners with ZTE to expand 5G footprint in Thailand

Thailand's leading operator Advanced Info Service (AIS) has secured the services of China's ZTE to launch a 5G innovation centre as a hub for research collaborations and joint 5G innovations.

Under the terms of the deal, the latter will be the former's strategic partner to upgrade to key technologies such as 5G.

"We are a digital life service provider that focuses on unlocking digital tech such as 5G, a vital piece of infrastructure to enhance the country's capabilities in the digital economy," said Somchai Lertsutiwong, CEO of AIS. "This brings us the potential for our investments to deliver a wide variety of experiences and smart services to AIS customers, the Thai public and a range of industrial sectors."

Lertsutiwong added that AIS has "always been confident that 5G will become a key variable in the near future to affect transformation, from consumer behaviour to



social contexts, and the growth of Thailand's digital economy".

Xu Ziyang, CEO of ZTE, added: "We will continue to innovate in 5G technical solutions and applications, and work with AIS to jointly explore the huge potential of 5G networks in the digital economy era."

AIS is expanding its 5G network to cover all 77 provinces of Thailand. The carrier's 5G network currently reaches 78% of the population, with the aim of reaching 85% by the end of this year.

The 5G centre is due to be completed by the third quarter of 2022.

Reliance Jio in talks with Ericsson and Nokia for 5G kit

Reliance Jio has started talks with Nordic tech giants Ericsson and Nokia to buy 5G equipment, in a move to diversify from its current 4G partner, Samsung, according to a report by Business Standard.

Swedish firm Ericsson and Jio had initially tied up for 5G trials in Delhi, but the plan did not materialise.

The two companies are set to begin their quick trials at the new location, considering the deadline of permission is July 26, the day from which the 5G spectrum auction will begin.

Both firms also looked to conduct trials in Jamnagar, Gujarat, but a decision has yet to be made.

Jio has already conducted trials of its homegrown 5G equipment in Mumbai and Jamnagar, and with Samsung in Jamnagar.

The report said talks have also begun with Finland's Nokia, though no trials have been planned.

Jio said it intends to take its homegrown 5G stack to global markets after testing it on a pan-India scale. In recent weeks, it has demonstrated several use cases such as connected drones and metaverse for retail using the trial 5G airwaves allocated by the government.

Nokia and Ericsson did not comment on the report.

Malaysian minister offers 5G incentives

The Malaysian government is willing to consider giving mobile phone companies fiscal incentives to move into 5G technology, as the country lags behind other nations in Asean when it comes to deployment of the technology.

Speaking to the Straits Times newspaper in Singapore, finance minister Tengku Zafrul Aziz said the incentives would act to mitigate any short-term commercial consequences of providing 5G

services to customers.

"All stakeholders must share a sense of urgency for Malaysia to step up its connectivity game to remain competitive in the region," he said.

At present Malaysia lags behind Singapore, Thailand, the Philippines, Indonesia and Vietnam in rolling out 5G technology.

Aziz also suggested that the government might offer licences to other companies if the companies,

"particularly the larger ones, continue to delay providing 5G services to their customers".

He said: "Indeed, the interests of Malaysia and its people must take precedence over the telcos' narrow commercial interests."

The minister added that 5G will boost the economy by RM650bn and create 750,000 high-value jobs between now and 2030. "Hence, the success of our 5G deployment is a matter of public interest," he said.

NTA hands M2M SIMs to CAAN and DHM

The Nepal Telecommunications Authority (NTA) has allowed the Civil Aviation Authority of Nepal (CAAN) and the Department of Hydrology and Meteorology (DHM) to get M2M (machine to machine) SIM cards, having earlier rejected the applications.

They will be used for automatic metering and weather predictions respectively.

Previously, the regulator had directed telecom operators not to issue the integrated circuits because of the incomplete numbering plan. However, it reversed the decision after assessing the application CAAN and DHM sent to Nepal Telecom.

As a result, Nepali operators can now sell M2M SIM cards.

M2Ms can work like regular SIM cards but are more reliable and durable and they can withstand adverse climatic conditions.



“We are still working on the numbering plan. We are still exploring the prospect of a new number range for (Internet of Things) IoT and M2M,” said Ambar Sthapit, director, NTA. “In such a scenario, the authority had previously asked

operators to provide the M2M SIM cards in a way that they can be changed if necessary, even after the SIM card is sold. But changing the number afterward could be a hectic process. That is why the authority didn't follow its initial plan.”

Singtel partners with Micron to deploy 5G mmWave

Singapore Telecommunications (Singtel) has been selected by semiconductor manufacturer Micron Technology to deploy its 5G millimetre wave solutions with localised edge core at the US firm's 3D NAND flash memory plant in Singapore.

The solutions will be deployed at Micron's cleanroom to support the development of a variety of digitally enabled applications including automated visual inspections of individual chips and augmented reality (AR) for operations and maintenance.

Singtel said Micron is the first company in the city-state piloting 5G by deploying an mmWave campus solution with edge core on-premises for industry 4.0 manufacturing applications.

“This industry-first deployment proves that 5G networks can be used for high-precision quality control and manufacturing operations, which previously was not possible with the limitations of Wi-Fi,” said Bill Chang, chief executive officer (CEO), group enterprise, at Singtel. “Additionally, the implementation

is a significant milestone in Singtel's journey to accelerate enterprise 5G adoption and will serve as a case study to inspire other 5G-enabled manufacturing sites around the world.”

Koen De Backer, Micron's VP of smart manufacturing and artificial intelligence, added: “Together with Singtel, we aim to bring the performance to the next level leveraging 5G technology. This will propel us forward as a trailblazer in operational excellence and scaled implementation of Industry 4.0 technology.”

Vietnam wants Thai investment in 6G development

Vietnam has invited Thailand to participate in the development of wireless communications, including 6G technology.

Thai minister of digital economy and society Chaiwut Thanakamanusorn made the announcement after meeting with Vietnam's minister of information and communications Nguyễn Mạnh Hùng.

Chaiwut said the development of 6G technology will only serve to improve various platforms, such as cyber security. He added that Thailand and Vietnam will establish a joint committee to develop digital economy and promote new start-ups. This will allow the nations to explore future opportunities.

Vietnam recently enacted three digital-related laws which mainly

relate to digital state, economic and societal transformation and said that it is willing to share details of these laws with Thailand.

Discussions also focused on economic development cooperation, including supporting Thailand's bid to serve on the management board of the International Telecommunication Union (ITU) for a new term from 2023 to 2026.

Arianespace launches satellites to serve APAC

Arianespace launched a brace of satellites to improve broadband coverage in the Asia-Pacific region on the Ariane 5 rocket's first flight of 2022.

It lifted off at 5:50 p.m. Eastern from the Guiana Space Center spaceport in Kourou, French Guiana, June 22, carrying Measat-3d for Malaysian operator Measat and GSAT-24 for India.

Both satellites separated from Ariane 5 and will use onboard propulsion to reach final positions in geostationary orbit.

Stéphane Israël, Arianespace's chief executive officer, said the next Ariane 5 mission is scheduled for September 6 to launch Eutelsat's Konnect VHTS satellite.

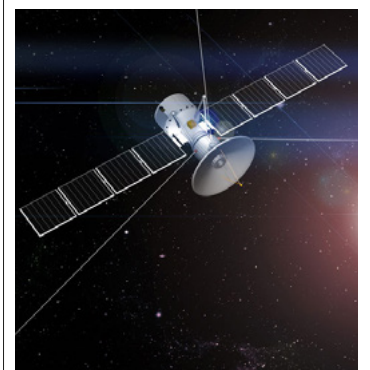
Measat-3d is due to replace two aging satellites for Measat, including one that started drifting out of its geostationary orbit slot in the middle 2021.

Europe's Airbus Defence and Space built Measat-3d, which was designed to provide broadband speeds of up to 100 megabits per second in areas with limited or no terrestrial network throughout the whole of Malaysia.

In addition to supplying satellite broadband, the satellite aims to provide redundancy and additional capacity for video distribution in the Asia-Pacific region.

Indian space agency ISRO built GSAT-24 for its state-funded commercial arm NewSpace India Limited, which plans to use the satellite for telecoms and broadcast services in India.

This was the 113th overall mission for Ariane 5.



TM, Cisco to provide private 5G network to enterprises

Telekom Malaysia Bhd (TM) has signed two collaboration agreements with Cisco to partner in projects for 5G innovation and the digital acceleration of small and medium enterprises (SMEs).

The deal is part of Cisco's Country Digital Acceleration (CDA) programme, which is a strategic partnership with governments worldwide to accelerate their national digitalisation agendas.

"The programme taps on the power of private and public partnerships across a variety of sectors, including national infrastructure, education, and smart businesses and communities, to bring digital solutions to national challenges," Cisco said in a statement.

TM said the partnership with Cisco focuses on three key pillars: digital transformation in the public sector, digital transformation for service providers that focuses on 5G innovation and digital transformation for SMEs.

Under the terms of the deals, TM and Cisco will build a 5G-as-a-service centre of excellence to springboard 5G adoption and develop proof of concepts for enterprises and vertical industries. "Supported by Cisco's full stack of private 5G core technologies complete with services and support, the innovation platform will demonstrate 5G enterprise use cases realised on the reference architecture to allow businesses to visualise and implement 5G frameworks and solutions that address unique business challenges," the statement read.

In a bid to accelerate digital transformation for SMEs, TM and Cisco will also drive a joint digital solution seeding programme for selected SME customers.

"These solutions will range from the Internet of Things (IoT) to business analytics solutions for SMEs in the retail, education, and manufacturing sectors," they said.

Talking critical

The mission critical comms revolution

Private 4G/5G communications offers an exciting opportunity for mission critical users – the move towards high-speed broadband services will enable new, advanced applications and offer significant operational improvements for users. However, there will still be a demand for traditional PMR technologies...so can the industry gain more than just the improvement in data services?

TETRA is still the most advanced digital trunked communications system for mission critical users today and sets the standard for voice and group communications but will never be able to offer the high-speed data services that are essential for today's critical workers. As organisations look towards the next generation mobile communications, there is an opportunity to reflect on how different technologies can continue to be viable for users.

Traditional narrowband PMR technologies will be required well into the future...issues of affordability, spectrum availability, cell coverage and re-use of existing subscriber equipment are all likely to be factors. We believe that a hybrid approach to technologies is the ideal solution to allow users the best choice; and a fully integrated, single network solution will always be a better solution than gateways to separate networks.

The TETRA standard was developed over 20 years ago, and one of the major benefits was the interoperability between subscribers from different manufacturers, however the lack of interoperability at the infrastructure level was (and still is) a frustration for clients. This was not an issue in the consumer 4G market as 3GPP standards allow all LTE eNodeBs to co-exist on the standard LTE Core. As a TETRA vendor, users regularly ask if our base stations can be used to extend an existing system (from a different manufacturer) – sadly the lack of an open networking standard adopted by all manufacturers, meant that full interconnectivity was not possible (apart from using a basic gateway interface)... this proprietary issue created difficulties for users, particularly where security is at stake. The ability to seamlessly select from a range of different vendors, and different technologies on the same core network is an ideal approach.

Recent global emergencies should focus mission critical users on the importance of fast, secure communications and the ability to rapidly deploy the most appropriate

technology for any situation and in any geographic area is essential. A perfect example is where ETELM working with B-LIFE deployed a system combining both TETRA and 4G for COVID emergencies in Italy.

The B-LIFE project required a rapidly deployable health laboratory to effectively respond to emergency public health issues – this is particularly pertinent to COVID but also for co-ordinating vaccination programmes, and for outbreaks of other viruses such as ebola, where dealing with any isolated outbreak is critical to avoid the spread and save lives. A similar solution is also adapted for emergency services and military applications whereby the user can benefit from secure TETRA voice communications deployed instantly in the field, with advanced mobile applications linked to command centres obtaining important data and making assessments in real-time. This solution is often based on single cell systems, where 4G (and 5G) has limited coverage, so having TETRA for voice communication and a '4G Bubble' for broadband data services, connected to the central monitoring systems gives the benefit of both technologies.

As an industry supplying highly secure, national infrastructure we must collectively work towards a future where our customers are given the option to select the most suitable technology (or combination of technologies) and not left in a position where they are locked-in to a supplier or service, and we have a responsibility to ensure migration paths are more seamless and less complex than they currently are today. The 3GPP model is perfect in this respect.

If one assumes that the demand for PMR technologies will continue (even in the 'next-G' world!), it is essential that vendors look at offering an equivalent fully integrated, single network solution for users. There is no technical reason why several different technologies cannot inter-operate on the same core network, this will reduce the costs and increase the options for users, and simplify the architecture by avoiding gateways and separate interfaces. ETELM's 4GLinked is a trailblazer in this regard as it's TETRA base station can co-exist with eNodeB's on the LTE core network... so how can we take this opportunity to revolutionise how vendors of different technologies co-operate in the future?

The technical solution is possible, and lessons can be learnt from the network standards established by 3GPP for the mobile consumer market – the 4G and 5G Core network is internationally

standardised and all base stations from different vendors inter-operate on the same network. This gives operators the ability to select suppliers based on a competitive market, and the ability to switch suppliers quickly should the need arise. This competitive approach has been a major factor in the rapid rate of deployment and technology advances in the consumer communications market.

An opportunity now exists for manufacturers of all standard PMR technologies to adopt the same approach and develop their technology into the 3GPP standards for core networking – LTE Core, 5G NR... this could create a single eco-system for all mobile communications and allow users to select and mix technologies based on cost, service and user requirements. 4GLinked TETRA base stations adopt this approach as they can connect directly to any LTE Core network in the same way as any LTE eNodeB, by utilising the LTE-S1 connectivity standard. This allows our TETRA system to be deployed over the same, single network core solution alongside 4G and future 5G base stations. The solution has been tested at 3GPP Plug tests and already deployed in many different scenarios for emergency services.

As the 3GPP networking standards for 4G and 5G are open, any vendor can develop the same solution into their base stations meaning that we can all benefit from the advances in core networking and allow inter-system and inter-technology solutions over a single core. The technology is available but commercial issues need to be overcome – this is where users can influence vendors and ensure that they never find themselves locked-in to proprietary networks.

Once technology becomes interoperable the next challenge for large national networks is how to deploy their service – privately owned or operator managed? The choices are available, and certainly operators will have a large part to play since they already have much of the national infrastructure established. However, once again users must ensure that there is a competitive environment – there is no point in having open standards in technology, if users are forced into single sourced managed services...so it is important to ensure that options exist with other operators so that services remain competitive – again a challenge for highly secure networks and one that needs to be carefully managed.

Paul Ward, director, ETELM



Pakistan: industry attracts US\$6.1bn FDI, operators hike prices

Pakistan's telecommunication industry attracted foreign direct investment of US\$6.1bn from July 1, 2018 – March 30, 2022, according to official government figures.

Speaking at the "World Telecommunication and Information Society Day", the federal minister for IT and telecommunication Syed Aminul Haque said that the number of active mobile SIMs reached 193 million by March 2022 due to reforms in the telecom sector, and mobile and fixed broadband consumers' numbers saw 39.4% percent increase.

He added that revolutionary steps had been taken in the information technology and telecommunication sector in the last three years in Pakistan.

Projects were started through Universal Service Fund (USF), the attached department of the Ministry of IT and Telecom, for the provision of broadband services across the country. Over 37 projects worth Rs31bn were launched by June 2021 and up to 75% work had been completed on most of these projects.

The federal minister said that Rs6.47bn was being spent on nine different projects of optical fibre and broadband services in Punjab. Furthermore, nine projects worth over Rs8.48bn are also under way in Sindh for the provision of high-speed internet and laying of optical fibre in the province.

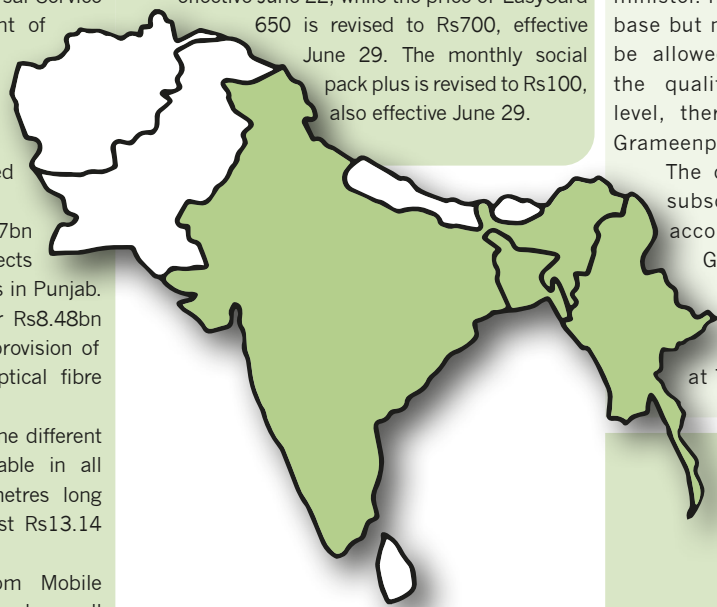
Work is also being carried out on nine different projects for laying of fibre optic cable in all four provinces. Total of 4,746 kilometres long cable was being laid which would cost Rs13.14 billion, Haque added.

Meanwhile, Jazz, Pakistan Telecom Mobile Limited (Ufone) and Telenor Pakistan have all increased rates of call and data packages, citing inflation as the main reason.

The former informed its customers of the price hike and told them that due to inflationary pressure, the cost of running the business has increased significantly across Pakistan.

Ufone has also increased the rates of call and data packages and gave the same reasons as Jazz. However, it gave customers one day's notice. The revised rates see its Upower product – a card package offering calls and data - was previously Rs100, but is now Rs120. The super card plus, previously available at Rs649 has been revised upward to Rs699 with no additional benefits, effective June 29.

Telenor Pakistan also revised bundles upward. The cost of EasyCard 500 is revised to Rs550 effective June 22, while the price of EasyCard 650 is revised to Rs700, effective June 29. The monthly social pack plus is revised to Rs100, also effective June 29.



Grameenphone hit with SIM ban

Bangladesh Telecommunication Regulatory Commission (BTRC) has put an indefinite ban on the sale of SIMs by Grameenphone as part of an ongoing dispute over the operator's poor quality of service.

The watchdog has regularly asked the company to improve standards, but the latter has failed to take the appropriate action.

BTRC reacted to the inaction by Grameenphone by telling the operator it cannot sell new SIMs until further notice.

"Despite our efforts, we have not seen any initiative to improve the quality of Grameenphone's service," said Mustafa Jabbar, posts and telecommunications minister. If they keep increasing the customer base but not the quality of service, it cannot be allowed to happen. Until they improve the quality of service to a satisfactory level, there will be a ban on the sale of Grameenphone SIMs."

The current number of Grameenphone subscribers stands at over 80 million, according to BTRC data.

Grameenphone shares started trading on the Dhaka Stock Exchange at Tk300.2 but fell by Tk 6 in the first hour before closing at Tk 294.1, following the news.

Telenor Myanmar becomes Atom

Telenor Myanmar rebranded its operations 'Atom' following the sale of the unit by Norwegian umbrella company Telenor Group in March to M1 Group for US\$105m.

The operator said in a statement that the change reflects the "post-transaction situation" and that there will be no impact on the range of services and products offered.

Telenor Myanmar is controlled by M1 Group affiliate Investcom, which is 49% owned by local partner Shwe Byain Phyu.

Parent company Telenor said in March it was working with M1 Group to ensure a smooth transition for customers, partners and employees after the sale. The business has a transition service agreement with Telenor for six months.

The political instability Myanmar experienced in early 2021 saw Telenor seek a buyer for the unit in July, noting at the time the current environment made it impossible to "conduct an ordinary sales process". In Q1 2021, the company recorded an impairment loss of (US\$686.5m) on its operations in Myanmar.

Bharti Airtel Q4 net profit jumps 164%

India's Bharti Airtel reported a 164% increase in consolidated net profit at Rs2,008 crore for the quarter ending March 31, 2022, versus Rs760 crore for the same period in 2021.

The country's second biggest carrier said consolidated revenue from operations rose 22% to Rs 31,500 crore in Q4FY22 as against Rs 25,747 crore in Q4FY21. Sunil Mittal-led Bharti's average revenue per user (ARPU) was Rs178 for the quarter, up from Rs145 from a year earlier.

To put this into context, ARPU of rivals Reliance Jio and Vodafone Idea for the same period was Rs167.6 and Rs124, respectively.

Airtel said in November 2021 that mobile ARPU needed to be at Rs 200 and ultimately at Rs 300, for a financially healthy business model.

The company has been raising money to fund

its digital ambitions, including developing home broadband, data centres, cloud adoption as it prepares to launch its 5G services in the country.

For the full year FY22, Bharti recorded a net profit of Rs4,255 crore against a loss of Rs 15,084 crore in the previous fiscal (FY21). The operator posted a revenue of Rs1.16tn for FY22, up from Rs1tn recorded in the previous financial year.

Gopal Vittal, chief executive officer (CEO), India and south Asia, Bharti Airtel, said the business is "well poised" for a couple of reasons.

"First, our ability to execute consistently to a simple strategy of winning with quality customers and delivering the best experience to them," he said. "Second, our future proofed business model with massive investments in both infrastructure and digital capabilities."

Singtel H2 net profit up to S\$994.5m

Singtel reported S\$994.5m in net profit for the second half ended March 2022, up more than 10 times from S\$87.6m year-on-year.

The growth came despite lower operating revenue, with profits coming in higher year on year as the group's exceptional items turned positive, from a net exceptional loss booked the previous year.

Operating revenue for H2 FY2022 fell 6.5% to S\$7.69bn from S\$8.22bn in 2021. Singtel attributed this to lower sales of equipment as well as a decrease in revenue from its mobile, data and internet and fixed voice, as well as pay television segments.

For the full year ended March 2022, net profit stood at S\$1.95bn, about two-and-a-half times up from FY2021 net profit of S\$553.7m due to a net exceptional gain compared to a net exceptional loss the previous year.

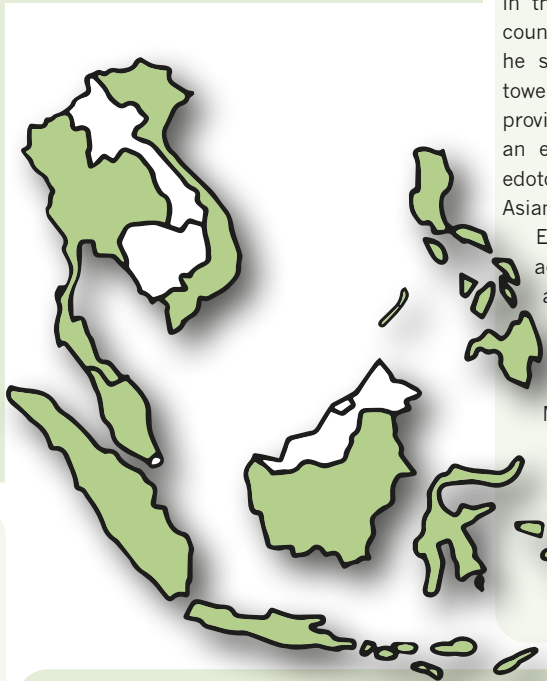
Operating revenue fell 2% to S\$15.34bn to reflect lower NBN (National Broadband Network) migration revenue, as well as the continued impact of Covid-19 and challenges in Singtel's carriage business.

Singtel chief executive Yuen Kuan Moon told journalists that the second-half performance was due to Covid-19 lockdowns in Australia and the impact of supply-chain shortages on

handset volumes.

"Some of the equipment revenue normally gives us lower margins, and it's mitigated by service revenue improvement as well," he said.

Meanwhile, Singtel's board has proposed a final dividend of 4.8 cents per share. Combined with its interim dividend of 4.5 cents per share, this brings the group's ordinary dividends for FY2022 to 9.3 cents per share, up from 7.5 cents per share in the previous year. However, that figure is lower than 12.25 cents per share in FY2020 and 17.5 cents in FY2019.



Edotco to expand in Philippines

Edotco Group, the Malaysia-based tower company, said it plans to further expand its presence in the Philippines, following the recent acquisition of nearly 3,000 towers from telco PLDT.

Suraj Narayanan, Edotco Philippines acting country managing director, told The Star that by becoming the largest tower company in the country, the company can be instrumental in shaping and developing the communications infrastructure while creating value for its stakeholders.

"This is a highly strategic transaction for us. It is the first step in our market expansion strategy in the Philippines, allowing us to become the country's leading independent tower company," he said. "Given the developing nature of the tower market in the Philippines, the transaction provides a critical first-mover advantage with an established and sizable platform, allowing edotco to diversify and strengthen its pan-Asian platform."

Edotco Group subsidiary ISOC Edotco Towers, acquired 2,973 telecom towers through a sale and lease back transaction with subsidiaries of PLDT.

The parent company manages telecom towers across nine markets, including Malaysia, Bangladesh, Cambodia, Sri Lanka, Myanmar, Indonesia, Pakistan and Laos.

Its biggest market at present is Malaysia, in which it has a portfolio of over 16,000 towers and managed sites. Bangladesh is its second biggest market, with approximately 15,000 towers.

Telenor to stay in Thailand

Telenor Group, the major shareholder in Total Access Communication Plc (DTAC), has vowed to stay operating in Thailand and is optimistic the planned merger with True Corporation will be completed imminently.

Speaking at a press conference at DTAC's headquarters, Sigve Brekke, president and chief executive of Telenor Group, said the combined strength of two "weak" players in Thailand's telecom market would create real competition.

"Telenor is not going to leave Thailand," he added. "A lot of people have been wondering that. We entered Thailand two decades ago with a vision that all Thais should have access to cell phones. That's what we called the growth 1.0 model."

Brekke added that the merger would yield the best results for consumers and the nation's continued advancement in the digital era.

Currently, Advance Info Service (AIS) is the number one telecommunication provider in Thailand with 43.7 million subscribers followed by True with 32 million and DTAC with 19.3 million.

'5G subscriptions in southeast Asia to double in 2022', says Ericsson report

5G subscriptions in southeast Asia and Oceania stood at 15 million at the end of 2021 and are expected to more than double this year, according to the latest edition of the Ericsson Mobility Report.

More network deployments taking place over the next few years means 5G mobile subscriptions are expected to grow at an annual rate of 83%, reaching 570 million in 2027, according to the report. This figure will almost be equal to the total regional number of 4G subscriptions at that time.

"With our global scale and expertise, we look forward to continuing our journey in supporting Vietnam with expanded deployments of 4G and 5G networks moving forward," said Denis

Brunetti, head of Ericsson Vietnam, Myanmar, Cambodia, and Laos. "4G and 5G are enabling Vietnam to unlock the full potential of the Fourth Industrial Revolution and will be the foundation upon which Vietnam can further build on its digital transformation journey."

Fredrik Jejdling, executive vice president and head of networks at Ericsson, added: "The latest Ericsson Mobility Report confirms 5G as the fastest growing mobile technology generation ever, and Ericsson is playing a key role in making it happen. We work every day with our customers and ecosystem partners around the world to ensure that millions more people, enterprises, industries, and societies enjoy the benefits of 5G connectivity as soon as possible."

Yahsat appoints Al Ali as CCO

Al Yah Satellite Communications Company (Yahsat) has named Sulaiman Al Ali as its new chief commercial officer (CCO) of Yahsat, effective as of July 1, 2022.

Al Ali will assume the role following the departure of Farhad Khan who served as CCO of Yahsat for the past six years. The new incumbent has been with the Yahsat Group since 2014, initially serving as a director within the Yahsat government solutions area, prior to assuming the role of deputy chief executive officer (CEO) of Thuraya in 2019 and subsequently its CEO in 2021.

"I am delighted to announce the appointment of Sulaiman Al Ali as chief commercial officer of Yahsat," said Ali



Al Hashemi, group CEO of Yahsat. "Sulaiman's new position and expanded portfolio is reflective of his outstanding contributions across the group and will enable us to expand and advance our customer solutions by effectively leveraging the distinct and complementary qualities offered by our fixed and mobility business and technology platforms. On behalf of myself and the leadership team, I take this opportunity to thank Farhad for his unstinting service and delivery to Yahsat and YahClick and wish him every success as he embarks upon his future endeavours."

Parallel Wireless lays off 500 employees, including in India

Telecom gear provider Parallel Wireless has laid off at least 500 employees, including a number in India.

Indian technology consultant RIU Global Services posted the news on LinkedIn.

"While this is disappointing news for these 500, others still sitting snug should realise they could be next. In such times, no one's job is secure in the world's true sense," said RIU Global Services. "We at RIU Global would like to offer our support, whether it is in terms of investment, resources, platform, or infrastructure to any such individual who would like to start something of their own in this space,"

Steve Papa, chief executive officer (CEO)

and founder of Parallel Wireless in the US, told the media that "we are making adjustments to prudently right-size given the realities of global economic conditions".

Eugina Jordan, former executive VP of marketing, said: "My heart goes out to all my colleagues across the globe that have been impacted by a mass layoff at Parallel Wireless, including yes, myself. I was one of the affected as well."

Regarded as one of the leading vendors in the open radio access network (RAN) industry, the Parallel Wireless is thought to have circa 900 employees worldwide. The layoffs have hit employees at all levels of the company in India, the US, UK and Israel.

Axiata, Telenor win merger approval

The Malaysian Communications and Multimedia Commission (MCMC) approved a merger between the mobile operations of Axiata Group Bhd and Norway's Telenor in a deal that will form the country's biggest player in the sector.

Telenor's Digi.Com Berhad and Celcom Axiata Berhad are Malaysia's second- and third-largest mobile service operators, respectively, but MCMC said it has issued a notice of no objection after both companies addressed competition issues that may arise from the merger.

In a joint statement, Digi.Com and Celcom said undertakings included divestment of 70 MHz of their spectrum and Celcom's "Yoodo" brand. Moreover, they agreed to establish a separate independent business unit for their mobile virtual network operators' (MVNO) wholesale business, as well as position existing products under a single corporate brand.

The companies expect the deal to be completed in the second half of 2022, with Axiata and Telenor holding equal ownership of 33.1% each.

This merger will now be subject to the approval of the Securities Commission, Bursa Malaysia and shareholders, the companies said.

Shahril Ridza Ridzuan, chairman of Axiata, said the company looks forward to playing an active role in encouraging national competitiveness through the provision of connectivity and research platforms.

Bruaset Kjoel, chair of the board of directors, Digi added: "Together, Celcom and Digi will bring better innovations to meet our customers' growing digital needs and for all participating in the digital economy to capture new growth opportunities in a fast-changing world. We will now focus on completing the remaining necessary steps to conclude this transaction and work on delivering a seamless integration programme to bring the vision and value of the merged entity to reality for the benefit of many."

Ooredoo partners with BICS for voice business model

Ooredoo Group has signed an agreement with international communications company BICS to create a voice business model that will deliver new solutions in artificial intelligence, machine learning and fraud protection, among others.

The agreement for voice traffic, which aligns with Ooredoo Group's strategic commitment to improving customer experience and quality of service for businesses and consumers, is the first such partnership of its kind in the region.

"For Ooredoo, this partnership is about reducing complexity and anticipating the needs of a new communications ecosystem," said Aziz Aluthman Fakhroo, Ooredoo Group managing director and chief executive officer (CEO). "We are

committed to investing in innovation, technology, and people to ensure we can offer the best possible products and services to our customers across our markets."

Effective immediately, the agreement will involve a phased deployment plan for Ooredoo Group operating companies across its global footprint that will be rolled out in Q3 and Q4 of 2022.

Ooredoo Group, which has a presence in southeast Asia, including Indonesia, Maldives and Myanmar, will work with BICS for voice traffic both in and out of the Group's operating companies. A key element of the first phase of the deployment plan is the creation of a dedicated team of specialists to share insight, expertise,

and resources between the two organisations and ensure a firm focus on customer experience.

"This is an innovative partnership which underlines both Ooredoo's and BICS' commitment to fuel market-leading growth in this evolving telecommunications landscape," added Guillaume Boutin, chairman of the board of BICS and CEO of Proximus, BICS' parent company. "As the voice market is consolidating, it is increasingly crucial to offer future-proof quality, stability, and protection to both operator networks and subscribers. I am confident that by combining BICS' and Ooredoo's strengths in this area, we will achieve significant returns for subscribers and operating companies alike."

ABS delivers satellite connectivity to oil and gas in Myanmar

Global satellite operator ABS has secured a multi-year, multi-link contract with Seonet Technologies Myanmar (Seonet), a VSAT service provider to expand its oil and gas communications services.

The deal will deliver satellite connectivity to the Bay of Bengal and the Andaman Sea around Myanmar via ABS-2.

ABS offers a VSAT solution catered specifically to the demanding broadband needs of the oil & gas industry. ABS-2 is capable of supporting critical services and streamline operations, providing multiple offshore platforms with access to real-time monitoring. It can also improve crew welfare, safety and healthcare conditions. In a single satellite link, separate virtual channels can be configured for corporate and crew connectivity.

Seonet is one of the VSAT service providers in Myanmar providing services to many sectors including telcos, oil & gas, enterprises and corporate entities. It operates two premium teleports hosting an array of teleport and managed services.

"Providing connectivity with high availability is essential to the daily operations of oil and gas companies. Satellite remains the only viable offshore connectivity option. We are pleased to play an important role in linking up the oil rigs and maritime industries and support Seonet's expansion efforts for the region," said Jennifer Blasko, ABS EVP of sales and marketing. "Using our C or Ku-band capacity, ABS links up oil rigs and service vessels across key markets in Asia, Africa and the Middle East."

Payne Maung Maung, managing director, Seonet, added: "We have two established teleports, one in the heart of Yangon and the other is deployed outside the city to better serve our customers providing geographical redundancy. The oil & gas sector is one of the key drivers that we are focusing on to grow our service portfolio. We are expanding our satellite services with ABS-2 to provide better availability to our customers."



Talking satellite

Getting space business qualified

GVF, through its training division – SatProf, Inc. – has for 21 years been engaged in the provision of satellite earth station/terminal installer training and certification. This year, GVF's Silver Anniversary, we have added to our training/education portfolio, taking an additional direction with the satellite industry's first comprehensive online non-technical education programme and curriculum to offer individual courses, full modules and a "Space Business Qualified" (SBQ) certification path.

With the SBQ, GVF is once again working with SatProf. Our other partner is Space & Satellite Professionals International (SSPI). The three satellite industry trade groups have a combined 80-years of experience in space industry education and in launching this new online learning programme we will satisfy the need of new and established businesses and employees in the commercial space industry to learn about all aspects of the business, enabling industry professionals to become "space business qualified."

The 21-years of GVF's work in installer training and certification – having the objective of building a global force of qualified VSAT installation technicians available in local areas to support expansion of VSAT networks everywhere – resulted from the industry's increasing recognition that training is a first line of defence against satellite radio frequency interference (RFI).

The industry has long agreed that improved training reduces uplink errors and improves equipment maintenance and installation practices. The World Broadcasting Unions-International Satellite Operations Group (WBU-ISOG) – since 2015 the World Broadcasting Unions-International Media Connectivity Group (WBU-IMCG) – has formally adopted a resolution supporting industry initiatives for training. Today, GVF training has reached over 20,000 students globally, pursuing some 30+ courses across, for example, VSAT installation, marine terminal operation & installation, teleport & news gathering up-linking, mobile terminal operation, numerous general theory topics & equipment-specific training.

The space and satellite industry has grown far beyond the dreams of its pioneers and the handful of

governments that initiated it. The commercial space industry is today a mature, fast-expanding, complex business. With a total size estimated at well over US\$1 trillion dollars, it reaches deeply into dozens of vertical markets and other industry sectors. It is essential in the provisioning of communications, data and the digital transformation of much of the global economy and has become an invisible but indispensable part of everyday economic activity. Its growth is being fuelled by the financial community's involvement as massive numbers of startups and new business models form within it. However, no industry course has offered a comprehensive learning experience to teach this, until now, and it was at the Satellite 2022 show in Washington DC on 21 March 2022 that the launch of SBQ was announced.

SBQ courses fill this gap, adding to the industry's online training toolbox a body of non-technical education designed to improve the knowledge and performance of existing employees, increase the marketability of those seeking a job in the industry, and provide employers with an inexpensive way to both increase productivity and enhance employee retention in a hyper-competitive labour market.

The courses are taught through a mix of self-paced, interactive tutorials, videos, illustrations, and testing to validate understanding and reinforce learning, with fundamentals courses leading to more specialised courses in satellite communications, earth observation, spacecraft and launch. The programme will enable learners to focus on specific topics or to work through the course series to achieve their choice of certifications. A Free "Welcome to the Business of Space" course is offered as an incentive for individuals and companies to examine the courses being offered.

A full description of the SBQ courses can be found at www.SpaceBQ.org. You can also email info@SpaceBQ.org for information, and stay informed on current and future developments by joining the growing community on LinkedIn and Twitter and following #SpaceBQ.

After more than two years prevented from undertaking international travel I will shortly be resuming my travels to satellite industry events. First on my agenda is an event which takes place in Dubai in the UAE, but which additionally addresses much of Africa

and south Asia. At CABSAT 2022 GVF presented and moderated three Summit sessions, which were held on 17 & 18 May:

- **'Stakes and Solutions in Responsibly Managing Space'**

Sustainability is a global priority across all industries and organisations, and should extend beyond our planet too. This panel addressed multiple facets of sustainability with discussion points covering why we should care about our impact on space, whose responsibility it is to keep space clean, the risks of not responsibly managing our impact, and the tracking of orbital objects, including other solutions and best practices, to help us responsibly manage our use of space.

- **'Disruptive Evolution in the Satellite Ground Segment'**

Satellite's ground segment, antennas in particular, is undergoing game-changing innovation. With the rapid growth of satellite networks in non-geostationary satellite orbits (NGSOs), and applications including machine-to-machine and people communications this part of the satellite industry is evolving to deliver, the panel addressed developments in the use of metamaterials, in power efficiency and in interference prevention, examine how satellite will reach full potential in delivering services across business, government, and consumer, together with discussing the benefits and challenges to adoption of flat panel alternatives to traditional parabolic antennas.

- **'Driving a New Space Innovation Paradigm with Artificial Intelligence and Machine Learning'**

AI and ML are being increasingly applied to foster innovation in the satellite and wider space industries. Impacting multiple areas of space operations, the panel explored how the satellite industry is leveraging AI and ML to revolutionise business. The panel will touch upon areas including optimisation in satellite autonomous control, in-orbit servicing/refuelling, and spacecraft decommissioning, data-gathering, analytics and management, and advances in software-defined networks and the design of new satellite terminals.

Martin Jarrold, chief of international programme development, GVF





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SATELLITE



BROADCAST

CO-LOCATION

Expertise needed to optimise 5G antenna selection

Colin Newman, director of antenna business development, Quectel, shares his tips on selecting antennas

5G technology is bringing a plethora of benefits including improved throughput, decreased latency and increased network capacity, which will in turn enable more devices to access the internet. This will enable faster downloads of movies, other videos and of data of all kinds and will provide an array of business and consumer benefits. In the developed world, the focus is on consumer services and applications that will benefit from 5G's ultra-low latency. However, for large parts of developing markets, notably in Asia, 5G will bring broadband to the market for the first time.

In Asia, more developed markets are leading adoption. According to research firm Omdia, China and South Korea were the world's first markets where 5G accounted for more than 10% of total subscribers. The firm has forecast that by the end of 2025, approximately one-third of all connections in the APAC region, including IoT, will be 5G. Over that period, it expects 5G to drive mobile revenue growth, with India experiencing the biggest increase at a compound annual growth rate of 5%.

However, for the benefits of 5G to be realized, the underlying telecom networks and the wireless products that use them need to be optimized. To assure optimum performance of wireless devices, the entire RF front end design layout needs to be configured to deliver the best 5G performance.

This means using the best antenna types as well as the best design options. Off the shelf antennas can often be used for many types of these designs and there are a variety of antenna types to consider.

Among antennas in common use today are laser direct structuring (LDS) and liquid crystal polymer (LCP) antennas, tuneable antennas and devices

that are designed to accommodate multiple antennas, such as for MIMO or beamforming solutions.

Different antennas offer different attributes. Any antenna that is used needs to be paired with the right module for the antenna type to ensure good performance and smooth integration. Multiple antenna arrangements enable greater throughput across different protocols. The typical 5G antenna setup is complex, so wireless device designers should work with module and antenna suppliers that are knowledgeable across all antenna types to ensure that they interact as expected and are backed by engineering support services that can optimize the 5G performance for their customers.

Expert vendors will also help with various antenna array design challenges as well as with the complexities that can arise from newer technologies such as 5G mmWave. Antenna position is critical to optimize performance and is a key consideration that should be addressed at the very early stage of the architecture. Addressing it after the design gets underway can lead to additional costs and delays, hurting revenues and time to market.

Similarly, there are several other design elements that should be addressed when designing devices with antennas for the best 5G performance. Among them are: Whether to use metal or plastic enclosures; the proximity of batteries, LCDs, connectors, shield cans and any other components containing metal; the size, position and orientation of the printed circuit board, any noisy components that can cause interference, other antennas sharing a similar frequency and the location of the device, just to name a few.

Antennas can be broadly categorized into four major types:

External antenna with cable: This type of antenna tends to offer excellent performance with the lowest risk. This type of antenna implementation is



well known and tested. The antenna is situated far away from other system electronics, minimizing the risk of any proximity issues.

Terminal antenna: Such an antenna also offers known, tested performance as well as low risk. A terminal antenna is usually the best choice for a low signal area, such as a basement.

Embedded Flex/PCB, SMD antenna: This type of antenna is more complex to configure for optimal performance and has higher risk but offers the benefit of low cost. With its surface mount design (SMD), this type of antenna is ideal for high-volume deployments.

Custom antenna: A custom antenna addresses mechanical constraints and performance and can be molded to fit the product, enabling it to be placed where a standard antenna would not be an option.

Customized antenna technologies include LDS, which is the prevailing antenna manufacturing technology on the market and offers high design flexibility with surface mount technology (SMT) component integration possible. Advantages here include the ability to etch an antenna pattern on either a plastic carrier, or the underside of the product housing, but this can be more expensive than flexible printed circuit (FPC) or sheet metal technology and double curved surface designs are not possible. FPC is an alternative option, sometimes using spring contacts for ease of assembly. However, FPC can offer

limited layout complexity, with a cost between sheet metal and LDS.

Sheet metal is the most flexible 3D antenna manufacturing technology with antenna volume and RF performance improvements possible. The technology offers lower antenna cost but the tooling charge is greater than for FPC or LDS.

With so many different types of antennas, components and configuration considerations, the technology is not something to buy, plug in, turn on and it's ready to use. To operate at all, and certainly to operate to its maximum capacity and provide optimal performance, antenna technologies should be selected carefully for their intended uses and locations. ■





The long road to going green

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

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

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

the problem is going to be addressed.

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

Mobile operators and the GSMA are taking collaborative action to be fully transparent about the industry's carbon emissions and have developed an industry-wide climate action roadmap to achieve net-zero greenhouse gas (GHG) emissions by 2050, in line with the Paris Agreement. The GSMA says that globally, more

than 50 mobile operators now disclose their climate impacts and GHG emissions via the internationally recognised CDP global disclosure system. The mobile sector has also been credited by the UN for achieving a critical breakthrough towards its mission of combatting climate change.

Of course, telecom tower infrastructure is a crucial asset for mobile operators, governments, independent infrastructure tower companies (towercos) and mobile users. Much of that, if not most, is to do with the mobile footprint being central to covering its customer base and the

management and operation of towers essential to its cost and network quality performance.

According to Idem Est Advisory & Research, a boutique subject matter expert with 20+ years of experience specialising Asia-Pacific telecoms research, the Asia Pacific (APAC) region represents over 70% of the global telecom towers market (3.2m towers) and the high Capex requirements of 5G rollout is pushing MNOs to revisit that strategy and consider telecom tower asset monetisation to finance more tower builds to cater for the 5G mid-band and mmWave high frequencies rollouts.

In some instances, MNOs transferred their tower assets into a fully or partially-owned towerco such as Mitratel, Edotco and Digital Infrastructure Fund in Thailand.

However, to invoke the old adage “with great power comes responsibility”, so it’s time to ask what progress southern Asia is making with regards to using renewable energy.

Rami Reshef, chief executive officer, GenCell, explains that “in the eight states that make up southern Asia, most notably India and its neighbours”, the move to renewable energy has been somewhat uneven.

“The rise of India as an economic powerhouse has generally come at the cost of ballooning fossil fuel emissions and often governments in this area have been hesitant to provide the policy support that the growth of green energy requires,” he says. “Pakistan, for instance, has extremely modest targets, aiming for 5% of its power supply to come from renewables by 2030.”

That said, Reshef says recent moves by the Indian government in 2021 have initiated restrictions on the use of fossil fuels in large cities and have provided much more resources and support for green power. This has already led to considerable growth within the hydrogen and solar power sectors.

“With any hope, these latest developments will promote the greater use of green power across sectors, including in telecoms where ‘greening’ mobile towers continues to represent a significant opportunity for companies seeking to accelerate towards their sustainability ambitions,” Reshef adds.

As mobile network operators (MNOs) expand into more rural and remote areas across southern Asia, they need to build new towers. However,



Alistair Munro, Ryse

“The combination of wind and solar in combination with energy storage harvests the maximum amount of renewable energy”

these new structures cannot access the electricity grid for reliable power.

Access to reliable power remains a challenge for telecom operators in many emerging markets. Poor to often non-existent grid infrastructure at many tower locations have driven a high dependence on diesel fuel to power such sites, increasing energy costs and carbon footprint for telecom operators.

A report carried out by the International Finance Corporation (IFC) called Investing in Sustainable Access to Communications: The Role of Telecom Energy Services Companies - conducted in partnership with a team of consultants from Roland Berger - says there are three countries in the region with a higher proportion of bad-grid and off-grid areas.

“In Myanmar, power availability is a major challenge,” the report says. “In the Philippines and Indonesia, the expansion of telecom towers into remote and rural areas will drive the number of bad and off-grid sites.”

According to the findings, southeast Asia accounts for around 29% percent of bad-and-off-grid telecom sites worldwide. However, the

report states that the same region is among the leaders globally in adopting renewable solutions at telecom sites. Some 23,000 telecom sites in the region have adopted renewables, out of 64,000 globally.

However, with innovation on the rise, the IFC revealed that Telecom Energy Services Companies (TESCOs) are emerging. Moreover, they own and optimise the power solutions for the telecom tower owner, through a long-term contractual agreement.

So, instead of the telecom tower owner having to invest and operate the power assets, TESCOs not only have the expertise, but also incentives to bring the best power solution and minimise the total cost of ownership of the power assets.

The good news is renewable energy comes in many forms. We can use solar energy from the sun, geothermal energy from heat inside the earth, wind energy, biomass from plants and hydropower from flowing water. So, with such l’embarras de richesses at humankind’s disposal – which one should we choose first? In other words, is one better than all the rest?

“Telecom operators and tower companies are capturing the opportunity of solar power, especially in countries in southeast Asia, where connecting to the grid is difficult,” says Dieter Billen, southeast Asia principal, Roland Berger, in the report. They are increasingly relying on TESCOs to do that for them.”

Reshef says every form of renewable energy has pros and cons and all are needed to achieve our ambitious global targets. “The ‘best’ power solution varies greatly depending on factors such as location, weather patterns, availability of resources etc,” he adds. “Hybrid projects can integrate the benefits of different types of renewable energy together such as intermittent solar or wind resources reinforced by reliable long duration fuel cells powered by hydrogen.”

Reshef adds that green technology is



Rami Reshef, GenCell

“The rise of India as an economic powerhouse has generally come at the cost of ballooning fossil fuel emissions and often governments in this area have been hesitant to provide the policy support that the growth of green energy requires”

constantly evolving to make all forms of renewable energy cheaper, easier to deploy and more widely available – and “with any luck”, these factors will help renewable energy sources to achieve progressively faster growth over time as they become a more obvious choice over fossil fuel alternatives.

As far as Munro is concerned, the different types of renewable energy are complementary and one is not better than the other. “The combination of wind and solar in combination with energy storage harvests the maximum amount of renewable energy,” he adds. “Solar as a stand along technology only generates for a maximum of 8 hours per day therefore capital expense, energy storage capacity and land space needs to be significantly increased if this is the only source of renewable energy. The additional of wind into the energy generation mix maximises the generation from the available natural resources and optimises energy storage capacity. In this way the combination of wind and solar gives the best performance considering all the parameters in telecom and critical infrastructure applications.”

Reshef adds that reliable, resilient and efficient hydrogen power driving fuel cells is a key part of a sustainable future and that hydrogen has some key advantages over other forms of renewable energy. “It’s the most abundant element in the universe and thus presents an almost unlimited amount of fuel on which to draw,” he says. “It has an energy efficiency comparable to that of fossil fuels and its availability is not dependent on local meteorological and geographical conditions. It also produces no emissions at the point of use, making it an incredible green power source. Its primary challenges are around the cost and complexity of production, transportation and storage.”

Historically, hydrogen has been extracted by a process of “steam reformation” where large quantities of water are boiled and pure hydrogen is extracted from the resulting steam. Often this is accomplished by burning fossil fuels, most commonly natural gas, meaning that while

Dieter Billen, Roland Berger



“Telecom operators and tower companies are capturing the opportunity of solar power, especially in countries in Southeast Asia, where connecting to the grid is difficult. They are increasingly relying on TESCOs to do that for them”

hydrogen is emissions free at the point of use, it can result in emissions within its supply chain. Further, pure liquid hydrogen has an incredibly low boiling point of -252.8C meaning it has to be stored and transported at extremely cold temperatures at great cost and energy use.

That said, technology being developed at GenCell and across the world aims to solve these problems. Instead of transporting hydrogen in its pure form, GenCell transports hydrogen in the form of ammonia, which can be stored at room temperature at a fraction of the cost.

“While no power source is perfect and different

sources will be more appropriate for different circumstances, hydrogen plays a critical role in decarbonising difficult-to-decarbonise sectors for various industries and use cases,” adds Reshef.

Alistair Munro, founder of Ryse Energy, says “southern Asia offers lots of different challenges because many communities live in island environment”. However, he says some operators are noticeably investing in a greener future. Telenor has a significant installed base of renewables within its portfolio,” he adds.

It doesn't take a genius to work out that when it comes to incorporating renewable energy, some climates benefit more from one than the others. “But the hybridisation of the technologies creates a more balanced and optimised solution,” says Munro. “This usually means the incorporation of small wind, as telco players who are exploring renewable energy will most likely be looking at solar PV and batteries.”

One company that's clearly playing its part is Nokia. Recently, the Finnish gearmaker added liquid cooling technology to its latest AirScale Base Station portfolio. Given that around 80% of energy used by mobile radio networks becomes waste heat, the this piece of kit technology can transfer 4,000 times more heat to deliver up to 90% reduction in energy consumption for cooling and reduce base station CO2 emissions by 80%, Nokia says. Liquid cooling technology can also be used in cell towers where it can reduce up to 90 per cent of energy consumption for cooling. The company has also launched the Nokia AVA Energy Efficiency service, applying artificial intelligence (AI) to reduce energy usage in 5G and multi-vendor legacy networks by up to 30%.

Preetha Nadarajah, Nokia



“Southern Asia and the greater APAC region can benefit from the significant potential to reduce CO2 emissions that come with digitalisation”

Looking to the future, Preetha Nadarajah, chief technology officer of Malaysia, Nokia, says technology has a key role in the fight against climate change and the Finnish tech firm remains committed to sustainability and promoting green energy usage.

“Southern Asia and the greater APAC region can benefit from the significant potential to reduce CO2 emissions that come with digitalisation,” she says. “Recognising this potential, Nokia works with local partners and enterprises to digitalise. After all, there is no green without digital.5G is a natively greener technology with more data bits per kilowatt of energy than any previous wireless technology generation.”

While 5G networks are up to 90% more energy efficient per traffic unit than legacy 4G networks, Nadarajah says the former still require further



action to enhance energy efficiency and minimise CO2 emissions that will come with exponentially increased data traffic.

“There are several energy-saving features at the radio base station and network levels, such as 5G-power-saving features, small cell deployments and new 5G architecture and protocols, which can be combined to improve the energy efficiency of wireless networks significantly,” she adds.

The will is there and we have the requisite renewable energy at our finger tips, so how much is the reluctance to move to green/renewable energy a political versus a business decision?

For Munro, any decision to move to green/renewable energy has to be a business-driven decision. “These are businesses so there has to be a positive effect to the bottom line and the environmental and sustainability benefits are secondary,” he says. “There is a limited regulatory framework in these markets unlike in Europe and other countries so there is limited “political” involvement in the decision making process from our view.”

He adds that “in today’s societal and conscious consumer environment”, coupled with the international public pledges many MNOs and towercos have made to go 100% renewable, “this energy must be green”. He continues: “Adding to this pressure, energy prices for both grid-connected and off-grid using diesel are soaring. All creating a follow-on effect that the major players are now realising renewables is the only viable option for the future of telecoms. Renewables are not only the ‘green’ or ‘CSR’ or ‘environmentally-friendly’ solution. On-site renewable energy generation is cheaper than traditional grid and off-grid solutions in most countries across the world. Choosing hybrid renewables as your primary energy source is the financial and economic decision, not just a green one.”

While the decision to ‘go green’ can be a difficult one for governments and businesses to make, Reshef says “the crucial fact to remember”, is that moving to renewable energy is in the interest of everyone, most obviously because we know it is necessary for our continued survival on this planet. “We also know that a continued dependence on fossil fuels is an unsustainable strategy that is leading us to irreparable climate disaster if we don’t drastically reduce emissions as soon as possible,” he adds. “If businesses do not transition in the short term, the

long-term consequences will be catastrophic.”

Nevertheless, “the truth of the matter”, according to Reshef, is that we do not have to decide between economic growth and a sustainable future. He says “in actuality”, the science shows us that one cannot be achieved without the other.

“Our continued dependence on fossil fuels is a massive risk that threatens both the world we live on and the growth of our economy,” Reshef concluded. “New investment in renewable energy has the potential to supercharge our economy in the future, ensuring reliable, safe and plentiful energy for all. GenCell is proud to be making a contribution to this clean energy future.”

Nadarajah adds: “Some of the most interesting new opportunities for digital exist in industry – particularly physical sectors. We are working with a wide variety of clients in smart manufacturing, factories of the future, ports, energy, public sector, and we are confident that collectively we can make a difference.”

The optics are good. Thankfully there’s no lack of sunlight across southern Asia and the cost of solar power is declining rapidly. Add to that the fact MNOs are increasingly embracing sustainability, filthy diesel generators are being replaced by solar panels as a primary source of power for telecom towers. ■



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Building tomorrow's smart cities in the age of 5G and IoT



Prianca Ravichander, director, partnership ecosystems, Tecnotree, looks at the rise of smart cities and the role of new technologies like 5G, cloud and IoT in shaping their growth

What makes a city 'smart' is its ability to use interconnected information to better understand and run its operations in a more efficient way – from its transport infrastructure and accessibility systems through to the quality of government services and citizen welfare. Using a framework of information and communication technologies, the city creates and deploys practices that are able to meet urban challenges with ease.

Smart cities are places where networks and services for inhabitants and businesses are made more convenient with the help of enhanced telecommunication technologies. Here technologies contribute to an improved quality of life through automation and higher levels of digital development. According to reports from the Coherent Market Insights, the global smart cities market was valued at US\$334.2 billion in 2018 and will reach a value of approximately

US\$1,359.8bn by 2027.

Smart city ecosystems use the Internet of Things (IoT) to better understand the requirements and patterns of a city through real-time data and respond with faster, lower-cost solutions. The usage of a large number of IoT devices and sensors that communicate with each other is best described with the term 'Massive IoT'. Through ICT (Information and Communications Technology) frameworks, these digital cities connect with

several dedicated networks of mobile devices, sensors, home appliances, communication gateways and data centres.

Southern Asia – an emerging market for smart cities

South Asia is a substantial and developing market offering a huge revenue potential and economic value for smart cities, and investors are trying to make the most of this opportunity. South Asian cities are transforming themselves by building sustainable and technologically advanced cities of the future.

As a developing nation, Bangladesh has long suffered from a poorly designed and managed energy and transportation system. Yet, readily available broadband networks put them in a position where there is a great opportunity to implement a smart city approach to their infrastructure projects. Smart city implementation may not be the same here as in some developed countries, but cooperation between ecosystem players like developers, government, and telco players can put them at a significant advantage.

Some use-cases relevant to smart cities in Bangladesh include smart parking features like assisting drivers and monitoring of parking spaces, online payment systems; smart utilities; smart metering for gas, electricity, and water consumption; and smart surveillance (close-circuit cameras in public places helping source behavioural analytics through camera footages for public safety, etc.)

India is another country witnessing continuous development in physical, social, and economic infrastructure, and investments in these areas are creating sustainable growth opportunities. With improvements in the quality of life, there is plenty of scope for implementing smart solutions and using digital technologies to support smart cities in India. Bhopal smart city, for example provides seamless Wi-Fi connectivity that supports its citizens with a round the clock call centre and mobile app called 'Bhopal Plus App'.

Similarly, ecosystem partners in Colombo, Sri Lanka are getting together to launch a project for smart city lights that will grow in phases in the coming next 4-5 years. Starting with the installation of these lights at colleges and university campuses throughout the city, the project will then progress towards their installation in bus stops, terminals, and train stations all over the country.

How does 5G and IoT empower innovation in smart cities

With increased traffic capacity, high connection density, and ultra-low latency, 5G enables everything from smart sensors to self-driving cars. 5G technology, as well as IoT, play an important role in empowering a fully functioning smart city. Here we discuss how these technologies are vital for the advancement of smart cities.

Improved connectivity

There is now a huge demand for high-performance interactive tools, and 5G enables these technologies for remote capabilities like never before. With the onset of the pandemic, the world has gone through structural changes where organisations have shifted to telework solutions and education systems have moved on from traditional to online classrooms.

5G and Cloud technologies are now making it possible for Indian hospitals to improve their digital healthcare services. High speed connectivity is enabling digital tokens, appointments with doctors, quick access to lab reports, online payments and a lot more.

Smarter urban mobility and traffic management

Travel and commuting can be revolutionised in smart cities. Through integrated cloud-application-terminal networks, 5G leads to excellent supervision and decision-making in the development of innovative applications and new transport architectures. Urban mobility becomes a lot safer with the help of real-time delivery of information on traffic congestion and public transport services.

Advanced 5G connectivity can help with understanding usage patterns for public transport, transit information, or unsafe situations. Responsiveness to traffic situations and the pattern of daily commutes can be made much faster with the help of 5G. A traffic management system connected with 5G technology allows traffic lights to get real-time data about traffic patterns through sensors, cameras, and drones. Other use cases for traffic management include vehicle health monitoring, map sharing, and automated parking.

A smart city project in Gandhinagar, Gujrat (India) has 13 Public Announcement Systems (PAS) installed in major traffic intersections that broadcast important government notifications, weather details, and environmental conditions. Approximately 1000 smart streetlights in Gandhinagar are capable of saving up to 30% of energy costs.

Using the power of IoT and 5G, along with high-resolution cameras and GPS sensors, smart city systems in South Asia have improved civic services by implementing an interconnected network of rubbish trucks that detect road assets in need of maintenance.

Smart Homes

5G fixed-wireless access provides expanded broadband to a large number of homes. Smart homes right now are operating in a fragmented way by incorporating a combination of Wi-Fi and Bluetooth. With its faster and more reliable network, 5G will be a game-changer for smart home systems. The newest generation network comes with OFDM encoding which is flexible enough to

meet the requirements of different bandwidths and applications. 5G will operate with a broad range of connected devices. By allowing any plugged-in device to connect with the network, 5G will enable all devices to start interacting more effectively.

Telecoms companies along with IoT partners create an ecosystem for smart, secured, and connected homes. The platform provides services such as alarms, emergency information, and other information detected by sensors. Other features for partners and direct customers include:

- System generated faults/failures notifications for vendors/partners
- Reminders for maintenance schedules for partners
- Hotlines to mobilise teams/help for critical failures
- Mass maintenance schedules for customers
- Challan tickets
- Home security notifications through videomail/SMS, etc. for theft prevention
- Emergency alarms and notifications for threshold usage and other emergencies

Some of the other IoT applications in smart cities include:

- Energy management
- Air quality management
- Weather monitoring
- Connected streetlights
- Waste management

What is next for smart city ecosystem partners in southern Asia?

The next step for smart city innovators in southern Asia is to understand the urgent need for planning and enable a new wave of smart city development across the region. 5G technology will help build these cities of the future and influence various sectors with new opportunities for partners, solutions, and applications. The development of smart cities in these countries depends on collaboration between ecosystem partners such as service providers, network technology partners, policy makers, connected devices, vertical industries, system integrators, and application developers.

Southern Asia is home to one third of the world's most vulnerable population and needs to first deal with some of the economic, infrastructural, and environmental challenges before trying to achieve their smart city goals. But the easy availability of mobile connectivity along with the young and technology-savvy population has made telecommunications one of the fastest-growing sectors in this region. It has also led to the boom of private investment for urban development. By leveraging new technologies like 5G, Cloud, and IoT, along with data-driven decisions, south Asian countries can reach new heights and shape a brighter future for their smart cities.

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India's government bails out struggling operators with major telecom sector reform package



Sébastien de Rosbo,
research manager, BuddeComm

India's telecommunications sector has struggled for growth over the last five years. The sector's lacklustre performance has been in spite of concerted efforts by the government to bolster the underlying infrastructure in a bid to achieve universal coverage. Instead, the country's relatively liberal regulatory environment has encouraged fierce competition and price wars amongst the operators, driving down ARPU to the point where many are now more concerned about their mere survival rather than generating positive returns for their shareholders.

State-owned as well as private operators have been forced to seek redress from the government

in order to avoid bankruptcy. One particular area of contention has been the billions owed by the operators to the government in the form of Adjusted Gross Revenue (AGR) dues – usage and licensing fees charged by the Department of Telecommunications (DoT) – that have been the subject of long-standing court battles over what should be counted as revenue.

The government won that battle in the Supreme Court in 2019, but the financial impairment of that decision has pushed a number of telcos – in particular Vodafone Idea – to the brink. Add the impact of the Covid-19 crisis in 2020 and 2021 to the mix, and the government had to

come to the industry's rescue by introducing a major reform package in September 2021. Along with changes to the definition of AGR with regard to non-telecom revenue, the package includes a four-year moratorium on AGR dues and spectrum instalments.

Coincidentally, the government has also deferred the spectrum auctions for 5G until later in 2022. Mobile spectrum in India is already in short supply in terms of providing the necessary capacity to reach universal coverage, but the cash-strapped MNOs may not yet be in a sufficiently strong financial position for which to make the 5G spectrum auction viable.

FEATURE: COUNTRY BY COUNTRY

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

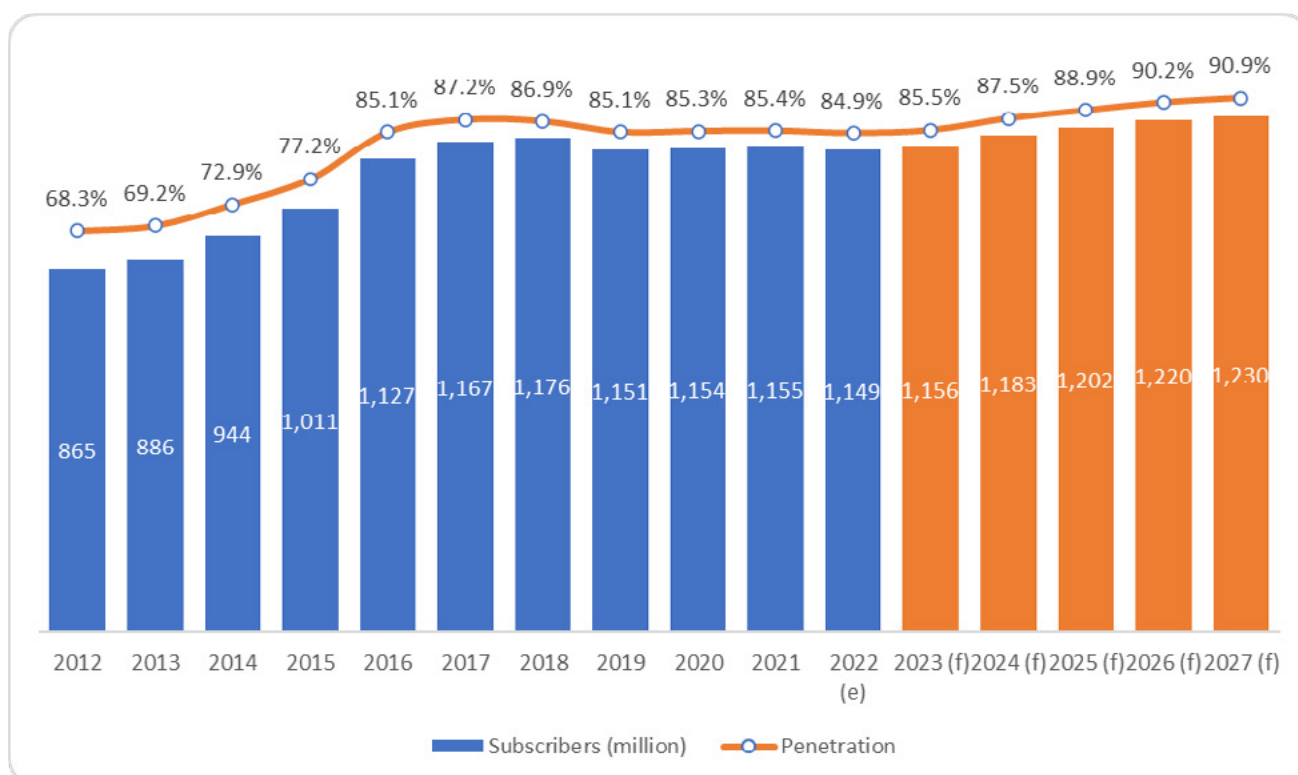
Year	Subscribers (million)	Penetration	Annual growth
2012	864.720	68.3%	-3%
2013	886.300	69.2%	2.5%
2014	943.970	72.9%	6.5%
2015	1,010.890	77.2%	7.1%
2016	1,127.370	85.1%	11.5%
2017	1,167.440	87.2%	3.6%
2018	1,176.000	86.9%	0.7%
2019	1,151.440	85.1%	-2.1%
2020	1,153.770	85.3%	0.2%
2021	1,154.620	85.4%	0.1%
2022 (e)	1,149.000	84.9%	-0.5%
2023 (f)	1,156.000	85.5%	0.6%
2024 (f)	1,183.000	87.5%	2.3%
2025 (f)	1,202.000	88.9%	1.6%
2026 (f)	1,220.000	90.2%	1.5%
2027 (f)	1,230.000	90.9%	0.8%

Key developments:

- The government releases a major telecom sector reform package, which includes a four-year moratorium on AGR dues and spectrum instalments.
- 5G spectrum auctions are postponed from 2021 to 2022.
- The target completion date for India's national broadband program BharatNet (originally scheduled for 2013) is pushed further out to 2025.
- Jio develops a 100%-homegrown 5G solution for India, including radios integrated with its own 5G core network as well as Jio 5G smartphones.
- BSNL announces plans to make 4G commercial services available in August 2022, following a cash injection from the government.
- Bharti Airtel's shareholders approve a deal for Google to acquire 1.28% of the company in return for a \$700 million equity investment.
- Vodafone Group sells a 4.7% stake in tower provider Indus Towers to Bharti Airtel.

Source: BuddeComm based on TRAI data

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



Source: BuddeComm based on TRAI data



Connecting the unconnected in the Philippines

A partnership between Globe Telecom and Curvalux is bringing affordable, sustainable internet connectivity to low-income families across the Philippines

The Philippines is an archipelagic country in the western Pacific Ocean comprising more than 7,000 islands. The two largest, Luzon and Mindanao, represent two-thirds of the country's total land area and around three-quarters of its total population, but there are nearly 2,000 populated islands across the archipelago – many of which are rural and remote.

Of the more than 110 million people living in

the Philippines, over 40 million have no access to the internet. This is largely due to the geographical challenges of the environment, with the distance between the islands and large bodies of water to cross making it extremely difficult to install large-scale telecoms infrastructure. Around 10% of the households across the islands do not even have access to reliable power.

Globe Telecom, one of the country's market-

leading mobile network operators, has made it a top priority to find a way to transform connectivity in the Philippines – overcoming the significant challenges posed by the natural environment to bring affordable, sustainable, high-speed internet to as much of the population as possible.

Gerard Ortines, the telco's head of business technical CAPEX management, is the man charged with tackling this challenge and has spent the past



two years leading a major project to investigate new technologies that could provide the solution.

Globe needed to find a new solution – a technology that would enable them to deploy large-scale internet infrastructure across this beautiful and diverse landscape with minimal disruption, highest performance and, most importantly, at the lowest cost to those who needed it the most.

Globe began working with Curvalux over two years ago when Ortines met Curvalux's founder and executive chairman Tom Choi – a satellite expert and the first in the world to bring the principles of satellite technology to the terrestrial telecommunications market.

The 'Edge Nodes' Tom had designed use focused multibeam technology to achieve high broadband performance, high capacity and exceptional interference mitigation but using minimal power and at a fraction of the cost of traditional terrestrial antenna. They were precisely the solution Ortines and his team were looking for to tackle the connectivity challenge they faced across the Philippine islands.

The project began with a 'proof of concept' trial in the centre of Manila, where a small number of Curvalux Edge Nodes were installed on a tower overlooking a small shopping mall that had previously struggled with poor internet connectivity. By focusing radio frequency beams onto the mall, the technology was able to provide total 2GB capacity with average 220Mbps per user download speeds to anyone inside who connected to the Wi-Fi.

With the technology proven successful on a small scale, Globe expanded the trial to a much bigger area. Semirara island – located in the Caluya archipelago, just south of Mindoro Island – is around 55 square kilometres and is home to one of the Philippines' major mining operations.

About 10,000 people live on Semirara, the vast majority of whom are employed by the mining company, and for many years the families there had been asking for better broadband connectivity across the island.

In September 2019, Curvalux installed a larger system of Edge Nodes on a mobile tower in the southern side of Metro Manila, Cavite. The proof of concept at Cavite with 68 friendlies was a success. Globe provided data speeds up to 50Mbps (plan offering at 50Mbps not technology limit) at an average distance of 2km, one of them reaching as far as 3.48km from the base station.

We have gotten excellent feedback from customers. Thanks to the multibeam phased array system, these could be focused on all of the main residential areas across the island, with CPEs also installed in central locations such as restaurants and hotels to provide community hotspot areas.

Since those initial proof of concept trials, the Globe/Curvalux partnership has continued at pace. There is now a plan to deploy Curvalux solutions on a phased approach.

It hasn't all been easy. One of the biggest challenges as the project has rolled out has been around ensuring line of sight when dealing with signal shadowed behind buildings, more mountainous and densely forested islands across the archipelago, as the narrow beams of the Edge Nodes need direct line of sight with the CPEs at all times.

Curvalux and Globe tackling challenges together even led to further innovation from the Curvalux team. Based on the shared experiences with Globe in the Philippines, Curvalux created CPE+ - a more powerful receiver that delivers 698Mbps download speed at 2km distance that improved performance in areas with partially blocked signals, for example due to dense vegetation.

Note: This is a recent POC of CPE+ concept that provides a local Wi-Fi hotspot of 100 meter that delivers up to 30Mbps speed to the users.

"It's this commitment to partnership that has really set Curvalux aside from other companies I have worked with in the past," says Ortines. "You will always face challenges on any project and find issues that you need to work around. The sign of a true partner is when you work together to find a solution to that challenge, learning from the situation, learning from each other. That's what we have with Curvalux and it's something that I really value."

Having slowed in 2020 as a result of the Covid-19 pandemic, the roll-out of the Globe/Curvalux project is now accelerating again, with many more sites due to come online in the coming months.

Globe is even looking ahead to a new connectivity innovation in CurvaNet – an implementation of Curvalux antennas on low earth orbiting satellites able to reach areas that are beyond the coverage of mobile phone towers. Globe Telecom is now exploring the possibility of using CurvaNet in remote parts of the Philippines leveraging existing Wi-Fi technology with the wider ecosystem.

Ortines believes that these technologies, as well as transforming connectivity in the Philippines, will play a significant role in improving internet access for people around the world.

"There are so many countries that have similar challenges to us, with difficult geographical landscapes to navigate and people of low incomes that cannot afford broadband connectivity via more traditional telecoms solutions," he concludes. "This technology enables anyone to get connected. We strongly believe this will transform connectivity in the Philippines – improving the lives of families and businesses across the country and building a digital economy that is fit for the future." ■

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Curvalux antenna

Curvalux is a UK-based company, which is rapidly making inroads into the African fixed wireless access (FWA) space. The Curvalux Edge Node 2.0 antenna system operates on a 160MHz channel at a 60° sector in Wi-Fi 6 and includes 16 narrow beams working simultaneously using dual polarization enabling frequency re-use of limited available spectrum and high-capacity MIMO technology. The low side lobe level narrow multiple beams with high isolation offers good interference mitigation this results in improved C/I ratio hence more availability of capacity in 5GHz. curvalux.com



Motorola's wireless bluetooth earbud

Motorola says this wireless earbud "has a simple, discreet design for business users wearing professional attire or for public safety users working undercover". This earbud has an inline microphone designed for transmissions in loud environments and comes with three sizes of eartips for optimal comfort. It comes with a long cord to offer flexibility in where you clip the PTT on your belt or shirt pocket. Note: this earbud must be connected to the appropriate push-to-talk pod. Police officers and other first responders wanting a secure solution with fast pairing will need to order the (NTN2571), while professional users wanting a cost-effective wireless solution must order (NNTN8127). motorolasolutions.com



'A fast and versatile solution'

D-Link reckons the DAP-1665 wireless AC1200 dual band access point is a fast and versatile solution for bringing wireless AC to an existing wired network or extending a current wireless network. The latest draft 802.11ac technology, the company says, delivers combined speeds of up to 1200 Mbps, "so you can create a high-speed wireless link between networks, or quickly transfer large files wirelessly between computers on the same network". What's more, the DAP-1665 features the latest 802.11ac wireless technology, capable of delivering combined speeds of up to 1200 Mbps over two bands. Use the 2.4 GHz band's 300 Mbps for web surfing, email and chat, while simultaneously using the

lower-interference 5 GHz band for network bridging, downloading, and file transfers. The DAP-1665 can be configured to operate in several modes, allowing you to customize it to your networking needs. Access Point mode allows the device to act as a central hub for wireless users, giving them access to your existing wired network. Wireless client mode is available to enable the DAP-1665 to connect to another access point and provide network and internet access to a remote wired device such as a gaming console or media centre. Bridge mode allows you to create a high-speed wireless link between two wired networks (LANs), alleviating the need to install additional network cabling. Bridge mode with AP adds



the functionality of a wireless access point to your bridged network, so wireless clients can access resources on both networks. Repeater mode extends wireless coverage of your existing wireless network to cover "dead" spots and reach farther into your home or office. dlink.com

GL's validation and regression testing for emergency services mobile networks

GL Communications has introduced automated testing of voice quality and coverage for emergency services in wide-area mobile networks. Validation and regression tests can run continuously to generate thousands of measurements per day in various spaces. Emergency services mobile networks include land mobile radio systems and often interface with the Public Switched Telephone Network (PSTN). These networks are used by police officers, firefighters, and other first responders and must reliably transmit audio between endpoint devices.

In responding to emergencies, clear communication between personnel is mandatory. Poor voice quality and long latency can lead to miscommunication resulting in catastrophic consequences such as loss of life and damage to critical infrastructure. Clear voice quality is needed not just outdoors but in vehicles, aircraft, buildings, and underground as well.

"Objectively measuring end-to-end voice quality in a wide range of scenarios spanning different locations can be challenging but is essential," said Robert Bichesky, director of engineering, GL Communications.



"GL recently released a whitepaper proposing a systematic way to test voice quality over emergency services mobile networks. The resulting testing will identify gaps in coverage, potential sources of interference, and other obstructions. This will allow the users to identify and eliminate vulnerabilities in their emergency services mobile networks and better protect their citizens." gl.com

Dual mode LTE and TETRA critical communications solution

Sepura has launched a Dual Mode version of its SCU3 Broadband Vehicle Device, increasing the options available to critical communications users. The upgraded model has a built-in TETRA module, enabling users to combine Mission Critical Voice with the power and flexibility of data connectivity via LTE networks. The Class 3 TETRA module in the new SCU3 Dual Mode device supports Direct Mode in the 380-473MHz

band, meaning critical communications users in public safety, transport, mining and utilities can benefit from the reliability and audio quality delivered by TETRA.

The Dual Mode option allows organisations to run hybrid fleets, with vehicles and control rooms using the Dual Mode device and frontline staff using TETRA hand-



portable devices for critical voice communications. It offers support for 2G, 3G and 4G voice and supplemental services (such as SMS and voicemail) and can also support high-definition video. Earlier this year it received GCF certification, ensuring its compatibility for use on mobile networks around the world. sepura.com

Good for emergencies

All Kenwood's NEXEDGE NXDN and NEXEDGE DMR models feature Emergency Key and Emergency Call features as standard, while more advanced models additionally offer built-in or optional GPS modules, Lone Worker and Emergency Advanced Motion Detection Function. These are designed to be incorporated within a robust health and

safety and lone worker policy. In addition to its ITU recognised NEXEDGE NXDN fully scalable digital systems, Kenwood says it can offer ETSI compliant dPMR and DMR Tier 2, Tier 3 Trunked and Simulcast solutions. For more localised operations requiring a simple turnkey communication solution Kenwood offers its ProTalk digital license-free PMR446 and



ProTalk DECT fully duplex digital wireless intercom systems. kenwoodcommunications.co.uk

New from Peplink

With 9.3dBi gain, the Maritime 10 is a single-cellular antenna that can keep you connected even farther away from the shore, according to Peplink. Small and 5G ready, this antenna is a future-proof choice for any maritime applications. As the name suggests, the Maritime

10 is designed for Marine Applications IP68 rated, durable omnidirectional antenna, with UV-stable housing, providing the best signal reception. It's also designed for 5G and offers wide bandwidth - Wide frequency range (600-4200MHz) supporting LTE



and 5G connectivity. Peplink also says installation is easy as the solution supports standard marine 1" 14 TPI thread mount and also has an L-shape mount for non-standard installations. peplink.com

'The perfect wireless enterprise solution'

Allied Telesis brings to market the TQ6702 GEN2 Wi-Fi 6 (8x8) wireless Access Point. The company reckons the eight spatial streams on the solution enhance performance, "placing the device at the top of the class for bandwidth". What's more, the firm says support for real-time applications like streaming video makes the TQ6702 GEN2 ideal for education, healthcare, manufacturing and busy commercial environments. Allied Telesis also says the high-throughput TQ6702 GEN2 maximises the benefit of Channel Blanket technology without compromising on overall performance. It joins

other "hybrid" access points in the Allied Telesis range that offer compatibility with legacy wireless clients and interference-free high-density AP installations. "We've combined the power of Wi-Fi 6 and 8 spatial streams with our Autonomous Wave Control (AWC) wireless management platform," says Chris Dyke, sales director UK & Ireland at Allied Telesis. "AWC enables a self-tuning wireless network that automatically reconfigures itself for the best possible performance. With our Channel Blanket (AWC-CB) technology, a high-capacity single wireless blanket can connect all



devices in a building without worrying about interference or limited capacity. It's truly 'seamless roaming'." The new TQ6702 GEN2 Wi-Fi 6 access point joins Allied Telesis' existing range of enterprise, small business, and outdoor access points. alliedtelesis.com

Mobile Mark upgrades LTM series antennas

Mobile Mark's new LTMWG946 is an upgraded version of the LTM 900 series. It combines 11-antenna elements: 4x 5G Sub-6, 6x Wi-Fi 6E and a GNSS element in one antenna housing. The company claims this solution provides extensive MIMO coverage on both 5G Sub-6 and Wi-Fi 6E. The LTM Series antennas now can be configured with Up to 6 Wi-Fi elements. The cellular elements for the LTMWG 900 Series are optimized to cover up to 7.2 GHz.

The LTMWG946 is designed for 5G Sub-6 fixed networks such as CBRS

& C-band private networks with supplemental Wi-Fi 6E coverage. This upgraded LTM series antenna is compatible with advanced multi-band routers that are designed for high speed, large data transfers using 5G or Wi-Fi 6E, but is also backwards compatible for 4G LTE & Wi-Fi 2.4/5 GHz networks. In addition, it is customizable with fewer Wi-Fi elements. Typical antenna applications include vehicle fleet management and public transportation.

This compact antenna measures

only 5 ½ inches in diameter and less than 2 ½ inches in height. The antenna is lightweight but sturdy, according to Mobile Mark, which makes it easier to install. mobilemark.com



Look out for...

BT trials new quantum radios for 5G & IoT networks

BT in the UK announced a pioneering trial of a new hyper-sensitive quantum antenna technology using excited atomic states that could boost the capability of next generation 5G and IoT networks.


Atomic Radio Frequency (RF) receiver technology represents a revolutionary new way of detecting radio waves that could find much weaker signals than conventional receivers. The receiver works by using a quantum effect called "electromagnetically induced transparency" to form a highly sensitive electric field detector. BT's trial represents the first time a digitally-encoded message has been received on a 3.6GHz (5G) carrier frequency. Previously, simple audio has been received using much higher frequencies but this trial is the first industrial demonstration using digital modulation within one of EE's main commercial 5G frequency ranges.

This new type of receiver may reduce mobile network energy consumption, enable Internet of Things (IoT) devices to become more cost efficient and longer lasting and support lower-cost smart cities and smart agriculture. The new technology could in future form the basis of ultra-sensitive 5G receivers for use in very low power passive mobile networks.

"Our programme has huge potential to boost the performance of our next generation EE network and deliver an even better service to our customers," says Howard Watson, chief technology officer, BT. "Although it's early days for the technology, we're proud to be playing an instrumental role in developing cutting edge science".

Researchers at BT Labs in Martlesham are now working to miniaturise the equipment and find the optimum RF modulation and signal processing for potential use in future generations of radio networks.

Macau gov to award 5G network licenses

 The Macau SAR government has approved long-awaited regulations that will finally allow for 5G network operations and licensing.

Macau's mobile telecommunications market has four mobile network operators that adopt 3G and 4G (LTE) system networks to provide mobile telecommunications services, mainly using the 4G system.

"Taking into account the trend of the latest development of the 5G network, the launch of the 5G

service in Macau is not only in line with the policies of the country, but also serves as a measure to accelerate the integration of the SAR in the development of the Greater Bay Area, satisfying the needs of local and foreign users in terms of 5G service," the Macau Post and Telecommunications Bureau said.

Authorities will then carry out a public tender that will award four 5G licences for mobile and public land mobile telecommunications network services. Operators are expected to be able to launch the


5G service as soon as possible in the first quarter of next year, should their application prove successful.

Local telco CTM said in May that the 5G network has been fully operational since June 2021 with the ability to cover the entire SAR.

Macau remains the only region in China without functioning 5G network, despite having already invested MOP600m in establishing its infrastructure using Huawei technology. It has ringfenced MOP2bn in investment for the whole network in the next five years.



Syria awards third mobile telecoms licence to Wafa

 Syria's telecommunications authority has awarded Wafa Telecom a licence to be the country's third mobile telecom operator, according to state media.

The country's minister of telecommunications Iyad al Khatib told parliament that operator would begin its services before the end of the year.

Damascus-based Wafa will enter a market where the main operator is Syriatel, which has over 11 million subscribers. MTN Syria is another key player.

Company officials said Wafa would rely for the first two years mainly on the two existing operators' network that

covers much of the country, before its own network has been set up.

Syria's state telecommunications authority finalised Wafa's draft licence in January, but did not include financial details of the new licence, which officials have for the last few years planned to announce.

In March, the Syrian Ministry of Economy and Trade announced a ban on the import of mobile phones "until further notice."


Economy minister Mohammad Samer Khalil ordered officials across the country to decline all requests for phones to be imported.

The decision is expected to result in increases in the price of mobile



phones, which have been a best-selling product in the country for many years, despite being sold at inflated prices of up to SYP700,000. The average weekly wage in Syria is SYP50,000 (circa US\$40).

Comtech awarded 5G contract in Saudi Arabia

 Comtech Telecommunications has been awarded a contract with a tier one operator in Saudi Arabia to support its 5G standalone network.

This mobile network operator will expand their current location technology platform for emergency response, safety, security, and value-added services. The operator will grow the 5G network within the kingdom, providing better performance to end users and meet new government mandates.

The deal was secured by Comtech's Trusted Location division, which is a provider of precise device location, mapping and messaging solutions for public safety, mobile network operators and enterprise solutions. Sold around the world to mobile network operators, government agencies, and Fortune 100 enterprises, these platforms locate, map, track and message.

"Comtech is at the forefront of providing 5G location services in the Middle East and worldwide," said Michael Porcelain, chief executive officer of Comtech Telecommunications Corp. "Our innovation and strong partnerships are vital to pushing 5G globally. This technology will allow the network provider to precisely locate 5G mobile devices for safety and security purposes mandated by local governments."

This is the second 5G project for Trusted Location in Saudi.

Nokia starts 6G trials in Japan

 Nokia has secured a major partnership with DOCOMO and NTT in Japan to jointly define and develop key technologies for 6G wireless services.

All three companies said that they will focus on two proof-of-concepts for the emerging 6G technologies: an AI native air interface and sub-THz radio access.

They aim to demonstrate a performance gain with an AI based 6G air interface compared to a conventional air interface, and to show that high-data rate beamformed access can be achieved in a high frequency band at 140 GHz.

Nokia and DOCOMO have a rich history in wireless research, starting with 3G in the 1990s, before working on both 4G and 5G,

including 5G O-RAN.

To achieve that, the Finnish gearmaker has outlined six key technologies that will be vital components of future 6G networks: new spectrum technologies, AI native air interface, network as a sensor, extreme connectivity, cognitive, automated and specialised architectures, and security and trust.


Among the six key technology components, the initial focus of the partnership is to demonstrate the benefits of AI-based learned waveform in the transmitter with a deep learning receiver in the mid-band, as well as to test high data rate indoor communications in the sub-THz band.

These technologies have the potential to substantially improve

deployment flexibility and to increase network throughput beyond that of 5G in the respective spectrum bands without necessarily increasing energy consumption.

"DOCOMO has been collaborating with Nokia since 2014 to accelerate the experimental trials for 5G wireless technology and promote the creation of new use cases," said Naoki Tani, executive vice president and chief technology officer at DOCOMO. "We are excited to work with Nokia to realise the 6G concept. DOCOMO and NTT will now start the experimental trials of two 6G proof-of-concepts for high-rate transmission in the sub-THz band and AI native air interface and contribute to 6G commercialization with vertical industry partners."

Orange France, Ericsson partner for 5G converged charging solution

 Orange France and Ericsson have signed a five-year agreement which will make Ericsson Charging the strategic monetisation platform for operator's 5G subscribers.

The standards-based, cloud-native Ericsson Charging solution will serve the nearly 28 million Orange France Customers, roamers-in and private mobile radio users and 20 million IoT devices based on a container based deployment using Ericsson Cloud Native Infrastructure Solution



(CNIS). Ericsson Charging will be integrated with legacy business-to-consumer (B2C) and business-to-business (B2B) billing platforms, resulting in optimized cost and agility across Orange operations.

Highly configurable network services are expected to play a major role in the digital transformation of industries in the 5G era. These will also drive new requirements for charging operations.

"Ericsson Charging solution will provide us with advanced technology and the ability to accelerate our time to market for new products and services, delivering optimised operational costs, and improving our overall customer experience with real-time information," said: Emmanuel Lugagne Delpon, chief

technology officer, Orange France.

Franck Bouétard, head of Ericsson France, added: "Orange France wants to drive its evolution to a full converged charging system for their 5G network. The Ericsson Charging solution enables them to realise, create, and capitalise on new digital opportunities".

This agreement builds on the long-term Ericsson-Orange France partnership. In 2019, Ericsson was selected by Orange France as its business support systems (BSS) provider for real-time online charging system to modernise and standardise charging systems for prepaid and hybrid users.



Russia's MTS starts selling used and discounted smartphones

 Russia's biggest mobile operator MTS has started selling discounted and used smartphones, offering consumers cheaper alternatives as inflation bites and Western brands suspend shipments against the backdrop of the country's invasion of Ukraine.

Smartphones from Chinese brands Huawei, Honor and Xiaomi, as well as South Korean manufacturer Samsung are now available for up to 50% less than new devices at stores and online. MTS said the brands offered and locations where they are sold

would be expanded.

"This is a good opportunity for our company to offer consumers an additional way to save on purchases of quality gadgets," said Pavel Sukhovarov, head of retail network development, MTS.


US tech giant Apple paused all product sales in Russia in early March, one of many Western companies to distance itself from Moscow since it sent tens of thousands of troops into Ukraine in February in what Russian president Vladimir Putin calls a special military operation.

Meanwhile, MTS has indefinitely postponed the planned sale of its tower assets.

The operator initially said that it was considering a sale back in November 2021 and was tipped to finalise an agreement in the first half of 2022. However, sanctions and the collapse of the rouble potential impacted negotiations. MTS owns circa 23,000 towers.

"We are continuing to look at different scenarios, we see interest in the asset and are in contact with potential investors," the operator said.

Deutsche Telekom, Ericsson turn to wind, solar for 5G site

 Deutsche Telekom and Ericsson conducted a trial in which they transformed a live radio site using a management solution to efficiently harness solar and wind energy while optimising power supply and demand.

The companies noted that the main aim of the partnership is to identify and validate energy efficiency and energy cost cutting solutions based on optimised energy consumption and control and increased usage of renewable energy sources.


Located in the Bavarian municipality of Dittenheim, the site has been partly-powered by energy from solar panels since the initiative began more than a year ago. Now, the Swedish gear-maker and German operator have added a wind turbine, capable of providing up to five kilowatts of additional power, as a second renewable energy power source.

"At Ericsson, we are committed to working with our customers to support them in cutting their carbon emissions," said Heather Johnson, vice president for sustainability and

corporate responsibility, Ericsson. "This partnership is a great example of how we're achieving this through our best-in-class energy efficient equipment, which can be operated entirely with renewable energy."

The simultaneous integration of the two renewable energy sources was made possible by the Ericsson Power System, a new Ericsson energy management product. This integration means the site can theoretically be operated on a stand-alone basis without utilising its cable connection to the electrical power grid.

Israel: Bezeq Telecom Q1 profit rises

 Bezeq Israel Telecom reported a rise in first-quarter net profit after Pelephone mobile phone service and Yes satellite TV unit attracted more subscribers.

The country's largest telecom group said it made 322m shekels (US\$96m) in the first quarter excluding one-time items, versus 299m shekels a year earlier. Revenue rose 1.5% to 2.26bn shekels.

Mobile unit Pelephone - Israel's third largest mobile operator - recorded quarterly net profit of 56m shekels, up from 8m shekels a year earlier.


The operator said revenue grew 11.5% to 437 million shekels driven by recovery in roaming revenues, growth in 5G plans and total subscribers.

Elsewhere, Pelephone's subscriber base rose to 2.583 million - 624,000 of them connected to its 5G network - from 2.492 million a year ago.

The company said its new fibre network now reaches 1.25 million households and it has 143,000 subscribers.

Meanwhile, Bezeq's satellite TV unit Yes posted a net profit of 10m shekels compared to breaking even a year earlier, as it added new subscribers while transitioning to Internet-based broadcasts.

UAE state-controlled telco becomes largest shareholder in Vodafone

 Emirates Telecommunications Group has acquired a 9.8% stake in British carrier Vodafone for US\$4.4bn, making it the largest shareholder in the company.

The state-controlled UAE group, formerly known as Etisalat and now rebranded e&, said the investment allowed it to “gain significant exposure to a world leader in connectivity and digital services”. Furthermore, the investor said the transaction provided a “compelling

and attractive valuation”.

The Abu Dhabi-listed group said it planned to be a long-term shareholder in Vodafone and that there were currently no plans to make an offer to purchase the mobile network operator outright.


“We are looking forward to building a mutually beneficial strategic partnership with Vodafone with the goal of driving value creation for both our businesses, exploring opportunities in the rapidly

developing global telecom market and supporting the adoption of next-generation technologies,” Hatem Dowidar, chief executive, said in a statement.

For its part, Vodafone said it looked forward to building a long-term relationship with its new major shareholder.

The purchase pushes e&’s stake in Vodafone ahead of BlackRock Inc., the Vanguard Group and HSBC Holdings, according to Bloomberg data.

Paraguay regulator launches mobile coverage tender

 Paraguayan telecoms regulator Conatel launched a coverage tender, funded with resources from the universal service fund.

The latest tender is aimed at expanding network infrastructure for mobile telephony services and internet access and data transmission.

Conatel set a maximum subsidy of 5bn guaraníes (US\$700,000) and the bidder requesting the lowest amount will win.

Coverage areas include the Yacacvash indigenous community, a basic school in San Roque González de Santa Cruz, the Margariños community and parts of the Ramal Oeste 193 road.

Offers may be submitted between May 30 and June 20 and envelopes will be opened that same day, Conatel said.

Three previous Conatel tenders in 2020 and 2021 were related to the expansion of the emergency system.

Earlier this year, the regulator approved the telecommunications development plan that aims to increase broadband coverage to 80% of the population by 2030.

Canada: banning Huawei and ZTE is the ‘right decision’

 Canada is banning two of China’s Telecoms, Huawei and ZTE from working on its 5G phone networks, calling the move “the right decision”.

The ban means Canadian telecoms firms will no longer be allowed to use equipment made by the two telecom equipment giants and comes after a review of Huawei equipment back in September 2018 by the Canadian authorities.

Minister of innovation, science and industry Francois-Philippe Champagne said the move would “protect the safety and security of Canadians”.

Huawei has come under increased pressure in recent years as the US cracks down on Chinese companies

that it believes are enabling or undertaking activities that could threaten its national security.

The UK, US, Australia and New Zealand have all banned or restricted the companies on their high-speed networks.

“Let me be very clear: We will always protect the safety and security of Canadians and will take any actions necessary to safeguard our telecommunication infrastructure,” Champagne told reporters. “In a 5G world, at a time where we rely more and more in our daily lives [on] our network, this is the right decision.”


A spokesperson for Huawei Canada said the Chinese firm met the news with huge disappointment.

“This is an unfortunate political

decision that has nothing to do with cyber security or any of the technologies in question,” the spokesperson added. “Over the past 13 years, Huawei Canada has devoted itself to helping Canadian carriers build out their wireless networks and provide quality services for the Canadian people. Huawei equipment, including both hardware and software, has been routinely and closely scrutinized by the government and its security agencies according to stringent quality standards. There have been zero security incidents caused by Huawei equipment throughout this entire period.”

The spokesperson said Huawei is “proud” of its security record in Canada.

Brazil hosts 5G backhaul demo via LEO satellite

 Telesat and Telefónica completed the first 5G Low Earth Orbit (LEO) satellite backhaul demonstration in Brazil and Latin America.

The testing campaign was managed with Telefónica Global Solutions (TGS), the Telefónica Group’s satellite service provider, with the help of its engineering teams together with those of Telesat. The Telesat Phase 1 LEO satellite layer 2 backhaul link was connected to TGS’s 5G test environment.

An 85cm Intellian gyro-stabilized Ka-band terminal with a 10 Watt BUC connected Telefónica Global Solutions’ data streams to the

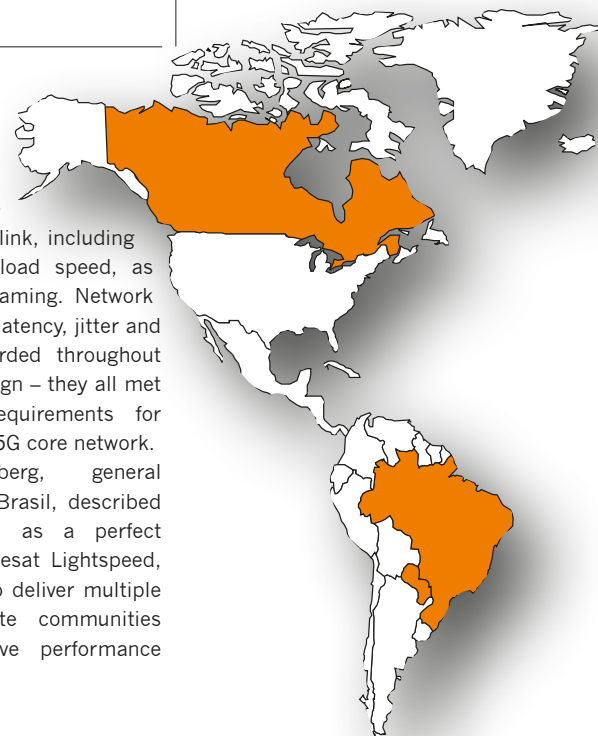
Phase 1 LEO, validating that a small, carrier-grade terminal can achieve the desired performance to properly support a 5G backhaul network.

“Building on our successful LEO test with Telesat in Europe, we were eager to evaluate the performance of the Phase 1 LEO integration with a 5G network,” said Eloy Rodríguez Villa, SVP global wholesale customers, Telefónica Global Solutions. “With the performance results achieved being close to fibre connectivity, Telesat Lightspeed provides a compelling value proposition for our 5G network rollouts across the globe.”

Numerous applications were

tested across the satellite backhaul link, including upload and download speed, as well as video streaming. Network measurements of latency, jitter and bitrate were recorded throughout the testing campaign – they all met the functional requirements for integration with a 5G core network.

Mauro Wajnberg, general manager, Telesat Brasil, described satellite backhaul as a perfect application for Telesat Lightspeed, “with the ability to deliver multiple Gbps into remote communities with transformative performance and economics”.



Q&A

Terence McCabe CTO for Asia Pacific and Japan Nokia



Who was your hero when you were growing up?

A difficult one- my heroes were generally from the world of motorsports growing up with names like Mike Hailwood, Joey Dunlop and Michael Schumacher, who all held the racing champion positions at one time or another. Growing up in Ireland, motorcycle road racing captured my imagination, and for those who know the place, The Isle of Man Tourist Trophy races were the pinnacle of the sport. The combination of technology and individual commitment required for success in this arena did not inspire me to participate. Still, it shows how attention to detail and single-minded focus must be combined with team building, even in what might appear to be an individual domain. Schumacher's success as a driver at Ferrari had everything to do with his ability to build a team focused on excellence. Time and time again, we have seen egos in sports break a team dynamic and ultimately undermine potential. It is true in any human pursuit.

What was your big career break?

There were two formative points; the first was when the job I had applied for out of College with Digital Equipment in Ireland fell through, and I was asked if I would consider relocating to Germany instead. The option opened my eyes to the opportunities of an international career and the potential personal development that could arise from that experience. Secondly, because of post-merger organizational conflicts, I had the good fortune to experience mentoring and support from an Organizational Development specialist called Allon Shevat. It was not all rainbows and sunshine; it was a process of understanding the complexity of any post-M&A environment and establishing a clear plan for managing the complex and emotionally charged situation, which is certain to occur when organizations face massive

changes. Allon's guidance helped mature me as a leader and enabled me to steer a path through fast-changing organizations and better handle risk management.

What's the best technological advancement in your lifetime?

The advent of the smartphone seems so obvious, but when we think about the changes it continues to bring to lives and lifestyles around the world, I would have to place it at the top of the list. The ability to have the internet available in the palm of your hand in a form factor that has become ubiquitous in such a short period. That this device gives us communication, mapping, entertainment, and healthcare capabilities with a near-global coverage footprint is nothing short of the science fiction that we were promised in the 50s and 60s. Certainly, the personal computer had an impact; the internet itself has been revolutionary, but putting the capabilities of the personal computer connected to the global information and economic resources of the internet into billions of hands across the world is transformational. Not everyone perceived those transformational changes as positive. Still, when I see the personal impact this technology has on my friends and family, when I look around me in Singapore and see people from every walk of life find tools to make their life easier, can find entertainment in their language, watch sports events, transfer funds, pay bills, I see a technological enabler which is a platform for innovation and a social leveller, giving access to the largest number of people at affordable cost.

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

"You can learn much from a bad manager." These were the parting words of a manager in one of my first positions in the UK as he was saying his last goodbyes. At that time, I was unsure what he meant, but I have subsequently realized

that there is indeed a lot more to learn from failure than accidental success. Success can look easy, and its causes are not always clear. Failure, on the other hand, is usually more evident in its causes and invites a post-mortem. Who examines their successes to understand whether they were intended or accidental?

What would you do with US\$1m?

Although it is not a large sum to invest in the technology sphere today, I would target the applications for connected healthcare solutions to enable the elderly to live the most fulfilling and independent lives possible. The pandemic has shown globally how tenuous the connections of travel and supply chain can be. Caring for family and loved ones has been helped by the availability of telemedicine and the broader availability of video calling. Still, so much more can be achieved through sensing and monitoring. Timely intervention and proactive warning can prevent crises from developing. In the 'new normal', I would like to see patients arrive at a hospital with the ER already having access to vital signs, medication, and possibly contact tracing information. There are many innovations in the sensing and monitoring space for illnesses like diabetes, liver disease, or thyroid dysfunction, which can be added to the basic vital sign capture.

If money was no object, where would you live?

Northern hemisphere winter in New Zealand, South Island ideally. Northern hemisphere summer France or Italy, autumn, and spring in Texas. Growing up in Ireland, I feel I have experienced enough cold, wet weather for a lifetime, and now living in Singapore, I am testing my tolerance for hot, humid weather. I think I am fundamentally a temperate creature.

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

Many years ago, I was giving a presentation in Korea at a Hyundai plant in Ulsan. I was speaking through an interpreter to a large

group, including two vice presidents. At the time, I was working on a software integration toolset called 'jabberwocky' at Digital Equipment. I had not yet moved off my introductory slide when one of the VPs stood and asked a question to the interpreter. The dialogue went back and forward a couple of times before the interpreter turned to me with a pained expression to ask, "They say that in Korea we choose inspirational or encouraging names for our products like 'lucky goldstar', but we have looked up this name 'jabberwocky' for your product, and it is a word which means nothing! How can you name your product with such a name?" This was my first business trip to Asia and my second presentation in what was to be a three-week tour of potential customers. I had learned an essential lesson on cultural awareness. Product names would always be a touchy subject for me from that day on.

If you could have dinner with someone from the past or present, who would you choose?

Robert Strange McNamara, American Secretary of Defense for much of the 1960s, was once a chairman of the Ford Motor Company and head of the World Bank. His experience and perspectives throughout a lifetime in the limelight of both the business and political realms made me curious. McNamara was subject to violent criticism for his role in American actions in Vietnam and his attempts to exercise civilian control over the Pentagon. Yet, he still managed to be reflective in his later years, participating in the retrospective dialogue and exploring the faults in his actions under both President Johnson and Kennedy. He reminds me that good intentions do not always equate to good results.

Which law would you most like to change?

I would like to see the barriers removed to allow presidential candidates in the United States to be other than 'natural-born citizens' of the United States. The change would support its long-standing practice of embracing immigrants. ■

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