How Asian Markets Are Ramping Up Their 5G strategy

Prose: Wireless Communications in a Fast-Evolving World

Mongolia to Take Digital Development to a New Level

IPv6 Adoption to Leapfrog Digital Growth in Asia Pacific

SUMMIT
TELECOM Review
LEADERS' SUMMIT
16th Edition

THE LARGEST VIP
ICT gathering

" **GLOBAL, REGIONAL, DIGITAL** "
07-08 DECEMBER 2022
Intercontinental Dubai Festival City, UAE

telecomreview.com/summit

TELECOM Review

THE TELECOM INDUSTRY'S MEDIA PLATFORM

ASIA PACIFIC

Q4-2022

telecomreviewasia.com

- S98-

Toni Eid,
founder
editor in chief
Telecom Review International

The New Devices Technology Trends: Satellite Connectivity and Wi-Fi 6E

New technology features are always introduced to devices upon their launch to mark the advancement into a new era. Two major features are set to be introduced soon to mobile phones, particularly the iPhone: satellite capabilities and Wi-Fi 6E.

The satellite capabilities feature will be deployed for emergency situations, allowing users to send texts to first responders and report crashes in areas without cellular coverage.

Apple is developing at least two pertinent emergency features that will rely on satellite connectivity rather than mobile networks. Apple declined, however, to comment or disclose any details as of now.

This feature comes at a time when satellite connectivity is assuming one of the roles set aside for 5G networks, with low-orbit satellites and mega projects by OneWeb and SpaceX, among others.

The second feature will be Wi-Fi 6E, which is the latest wireless fidelity (Wi-Fi) standard, offering faster network speeds and support for handling even more devices on a single network.

Once officially announced and introduced to mobile phones, these two features will revolutionize the mobile device industry and will set the bar high enough for competitors to take action and join in thinking outside the box to meet customers' needs and expectations.
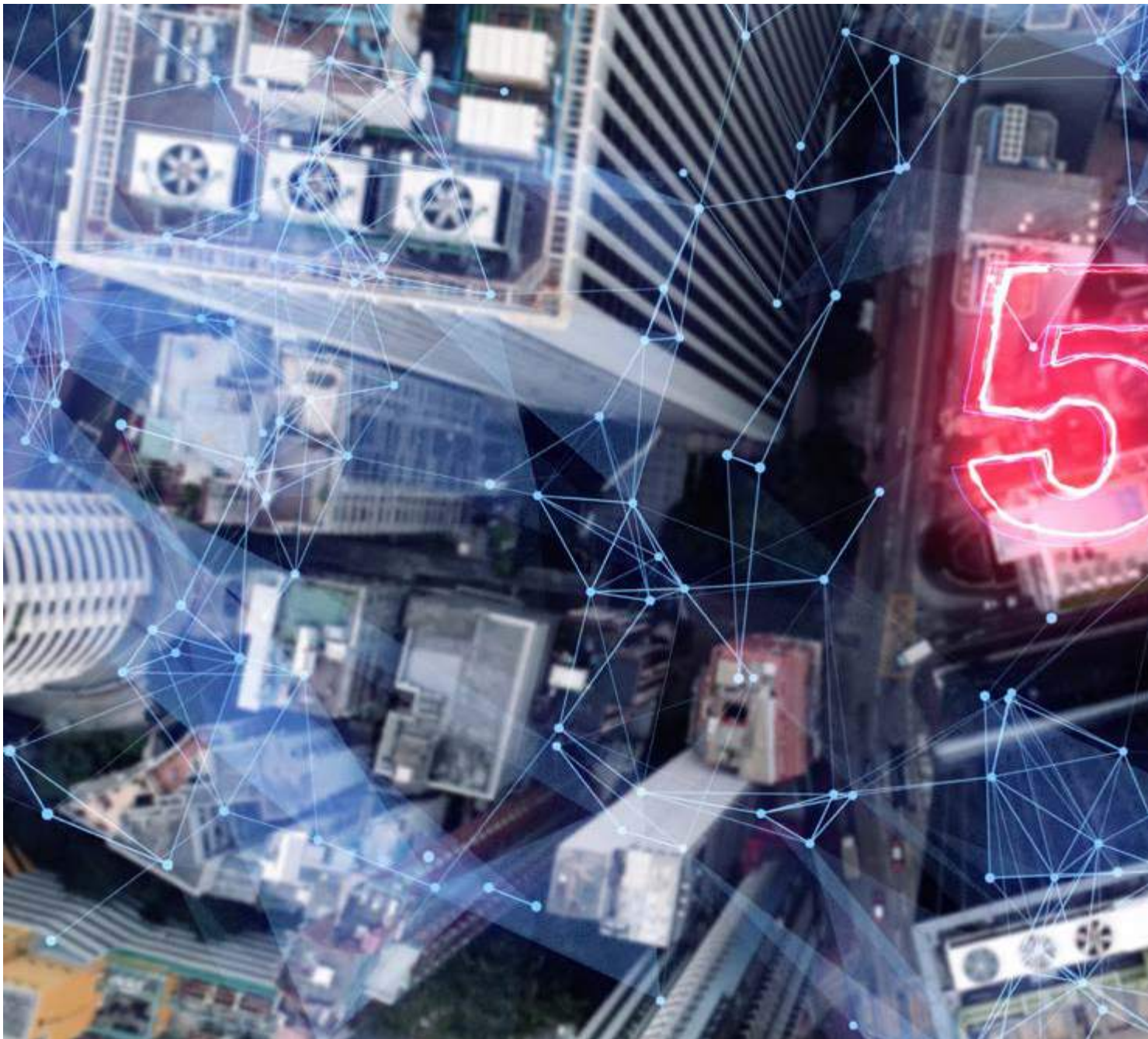
How Asian Markets Are Ramping Up Their 5G Strategy

The most recent study by US-based think tank, International Data Corporation (IDC), suggests that earnings from 5G services in Asia Pacific will increase by the compounded annual growth rate of 137% in 2026, from $106 million last year to $8 billion in the five-year period, thanks to the ever-growing demand for this technology by various industries.

The increasing adoption of digital applications requiring high-data and high-bandwidth usage within the households and enterprises is prompting greater improvement to the existing fixed-line network infrastructure.

While South Korea and China continue to outpace their regional neighbors in the 5G race, Singapore and Thailand are also well on track to reach their target, while other emerging markets in Southeast Asia have also ramped up their games.

In a press release, Bill Rojas, adjunct research director for IDC Asia/Pacific, said, "It will take the telecom industry three to five years to fully develop 5G enterprise services, and equally the same amount of time for leading enterprises to conduct proofs of concept and trials before committing their business operations to depend on 5G. But the early trend is that private networking has received the most attention in all markets in the region due to the potential benefits for industries. Network slicing will be deployed initially in factories, warehouses and Smart Airports, but eventually in outdoor settings such as Smart Ports, Smart Stadiums, Smart Campuses and transportation hubs."

IDC's report said that 5G FWA will serve both as a temporary solution in certain markets, including the Philippines, although it will also be a substitute for fiber broadband access, which could not reach specific areas. Aside from the Philippines, markets seen to be deploying 5G FWA (Fixed Wireless Access) include Australia, New Zealand, Hong Kong, Malaysia, Thailand, Vietnam, and India.

As of now, challenges still lie ahead in terms of 5G deployment in the region, especially for emerging markets that continue to experience a digital divide. To face such challenges, in the Philippines and Malaysia, for example, governments are becoming more involved in their 5G projects.

Here are what some Asian markets have come up with so far in terms of their 5G rollout.

Thailand

Thailand is among the first to roll out 5G in Asia-Pacific. It first deployed 5G services in early 2020, with major telecom operators AIS, TrueMove H, and dtac at the forefront.

Now, the country is seen to be moving farther ahead of its regional neighbors in terms of 5G deployment, thanks to the government's push to ensure 5G availability in the country. The latest data from Ookla shows that Thailand's 5G availability has already reached 24.6%, with its capital Bangkok accounting for 30.1% of it.

The country's largest telco player, AIS targets to deliver 5G connectivity to 85% of its population by late 2022, and it also aims to expand its 5G network to all of Thailand's 77 provinces.

The telecom providers, True and dtachave newly merged under the entity NewCo, which is said to be capable of delivering stronger competition to AIS, and investing in 5G.

Malaysia

Malaysia's 5G rollout has long been overdue, until recently when the six telecom leaders have reached an agreement to invest in the state-backed 5G wholesaler DNB.

The Malaysian government established Digital National Berhad or DNB to put up a single wholesale network early in 2021. However, this was delayed by political and commercial issues towards the end of last year.

DNB is the only entity that's allotted the 700MHz, 3.5GHz and 26/28GHz spectrum for 5G use. Other telecom providers are not allowed to deploy their own networks.

The telcos refused to accept this regulation, which prolonged the process until authorities eventually reached an agreement with private

telcos in March. The government offered them a 70% stake in DNB to guarantee their position in the 5G roll-out and protect them from being overcharged for wholesale capacity .

During the last week of August, the Malaysian Communications and Multimedia Commission (MCMC) announced that they had reached a deal with the telcos to proceed with the 5G rollout. Communications and Multimedia Minister, Annuar Musa estimated that Malaysians will be able to gradually experience 5G connectivity starting in September 2022.

The regulator said that telecom providers included in the 5G deal have completed four of the five phases of their technical tests.

Only a few cities in Malaysia are covered by 5G, including selected areas of Putrajaya, Kuala Lumpur, Johor, Cyberjaya, and Selangor.

MCMC CEO, Datuk Mohd Ali Hanafiah Mohd Yunus saw this as a positive development, and that, most likely, they will see 5G services being rolled out in September.

DNB previously stated that its goal was to achieve 80% coverage across the country in the next two years. Most of Malaysia will see necessary infrastructure by 2023, attracting foreign tech giants including Vodafone, Rivada Networks and Intel to penetrate the market.

Singapore

Singapore is fast emerging as one of the leaders in the 5G game in the region.

The Infocomm Media Development Authority (IMDA) in August announced three additional 5G projects to expand 5G services in the city-state.

Some of these projects involve the use of 5G in augmented reality, medical technology, and the maritime sector.

In a statement, IMDA's Chief Executive, Lew Chuen Hong, said, "Singapore will continue to push the boundaries of innovation through frontier technologies such as 5G. We are excited to work with our industry partners to unlock the real impact of 5G. We look forward to seeing new and exciting ways 5G will benefit our businesses and consumers".

According to IMDA, under its 5G Innovation Programme, S$30 million will be allotted to speed up the adoption and commercialization of 5G technology.

IMDA also announced that Singapore will reach the goal of having full 5G standalone (SA) coverage over its anchorages, fairways, terminals, and boarding grounds by mid-2025. It said that 5G coverage in Singapore's current port waters will allow for the establishment of what it says is "the world's first public and largest 5G Maritime testbed to trial, innovate and commercialize Maritime 5G use-cases over the next decade."

> It will take the telecom industry three to five years to fully develop 5G enterprise services

These developments take place after Singtel announced that it has reached more than 95% standalone 5G coverage across the country, three years ahead of the government's target.

Singtel also announced in July that its 5G network now spans 1,300 outdoor sites and delivers signal in over 400 buildings and train tunnels.

Singtel's rival, StarHub, meanwhile, has said that it is almost reaching nationwide coverage, which it expects to be completed in the coming months. Most populated areas can already receive 5G signal. It recorded 1.5 million postpaid mobile subscribers early in 2022, and among these, 400,000 were using 5G handsets and could access 5G connections.

Indonesia
Indonesia is seen to be one of the fastest growing telecommunications markets across the globe, thanks to the increase in both mobile and fixed broadband usage. According to a 2021 report by Google, the overall digital economy in the country is estimated to double to $146 billion in 2025.

However, it's seen to still be facing an uphill battle before it starts implementing its 5G project.

Jakarta recently presented Indonesia's Digital Roadmap 2021-2024, which includes four strategic sectors. These are digital infrastructure, digital government, digital economy, and digital citizens. It also covers six targets for accelerating the country's digital transformation, which include the development of safe digital infrastructure, as well as transforming the country into a tech producer by developing 4G and 5G nationwide.

So far, Indonesia's telecom giants' focus is on the expansion of 4G coverage in the country, and they're in no rush to push for 5G deployment.

According to a forecast by Fitch Solutions, "LTE remains under-utilized at present and there are over 3,000 rural towns and villages that are yet to be served by any carrier as of Q1 2022. Operators will look to establish basic 3G/4G services in such regions while developing their 5G networks in major urban centers of Java and Sumatra. However, sustained price competition among principal and alternative operators are key downside risks to profitability and long-term service development."

According to Indonesia Telecoms Industry Report, 5G mobile subscribers are expected to account for 43.5% of all subscriptions in Indonesia by 2027, while 4G will make up about 50.6% of all connections, and 2G and 3G will account for about 2% if not discontinued earlier.

Philippines
The Philippine's new administration laid out plans for a digital economy in June as its newly elected president is looking into more opportunities to fast-track the buildup of the country's digital ecosystem.

Aside from its growing 5G capacity and welcoming of new telecom players, the country is also awaiting the launch of satellite connectivity, which is expected before the end of the year.

Amid these latest developments, the Philippines' two telco giants, the PLDT Group and Globe Telecom, are also beefing up their offerings.

As of the first half of 2022, PLDT's wireless unit, Smart, has deployed around 77,100 total base stations nationwide, supporting its 3G, 4G/LTE and 5G customers. Among these are 7,300 5G base stations. Smart has rolled out 2,500 additional 5G base stations across the country, compared to a year ago.

Meanwhile, its rival, Globe Telecom, is stepping up its 5G rollout across the country with the deployment of more than 900 cellular sites in the first six months of 2021. Its 5G network outdoor coverage is now at almost 97% of the regional capital of Metro Manila, and 86% spans across key cities in the Visayas and Mindanao islands.

Globe targets to build around 1,700 new cell sites by the end of 2022, surpassing the previous year's 1,407.

Meanwhile, newcomer DITOTelecommunity is reported to be continuously developing and deploying its standalone 5G network nationwide. DITO will however, need more time and resources for the deployment of its network to deliver 5G services to its consumers.

China
China continues to dominate the global 5G race, and it's been expanding its 5G infrastructure at a fast rate. Latest data from the Ministry of Industry and Information Technology (MIIT) shows that as of the end of July, China had put up approximately 1.97 million 5G base stations, with all prefecture-level cities and counties as well as 96% of all towns equipped with 5G network coverage.

China's 5G base stations represent more than 60% of the total 5G users across the globe. And its 5G users across the country account for more than 70% of 5G users worldwide.

MIIT data also suggests that the number of 5G mobile users in the country had reached 475 million by the end of July, a net growth of 120 million compared to the previous year.

This progress is backed by the highly developed research and development capability that local companies have accumulated, with Huawei continuing to be the largest 5G patent holder across the globe.

According to the 2022 World 5G Convention, telecom operators have cumulatively invested about $59.4 billion in 5G.

The MIIT data states that the construction of 600,000 5G base stations will be finished by 2022.

The government aims to have 560 million 5G mobile subscribers by the end of 2023 and increase the penetration rate of 5G technology among major industrial enterprises to 35% in that period. **TR**

HE Bolor-Erdene Battsengel, State Secretary,
Ministry of Digital Development and Communications,
Mongolia

Mongolia to Take Digital Development to a New Level

Telecom Review Asia Pacific interviews HE Bolor-Erdene Battsengel, State Secretary, Ministry of Digital Development and Communications, Mongolia, the first state secretary of the newly established Ministry of Digital Development and Communications to learn about Mongolia's digital ambitions and progress.

Digital governance is a key agenda for many countries. What have been some initiatives rolled out?

Mongolia aims to build a digital nation. In this context, a number of basic system and structural changes have been made. For example, to accelerate digital transformation, the former agency named Communication and Information Technology Authority was reorganized this year into the Ministry of Digital Development and Communications. E-Mongolia platform has successfully launched an integrated e-government system. The E-Mongolia academy has also been established to further develop, improve and maintain the E-Mongolia System. The fundamental laws of digital governance, such as the Law on Public Information, the Law on Digital Signatures, the Law on the Personal Data Protection, and the Law on Cyber Security, have also been approved by the Parliament of Mongolia.

Mongolia implemented the e-Mongolia platform a couple of years ago to digitalize public services. Can you tell us about the progress of this initiative and how this has impacted the lives of Mongolians?

We first introduced the E-Mongolia system on 1 October 2020. The main achievement is that today, it has become a large system that includes 656 services from 61 government organizations. In total, more than 12 million services have been provided online through this system. The system currently has 1.3 million users. That means one-third of the adult population uses the E-Mongolia platform. A total of 656 most demanded public services can be obtained from this system, from applying for a driver's license to applying for a passport. Features such as offering services based on customer behavior have recently been added.

Mongolia is a vast and one of the least densely populated countries in the world. Can you tell us how this has been a challenge for 5G adoption and what is the 5G journey like so far?

Our country has approved a policy to introduce 5G networks in 2020. In 2021, 5G pilot tests were successfully conducted twice. This year, the Ministry of Digital Development and Communications and the Communications Regulatory Commission are preparing the spectrum management for the introduction of 5G in Mongolia. In addition, mobile operators are preparing to invest in 5G. It has also successfully completed a 5G readiness assessment with the support of the International Telecommunication Union (ITU).

Our country has a large territory and a sparsely populated region. This situation poses the biggest challenge when building a 5G network. In other words, the investment for establishing a 5G network will require a lot. In addition, 5G requires more robust fiber optic infrastructure. The next big challenge is a small, but highly competitive market. For instance, Mongolia has more than 3 million citizens served by 5 mobile operators.

What are some plans in the pipeline for the Ministry of Digital Development and Communications of Mongolia?

As I mentioned, our country aims to become a digital nation. The government has announced that information technology is one of the priorities of the economy. The Ministry of Development was implemented within the government, and the Parliamentary Standing Committee on Innovation and Digital Development was established. Our ministry has also approved a digital nation strategy. The strategy has six sub-objectives: digital infrastructure, e-governance, cybersecurity, digital literacy and inclusion, innovation and production, and national development accelerator.

As I have said before, we have passed laws to accelerate the nation's digital development to a new level. Emphasis will be placed on the implementation of these laws and the approval of compliance regulations. **TR**

> Our ministry has also approved a digital nation strategy. The strategy has six sub-objectives: digital infrastructure, e-governance, cybersecurity, digital literacy and inclusion, innovation and production, and national development accelerator

Sulaiman Al Ali, CEO of Thuraya

Forging New Opportunities For Satellite Connectivity in the Asia Pacific

Thuraya, the mobility subsidiary of the UAE's flagship satellite operator, Yahsat, recently unveiled a new office in Singapore to mark 15 years of presence in the Asia Pacific market. Telecom Review Asia Pacific speaks with Sulaiman Al Ali, CEO of Thuraya, to learn about Thuraya's recent successes in globalising satellite innovations.

Can you tell us about the prospect of satellite services and how it would impact the future of connectivity, especially in the Asia Pacific region?

The satellite industry is currently heading in two directions - one driven by increased demand for data and the other by the demand for very small terminals with limited data rates to meet IoT requirements. While the new LEO mega constellations promise the delivery of higher data rates, GEO systems remain the major provider of connectivity across different sectors and applications considering their heritage, reliability and availability. Innovation and advancement is also happening within MSS and with new satellite capabilities, we can reach higher data rates. For instance, with our T4 Next Generation System (T4-NGS) we plan to offer at least double from the current data capabilities reaching north of 1 Mbps. This is considered a leap for MSS L-Band systems.

When it comes to IoT requirements, we are looking at addressing a burst of data that provides information on applications covering segments like transportation, maritime, agriculture and livestock monitoring. To meet these needs, users require very small devices and very low data rates.

In the Asia Pacific, demand is driven by two key markets associated with transportation, namely maritime and IoT. That said, there is of course high demand coming from the government and defence sectors, with specialized solutions requirements. But, owing to the huge volume of trading that takes place in this region, maritime connectivity and safety are particularly important in the Asia Pacific. Hence, we are witnessing a spike in demand in the maritime sector driven by business and regulatory requirements.

In this region, agriculture is another industry that is increasingly reliant on satellite connectivity, especially in the face of supply chain shortage, to facilitate timely communications and operational efficiencies.

How has the role of satellite and terrestrial connectivity evolved over the years?

With the rise of Internet of Things, we have reached a stage where satellite IoT is aligned with terrestrial IoT. Especially for critical communications applications, ubiquitous connectivity and high availability are an absolute necessity. It serves as the impetus for terrestrial and satellite operators to work hand in hand to complement each other.

Already, we can see that many partnerships have been forged between operators and this trend will continue to persist as regulations and standards for terrestrial and satellites come together.

Can you share with us Thuraya's partnerships and your outlook on the Asia Pacific?

In the UAE, our majority shareholder Yahsat, recently announced two joint ventures — one to produce products for the satellite industry and the other to provide the country with geospatial and remote sensing capabilities.

In the Asia Pacific, we have forged many partnerships across maritime, government, NGO and enterprise. These include major partners such as Softbank in Japan, Smart in the Philippines, as well as hi-tech companies like APSI in South Korea.

Thuraya views the Asia Pacific region as a strategic market with immense potential. Demonstrating our commitment toward this market, we have opened a new Asia Pacific office in Singapore to mark 15 years of presence, where our first office was established in Singapore in 2006. Today, the new office is a testament of our growth in this region.

In over a decade, we have amassed a very diversified portfolio of projects and found success with our offerings. For instance, the Thuraya MarineStar, a maritime solution with advanced two-way tracking and monitoring capabilities, has been very well-received in Asia. Other innovations include Thuraya Push-to-Talk, an IP-based radio communications solution that extends voice communications beyond line of sight (BLOS). Moreover, with our T3 satellite covering the entire region and extending to every part of Australia, we are committed to delivering a rich and diversified portfolio as we look to develop more partnerships to advance development across the Asia Pacific. **TR**

> Thuraya views the Asia Pacific region as a strategic market with immense potential

Denis Ng, Marketing & Infrastructure Solutions Director of Prose

Prose: Wireless Communications in a Fast-Evolving World

In early 2022, it was announced that Rosenberger spun off the antenna and wireless division under the Prose brand. Telecom Review Asia Pacific speaks with Denis Ng, Marketing & Infrastructure Solutions Director of Prose on the brand's value proposition and offering.

Can you explain the relevance and purpose behind the new brand identity Prose?

Prose is a spin-off from the Rosenberger Group, a specialist in connectivity and wireless solutions, and one of the leaders in the telecommunications industry. With wireless technologies evolving rapidly, transiting from 4G, 5G and then to 6G in the near future, the industry has witnessed vast progress and advancements. Today, customers demand unique solutions to meet newer requirements. With this, we feel that it is timely for Prose to operate as a separate entity, to become leaner, more agile, and closer to global customers to better address the fast-changing needs of different markets.

Can you tell us about Prose's unique solutions portfolio?

To cater to the specialized needs in a 5G era, the strategic focus of Prose is on 5 key areas to deliver connectivity and wireless solutions, namely, base station antennas, microwave antennas, indoor and outdoor coverage solutions, open RAN sub-systems, and RF accessories.

Our product portfolio maintains Rosenberger's tradition of innovation and technological expertise. We are a company with more than 3,500 people providing global operators and service providers with innovative wireless technologies. Currently, Prose has the largest team in the Asia Pacific region, but has a fast-growing portfolio in other parts of the world as well. In this region, we have R&D centers in China, Australia and India to expand our focus on base station antennas and open RAN solutions, and provide tailored solutions to meet the future demands of customers.

How does your portfolio address the latest wireless technology trends in the APAC region?

5G requires new base station antennas capable of delivering its promise of high bandwidth and low latency. In the area of base station antennas, we work with a strategic partner to supply operators with massive MIMO antennas as a comprehensive solution to address the new requirements in a 5G era. We also offer multi-RAT 4G+5G integrated antennas for other scenarios.

In terms of indoor solutions, most locations around the world are equipped with passive infrastructure that covers 4G bands up to 2,700 MHz. This infrastructure is not able to support the new 3500 MHz band allocated to 5G, and also 4x4 MIMO to improve 5G throughput. Should we ride 5G on the existing infrastructure, the 5G promise of high bandwidth and low latency will not be delivered. To overcome this, we use an active fiber optic distribution system to connect a base unit to multiple active remote units to reduce the high losses of RF cables. This solution is multi-operator, multi-technology and multi-RAT, allowing up to 4 operators to share infrastructure to reduce the capex costs of indoor investments and to enable 5G coverage indoors in a fast and timely manner.

Meanwhile, with open RAN, we are moving 5G away from proprietary systems and working with other partners. As we develop both radio and antenna solutions, we work collaboratively with our partners to produce high-power solutions with massive MIMO antenna integrated as a single open RAN radio unit. We also foresee the wireless industry connecting Open RAN to indoor solutions and are developing a low-power solution to connect Open RAN with indoor active solutions – this is also the unique selling point of our open RAN platform. If the radio setup can be reduced to a low-power unit, operators can benefit from significant capex and opex cost savings.

The wireless communication market is set to keep expanding over the next few years with service providers, neutral hosts, and private networks all targeting different growing market segments. While Prose is preparing unique solutions for these markets in 4G and 5G infrastructure products, the company is on the technology forefront and well positioned to provide connectivity and wireless solutions particularly in massive MIMO, base station antennas, indoor active distributed antenna systems, and open RAN sub-systems to address both outdoor and indoor coverage requirements. **TR**

> The wireless communication market is set to keep expanding over the next few years with service providers, neutral hosts, and private networks all targeting different growing market segments

IPv6 Adoption to Leapfrog Digital Growth in Asia Pacific

In the wake of IPv4 address exhaustion, the evolution to IPv6 becomes imperative to support sustainable Internet growth. Telecom Review Asia Pacific interviews Latif Ladid, Founder and President of IPv6 Forum and Chair of ETSI ISG IPE, and Sureswaran Ramadass, Emeritus Professor of Malaysian University of Science and Technology, on IPv6 progress and its role in charting digital growth.

The Internet serves as the backbone of our digital economy today. With the massive uptake of technologies like IoT, cloud computing and 5G, an exponential surge in global digital users and connected devices will exhaust available unique IP addresses.

While IPv4 accommodates up to 4.3 billion unique IP addresses, IPv6 supports a marked improvement of up to 340 trillion trillion trillion addresses. Sharing on this, Latif Ladid said, "The transition to IPv6 is a very natural progression into the new Internet to support its sustainable growth as users or devices are added manifolds in the foreseeable future."

By 2030, IoT is expected to connect tens of billions of devices. With connectivity at the core of a digital economy – an important driver of economic growth – IPv6 solves the problem of insufficient IP addresses to power connectivity potential and advance digital transformation. In fact, Ladid likened IPv6 to the "digitalisation of the Internet" to meet newer requirements in a cloud computing, 5G and IoT era.

"Currently, no one has a unique IP address. We are like tourists on the internet – not residents. But with a unique IP address assigned to each device, we will have an end-to-end model that allows direct

communication between devices," said Ladid. "We would go from peering between operators to peering between individuals. And this fundamentally shifting the dynamics from master-slave to everyone being a master."

Reinforcing IPv6's relevance and importance in today's digital landscape, where 5G deployment is picking momentum, Sureswaran Ramadass opined that "the marriage between IPv6 and 5G is a match made in heaven" as 5G implementation will be driven by IPv6.

"Migrating to IPv6 can be challenging on legacy networks," Ramadass commented, "But with 5G networks being new, they can be easily matched with new technologies like IPv6 to be undertaken in tandem to yield maximum benefits."

Moreover, IPv6 can be combined with innovative technologies to deliver network automation and intelligence to meet emerging 5G requirements. For consumers, this translates into benefits including increased cost-effectiveness, faster speeds, and a long-term solution that enables next-generation services, Ramadass added.

IPv6 Enhanced in the Asia Pacific
In the Asia Pacific, IPv4 resources are increasingly waning. Especially in Southeast Asia, home to 440 million Internet users, IPv6 paves the future for network development to address connectivity hikes. Notwithstanding, IPv6 also drives innovation and digital transformation.

As such, more countries are paying attention to IPv6 and enacting policies to promote its development. In the region, countries like China and India are frontrunners in IPv6 deployment. Another country that has come a long way in IPv6 deployment is Malaysia.

Shedding insight into Malaysia's IPv6 development, Ramadass said, "Currently, Malaysia is ranked fifth in the world in terms of IPv6 deployment, roll-out and traffic. Instead of looking inwardly, Malaysia has reached a stage now where it can focus on greater outreach to help other countries develop IPv6 capabilities."

"All smart devices already support IPv6. The key is turning on this capability," Ramadass added. "In Malaysia, a change took place when we focused on capacity building and conducted training programs for ISPs and telecom operators to deploy IPv6 on their networks."

Based on IPv6, IPv6 Enhanced makes provision for innovations to enhance network capabilities and deliver benefits such as ubiquitous connectivity, ultra-high bandwidth, low latency, automation, as well as deterministic quality and security.

Ladid elaborated on the impact of IPv6 and IPv6 innovations on industries like agriculture, finance and government. Take agriculture, for instance, sensors can be disseminated along the distribution food supply chain and traced using blockchain to ensure "more efficient food distribution from farm to table, with minimal food lost in the process". Doing so can significantly boost agricultural productivity and efficiency, and support Asia's development.

In addition, Ladid shared that "IPv6 achieves an end-to-end model that is essential for countries to ensure data sovereignty". Unlike with IPv4, ministries in the government can be allocated unique address space to ensure secure, encrypted communication between ministries that stay in the country.

However, for wider IPv6 adoption and penetration to take place, governments play an essential role. Ladid recommends a "top-down approach for governments to adopt IPv6 and lead by example" to accelerate the IP evolution.

In essence, both concurred that IPv6 and IPv6 Enhanced can address new challenges and create new value in a digital economy. Together, IPv6 and IPv6 Enhanced can enable technologies critical to digitalising industries, and forge economic value and progress. **TR**

> Based on IPv6, IPv6 Enhanced makes provision for innovations to enhance network capabilities and deliver benefits such as ubiquitous connectivity, ultra-high bandwidth, low latency, automation, as well as deterministic quality and security

Dr Derek Wang, Singapore Country Manager,
Alibaba Cloud Intelligence,

Accelerate Partners Digital Innovation Capabilities

Telecom Review Asia Pacific interviews Dr Derek Wang, Singapore Country Manager, Alibaba Cloud Intelligence, to learn about Alibaba Cloud's undertakings in the region to bring value to ecosystem partners in their digital innovation journey.

Growth in global cloud markets has outpaced previous years. Can you tell us about Alibaba Cloud's global reach and key markets in the Asia Pacific?

Alibaba Cloud is the digital technology and intelligence backbone of Alibaba Group. It offers a complete suite of cloud services to customers worldwide, including elastic computing, database, storage, network virtualization services, large-scale computing, security, management and application services, big data analytics, a machine learning platform and IoT services. Alibaba Cloud maintained its position as the third leading public cloud IaaS service provider globally in 2021, according to IDC, and is the world's third largest and Asia Pacific's leading IaaS provider, according to Gartner's April 2022 report.

Alibaba Cloud serves more than 4 million customers worldwide and work with close to 10,000 global partners including Salesforce, RedHat, VMware, MongoDB to bring leading solutions to businesses around the world, and it has 84 availability zones across 27 regions globally. In Singapore, Alibaba Cloud owns three data centers locally.

As Asia Pacific is home to many emerging markets, there has been a rise in data centers to tap on its potential in recent years. How is Alibaba Cloud growing its presence and its approach toward supporting digital transformation in this region?

Alibaba Cloud has extensive business presence in Asia Pacific (APAC) countries such as Singapore, Malaysia, Indonesia, Thailand, Philippines, Japan and Korea, and we also operate our own data centers in these countries. In terms of supporting countries' digital transformation, we work with local partners in each country closely, to bring products and solutions for customers, and leveraging IT partners' extensive local expertise to ensure our products meet with customers customization demands. We see great demands for cloud computing services driven by COVID-19 in the region, especially in industries such as F&B, e-commerce, education, logistics, digital entertainment, live streaming, and gaming. With our extensive experience serving international customers and garnering successful experiences from these verticals, we are confident to bring the successful learning to help APAC's businesses to transform.

In addition, we bring products and solutions overseas to meet local market's growing demands, too. In Singapore, to boost innovation and increase operational efficiency for enterprises in a hybrid workplace, we have launched cloud computer, our Desktop-as-a-Service (DaaS) for faster IT deployment and increased device flexibility. The service is especially useful to support companies that have a remote workforce in need to access to heavy computer powered productivity applications in industries like AI research, video production and rendering, engineering and finance modeling, telecommunication, livestreaming, education, oil and gas simulations.

How does Alibaba Cloud enable enterprises to accelerate digital innovation and create value?

Alibaba Cloud offers a slew of digitalization solutions that have been proven successful supporting the various business units of Alibaba Group, including e-commerce, fintech, logistics, and digital media and entertainment. In order to help enterprises complete their digitalization journey, we not only offer our technology know-hows, but also work with our global partners closely to offer world-leading solutions in areas such as customer management, logistics, hybrid cloud, database so that through working with Alibaba Cloud, customers can also have direct access to our wider ecosystem partners' offerings, and complete their digital innovation journey with us.

In addition, we believe in building an inclusive ecosystem to create better values for our customers and partners alike. In Thailand for instance, we have launched a "Partner Alliance 100" program to recruit local technology and channel partners onboard, so that we can empower them with Alibaba Cloud's leading solutions and invite them to integrate theirs onto our state-of-the-art cloud infrastructure. We have these kinds of similar partner enablement programs in other regions too, in order to accelerate our partners digital innovation capabilities.

How else is Alibaba Cloud supporting regional enterprises and startups to grow and innovate?

Alibaba Cloud launched Project AsiaForward in 2021, and has committed an initial US$1 billion funding and resources to cultivate a million-strong digital talent pool, empower 100,000 developers and support the growth of 100,000 technology startups in the APAC region. The project is part of Alibaba Cloud's strategy to invest in infrastructure, technological innovation and talent development to contribute to local economic growth through digital transformation as the trusted cloud leader in APAC.

Under the project, Alibaba Cloud has also launched a Global Startup Accelerator, introducing a series of Demo Days in key APAC countries including Singapore, Thailand, Philippines, Indonesia and Malaysia, offering local startups the chance to present their business ideas to investors to win potential investment, as well as to become part of Alibaba Group's ecosystem. **TR**

"

Alibaba Cloud serves more than 4 million customers worldwide and work with close to 10,000 global partners including Salesforce, RedHat, VMware, MongoDB to bring leading solutions to businesses around the world

"

Bryan Hartin, Executive Vice President, Sales and Marketing, Iridium

Iridium Is Here for a Long Haul, Says EVP Bryan Hartin

With a cross-linked constellation of 66 satellites, Iridium's global network connects people and things in the world's most inaccessible locations. Telecom Review Asia Pacific spoke to Bryan Hartin, Executive Vice President, Sales and Marketing, Iridium, to know more about the company's offerings, market competition, and growth plans.

Growth in IoT is driving increased connectivity worldwide. Can you tell us about Iridium's growth in the past year?

In 2021, Iridium had the best subscriber growth in the company's history, with total billable subscribers growing 17% year-over-year, driven by growth in IoT. We rely on the success of our ecosystem of partners to develop, sell, design, and market Iridium-based solutions, while we focus on what we do well. Our constellation is one of the youngest L-band networks worldwide. Presence in low earth orbit gives us the unique advantage in IoT as our satellites are closer to earth, and can hence offer solutions for devices that

are a lot smaller. They are also very efficient, lighter and faster than our competition.

In addition, we provide our ecosystem of partners with enabling technology through modules that provide Iridium-based connectivity. Our partners leverage this enabling technology for IoT products and solutions. Some of our IoT solutions are used by heavy equipment OEM companies such as Caterpillar, Komatsu, Hitachi and Doosan, for telematics mainly, and to track their assets worldwide. For some of these OEMs, more money is derived from maintenance parts sales and services, compared to sales of the equipment. Globally, we also have partners who tap on Iridium's enabling technology to perform vessel monitoring for fishing regulations or research into climate change.

One of the uses in IoT or personal communications is enabling technology that can fit in small devices – with personal communications as an area that is quickly gaining traction. An example of this is Garmin, which uses Iridium enabling technology in small devices to track locations and send SOS messages during an emergency.

Another product is the Iridium Edge Solar, which offers real-time GPS tracking and local wireless sensor and communication capabilities over Bluetooth. It can be placed on a container to track its position, monitor the temperature of the container, or determine if the doors are open or shut.

Essentially, our target is not replacing cellular technology, but complementing it so that connectivity can be maintained even outside terrestrial coverage. We are uniquely qualified to do so because of Iridium's truly global network, comprised of 66 crosslinked satellites in space with 9 spares on-orbit and another 6 on the ground.

Can you share with us more on Iridium's award-winning Iridium Certus and how it is designed to match customer needs?
To give you a background, we started as a legacy narrowband company that subsequently added broadband

capabilities to our offerings. When we first developed the new network, one of our design criteria was to support broadband.

As L-band is very reliable and resilient, we arrived at the name Iridium Certus as "Certus" is Latin for "certain" and "reliable". Demonstrating this, our products and services can work under any weather conditions, and is in fact, more resilient than some VSAT providers.

So we ventured into broadband products and then pivoted back to cover the gap between narrowband and broadband to support midband. Our broadband speed ranges up to 704 kilobits per second, which is on the higher end of the speed capability for the L-band. We also rely on 3 world-class value-added manufacturers (VAMs) to build the products – namely Cobham Satcom, Thales and Intellian – that sell our products to service providers, and in turn, take these products and services to all kinds of ships worldwide.

Clearly, maritime shipping is one of the largest markets that uses Certus' broadband products. Fishing and leisure are also big markets for us. We are also into unmanned surface vessels (USVs) – an area where we are starting to see a lot of interest. Because Iridium operates globally, we are able to provide constant connectivity to support autonomous vessels. We are also well-positioned to provide aviation safety services, primarily in cockpits, as well as land products that ensure vehicles stay connected. For instance, ministries of defense and governments use Certus land products for deployed operations.

How do you expect satcoms to evolve in the foreseeable future?
Currently, we are seeing a lot of new entrants in the market, which bodes well for the satellite business. However, some of these new players are focused on higher-speed services and would be competing with companies to offer residential broadband. While we see opportunities to work with some of these new entrants, we are mostly focused on staying in our lane and growing that lane a bit wider – especially in IoT.

Moving forward, a gamechanger for the satellite industry is enabling technologies for smartphones – an emerging area that we are uniquely qualified to support. With more than 25 years of experience, we have provided consistent and meaningful growth for our shareholders and we are committed to continuing with that.

The Asia Pacific, being a region where Iridium is doing very well, will continue to be a market where we will grow and expand into new areas. For instance, many fishing companies in Asia require reliable satellite communications. And Singapore, being a major port city, is an important market for Iridium as ships arrive from all over the world. Finally, in Asia, aviation is another important market as OEMs with facilities in the region, such as the likes of Boeing and Airbus, rely on Iridium to operate efficiently across the globe. **TR**

"
The wireless communication market is set to keep expanding over the next few years with service providers, neutral hosts, and private networks all targeting different growing market segments
"

India's 5G to Rollout by October 12

India is expected to roll out 5G services by October 12, according to Ashwini Vaishnaw, union communication, electronics and information technology minister.

Vaishnaw revealed that 5G prices will be reasonable for users and that 5G services will be scaled up after launch to reach more parts of the country in the coming two to three years, with a focus on delivering 5G connectivity to both urban and rural areas.

India has entered its final stage of rolling out 5G services, with the government having issued spectrum allocation letters to telecom operators in preparation for the impending 5G rollout

During the initial phase of rollout, 5G will reach 13 cities, namely Ahmedabad, Bengaluru, Chandigarh, Chennai, Delhi, Gandhinagar, Gurugram, Hyderabad, Jamnagar, Kolkata, Lucknow, Mumbai and Pune.

Separately, PM Modi said during the Grand Finale of Smart India Hackathon 2022 that India is preparing to launch 6G by the end of the decade – which will be a boost to sectors such as gaming and entertainment.

Telstra Boasts Fastest Speed in Australia

Telstra is Australia's fastest mobile network for the first half of 2022, based on results from the Ookla Speedtest Awards from January to June 2022.

Telstra has a median download speed of 81.57 Mbps and median upload of 11.38 Mbps, representing an improved speed from the second half of 2021.

Telstra also has the fastest mobile network speeds in the cities of Sydney, Greater Melbourne and Greater Brisbane – where nearly half of Australia's overall population resides.

"Keeping our customers connected is at the centre of everything we do, and one part of that is giving customers access to the largest and most reliable mobile network in Australia. That includes expanding our 5G coverage to allow for faster speeds as well as improving the capacity of our 4G network, and it's also about the new technologies we're developing like mmWave 5G," Telstra commented.

Telstra currently covers 80% of Australia's population with 5G, with plans to roll out 5G to 95% of the population by 2025.

ACC>> 2022
ADAPT·COLLABORATE·CONQUER

Asia's ultimate networking event that gathers the industry's top business minds and organizations to learn together and develop partnerships to drive the industry into the future.

▼ PLENARY SESSIONS

KEYNOTE SPEAKER

MIKE WALSH
CEO OF TOMORROW

WHAT LEADERS NEED TO KNOW ABOUT THE METAVERSE

Crimson Resort & Spa
Boracay, Philippines
September 19-23, 2022

AND MANY MORE SPEAKERS

▼ WORKSHOPS

Mishina Ryuji
Head of Portfolio & Propositions
NOKIA

Siddharth Kapoor
Product Manager
NOKIA

Colin Brown
Chief Commercial Officer
HAUD

Robert Ng
Senior VP
Strategic Accounts and Partnership
SOPRANO DESIGN

Darwin Luzuriaga
DChannel SE Director, APJ – DZS
Fujitsu Partner

Global IoT
Connectivity, Data Exchange and Monetization

Do you DARE to keep PACE?
Solving the A2P revenue conundrum

Unleashing Communications to Improve CX

5G O-RAN Transformation & Transport Implications

AND MANY MORE SPEAKERS AND TOPICS TO BE REVEALED SOON!

▼ DINNERS

SEPTEMBER 20,2022 | 7:00PM
BEACHFRONT, CRIMSON RESORT & SPA
BORACAY

BORACAY BAR CRAWL
SEPTEMBER 21, 2022 | 7:00PM

SEPTEMBER 22,2022 | 6:00PM
BEACHFRONT, CRIMSON RESORT & SPA
BORACAY

Nokia's Subscriber Data Management Software Selected by Jazz to Drive New Customer Experiences

Nokia has announced that Jazz, Pakistan's largest mobile operator, has selected Nokia's latest Subscriber Data Management (SDM) software to enhance HLR/HSS network resiliency and accelerate new products and services for Jazz customers. As part of a phased expansion and deployment strategy, the network will be gradually modernized to a fully cloud-based SDM architecture by 2025.

The modernization strategy will enable Jazz to deploy fully geographically redundant active networks in four

data centers in Islamabad, Lahore, Karachi and Faisalabad to ensure network availability as a disaster recovery solution. The deployment, an extension of an existing collaboration, will help Jazz deliver its digital transformation-related ambitions by allowing the auto-provisioning of devices and services at a massive scale to accelerate Pakistan's digitalization. Nokia SDM's software will reduce the provisioning time for new subscribers, services and functionalities. The cloud transformation of the SDM network will allow Jazz to use network automation for zero-touch capacity scaling. In addition, Nokia NetAct will provide a consolidated view of multi-domain, multi-technology networks to ensure the best network experience.

Abdul Rehman Usmani, vice president, network at Jazz, said, "Being the largest digital mobile operator in

Pakistan, Jazz is playing a key role in the country's digitalization journey. Our extended collaboration with Nokia will help us further improve the customer experience by ensuring network resilience and rapidly new consumer and business services. Nokia's industry-proven solution will help us towards readiness of any future technologies, while enhancing the growing needs of the existing networks."

Imran Durrani, head of customer team for Jazz at Nokia, added, "Nokia SDM's software will provide Jazz with a consolidated multi-technology network and enhance its digital services by allowing the operator to auto-provision new devices at scale. We look forward to expanding our longstanding relationship with Jazz for this crucial project as part of its network modernization transformation."

SES to Power Satellite-Based Connectivity to Cruise Line Fleet

SES will be providing high-speed satellite-based connectivity services to the newest landmark ship of a leading family cruise line. The cruise line's existing fleet will also transition its connectivity to SES's second-generation medium earth orbit (MEO) system O3b mPOWER, along with installing the service within its newbuild program.

The high-performance connectivity service onboard will first be available via SES's O3b Medium Earth Orbit (MEO) constellation and will subsequently migrate and expand to SES's O3b mPOWER communication system. This

connectivity will be augmented by SES's geostationary satellite fleet and ground-based infrastructure to provide high-bandwidth redundancy and unparalleled reliability throughout the voyage.

The new agreement will help enable a seamless and hassle-free internet connectivity experience for guests who can unwind in complete luxury without worrying about their families consuming large amounts of data at considerable expense. Passengers can purchase new unlimited Internet access plans by leveraging SES's O3b mPOWER network and thus enjoy unmatched connectivity while cruising.

The low-latency connectivity network which will be delivered by SES's O3b mPOWER system is also set to enable innovative connected technologies, including a first-of-its-kind immersive augmented reality experience for guests. It will also power wearable

technology for families, which will provide children secure and safe access to amazing experiences while parents recline at the pool.

Simon Maher, Vice President of Global Sales, Cruise Maritime Services at SES, said, "SES is privileged to be selected as the most innovative technology connectivity partner for both the transition of the current fleet of cruise ships from the legacy provider to SES but also supporting the cruise line's fleet expansion plans. We are passionate about amazing, innovative experiences that push the boundaries of what people think is possible. As the only company to operate a commercially successful medium earth orbit constellations at unmatched scale, SES is uniquely positioned to offer the most reliable, best-performing high-speed connectivity at sea that helps make incredible and innovative experiences a reality."

Vodafone and Kacific Partner for Satellite Mobile Backhaul in Papua New Guinea

Kacific Broadband Satellites Group (Kacific) has partnered with Vodafone PNG to deploy the satellite operator's mobile backhaul services, helping to greatly expand Vodafone PNG's voice and 3G/4G data network into rural areas of Papua New Guinea.

Vodafone PNG, based in Papua New Guinea and part of the Amalgamated Telecom Holdings (ATH) Group of companies from Fiji, successfully launched in April 2022, disrupting the nation's telecommunications market. It is now in the process of rapidly expanding its network and customer base.

Vodafone PNG has committed to wholesale bandwidth delivered by Kacific's high-speed Ka-band satellite, Kacific1. The cost-effective mobile backhaul bandwidth will primarily be used for voice and data and will serve both residential and enterprise end-users.

"Kacific and Vodafone PNG see huge potential for growth in Papua New Guinea, as well as a genuine thirst from the country's citizens for affordable and reliable mobile and data services. Together, we aim to disrupt the market in a way that brings more choice and better connectivity to everyday people," says Brandon Seir, chief commercial officer, Kacific.

"There is real potential for satellite-based communication services to help Papua New Guinea increase access to communications services from 10 percent (in 2009) to 100 percent of the population – a goal of the nation's strategic development plan, Vision 2050," he adds.

"In every market, we aim to be the best. With Kacific, Vodafone can provide the best coverage and increase local people's access to reliable, high-speed voice and data services," says Nirmal Singh, managing director, Vodafone PNG. "Kacific satellite services vastly reduce the cost and complexity of remote terminal installation, allowing Vodafone to rapidly deploy our network across the nation, including to the underserved rural areas. Together we are providing greater access on a large scale, helping increase Papua New Guinea's basic infrastructure in order to grow and prosper."

ZTE and Pakistan's Zong Launch Dual-Band FDD Massive MIMO

ZTE, together with Zong, Pakistan's digital services front-runner, has commercially launched the dual-band FDD Massive MIMO in Zong's existing 4G network, well satisfying the expansion requirements necessary for increasing 4G users and traffic.

With ZTE's FDD Massive MIMO solution, the deployment area's 4G data traffic capacity has jumped by 21% while the average user throughput has increased by 40%, resulting in a 60% reduction in high-loaded cell counts.

Zong has been leading the data market in Pakistan with its rapid growth in 4G users and data traffic. Total 4G data traffic in the year 2021 increased nine times over that of 2018, while the proportion of high-load cells increased from 3% to 17%. Therefore, Zong's network effective solutions to meet its expanding network requirements.

Zong is also a pioneer of exploring new technological solutions. It is known that FDD Massive MIMO is one of the key 5G technologies. It has now been successfully applied in the 4G network, bringing about great advantage. In September 2021, Zong together with ZTE successfully commercialized the first FDD Massive MIMO site in Peshawar. The FDD Massive MIMO has been operating well on 4G for both 1.8GHz and 2.1GHz dual bands, with the highest output power of 320W in the industry. In addition, it has enabled the industry's unique Smart Spatial Cell Groups (SSCG) technology, which realizes intelligent cell coverage adjustment based on user distribution, and improves cell capacity and spectrum efficiency.

"Digital everything" is becoming a new priority of the telecommunications industry. FDD Massive MIMO is a much-needed technology to support global telecommunications operators in a highly-competitive market.

By the end of May 2022, more than 170 sites were on air. Such large-scale commercialization of FDD Massive MIMO is becoming a new way of improving capacity and spectrum efficiency in 4G networks. Moving forward, Zong and ZTE will be committed to expanding the large-scale commercialization of the FDD Massive MIMO to further improve the capacity and spectrum efficiency of 4G networks.

Terry Bleakley, SVP in Asia, Intelsat

Standards drive growing opportunities for the satellites industry, says Intelsat's SVP

Terry Bleakley, SVP in Asia, Intelsat, discussed in an exclusive interview with Telecom Review Asia Pacific the importance of standards in the satellite industry and highlighted how the company is leading in this area. He also shed light on the main growth opportunities presented to Intelsat in different areas of the satellites industry.

TELECOM Review

How are satellite operators planning to integrate their satellite capabilities with terrestrial telecoms technology?

Organizations have different strategies. Looking back at the history of the satellites industry, it's been very heterogeneous and sits outside telecom networks in general. We really need to become homogeneous and fit more with the telecom network. Statistics have shown that telecommunications and paid TV spend every year about $1.6 trillion and satellite makes up around $16 billion, which is about 1%. Therefore, to become more relevant, our solutions should interact more seamlessly with standards.

At Intelsat, we have a $2 billion unified network made of three components, namely virtualization, standards, and smart edge terminals. The virtualization is about software-defined satellites which are very flexible. The second component is standards; Intelsat is working towards open standards. The satellite industry has been heterogeneous which makes it difficult to interface and doesn't allow you to get scale. Being part of the telecom network gives us scale.

In this framework, we will chair the NTN segment of the 3GPP as part of the Release 17 of 5G standardization efforts, which is considered a first in the industry. Never before has a satellite operator been involved in 3G or 4G standards.

Moreover, we're the first satellite operator to get MEF Ethernet certification which will allow our network to interface seamlessly with the Ethernet portion of the network.

The third part of the standards is: DIFI (digital IF). At the moment the radio signal- IF is analog and we need a standard around the digital IF.

As the 5G standard is adopted, new markets will evolve for satellite operators, IoT, private 5G network and cellular backhaul for densification because the wave form of 5G doesn't go as fast as transmitting more information so it needs more cell sites and edge devices. Based on some of those opportunities, a market doesn't really exist today for satellite; it's just starting and in 2030, it will become an 8 billion dollar market for satellite operators. There's a driving force for us to adopt 5G and embrace it and work with the telco operators.

How will this impact the affordability and accessibility of satellite broadband services in the future?

The market we see growing is cellular backhaul, cloud connectivity, and private networks. People have this strange idea that satellites are not able to do video and voice over and the first thing people want to see from our network is whether Teams works and when they see it working seamlessly, they are convinced that geo-satellite works.

If we look outside the traditional telco, we see a lot of growth in mobility. Our FlexMaritime Networks is a managed service that we provide and that connects ships using our capacity. We connect 9,000 ships today. In addition, we acquired in-flight connectivity company GOGO commercial aviation as well this year and we've incorporated that into Commercial Aviation Intelsat.

We are looking at how we can bring our relationships with the media companies to aircraft passengers and how to strengthen our opportunities in that area. We already work in the US with T-Mobile for providing a more seamless experience for the passengers when they get on an aircraft. As we build out our 5G core, and we have a 5G network on the plane, we become a roaming service provider for them.

Will the industry see the same growth cycles back in five or 10 years ago?

Satellites industry has gained more awareness in recent years which has allowed us to meet more MNOs and high profile executives and has given us the chance to tell our story: We're a 5G multi-led multi-orbit satellites network. We are getting a lot of business for growing cellular backhaul.

We also see opportunities in government-lead initiatives to connect schools, hospitals, and governments remotely. These government-funded projects aim to reduce the digital divide and found in satellites the solution to solve their issues.

Moreover, private LTE is getting more interest in terms of extending cloud to remote areas. **TR**

> As the 5G standard is adopted, new markets will evolve for satellite operators, IoT, private 5G network and cellular backhaul for densification
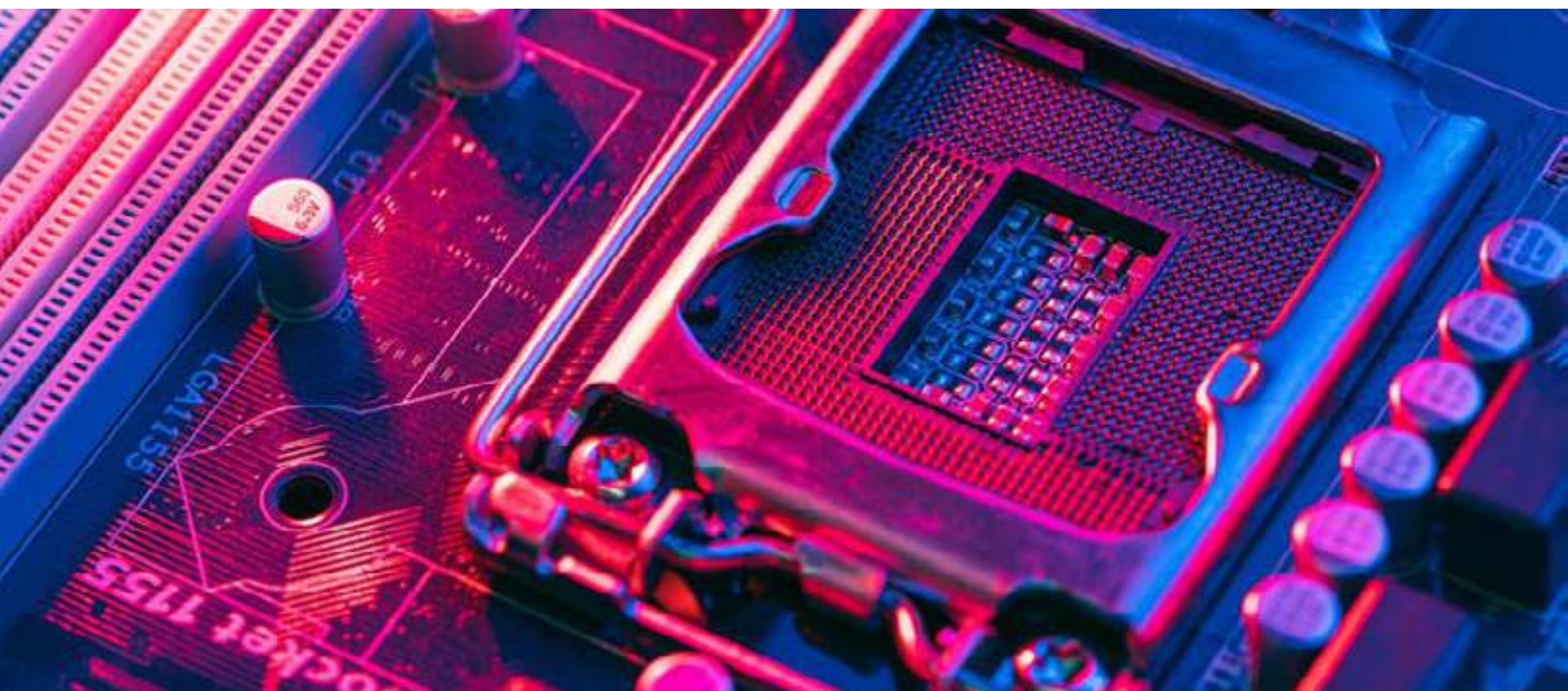
Operators Hopeful That Semiconductors Shortage Eases

Semiconductors are a critical building block in today's 5G-driven digital age. In its second year and since the height of the pandemic in 2020, the ongoing global shortage has adversely affected the inventories of smartphones and IoT devices and impacted revenue for telecom operators.

Based on Gartner's forecast, mobile phone sales will decline 7.1% this year, with Gartner correcting its earlier projection that mobile phone sales would grow by 2.2%.

Given the current shortage, SK Telecom recently launched Sapeon, a semiconductor company that provides for growing ventures in artificial intelligence services. According to Statista, the AI semiconductor market is expected to reach $70.9 billion in 2026, increasing from $10.9 billion in 2021.

Sapeon's CEO, Soo-jung Ryu, shared that the company aims to sell to data centers and big tech players in the US and Europe.

"We would like to test case the SAPEON chip in multi-access edge computing and we see telecom operators like Deutsche Telekom AG as possible partners to collaborate [with] in Europe," Ryu said.

Inevitably, the current chip shortage of semiconductors has seemingly become the bargaining "chip", exacerbated by growing geo-political tension between China and the US. Other political factors have aggravated the global situation,

resulting in smartphone shipments dipping in the second quarter of this year – the fourth consecutive quarter of slippage.

> The AI semiconductor market is expected to reach $70.9 billion in 2026, increasing from $10.9 billion in 2021

At the epicenter of this crisis is Taiwan, a leader in manufacturing semiconductors. Taiwan-based TSMC, for instance, contributes to about 64% of the global semiconductor market. Given that an assortment of 4G and 5G network equipment – including routers, base stations and backhaul infrastructure – requires semiconductors, such a shortage can derail network expansion plans for telecom operators worldwide.

One of the countries most strongly affected by this is India. Figures by the Indian Cellular and Electronics Association (ICEA) revealed that Taiwan's foundries provide more

than 75% of the chips used in mobile devices made in India – the biggest market for smartphones. Given the volatile global supply chain for chips, the country has rolled out an "India Semiconductor Mission" plan to launch semiconductor and display fab manufacturing to cater to and become self-sufficient in coping with present and future demands, which are expected to escalate when the country embarks on 5G services.

Ashwini Vaishnav, India's minister of electronics and IT has remarked that "India will need at least 10 semiconductor fabrication units in the coming years and the government is ready to invest in several more projects." There are also plans to turn India into a global manufacturing hub for chips.

New US Law Threatens to Add Woes to Global Chip Supplies
In mid-August, the China Semiconductor Industry Association (CSIA), a state-backed trade group, called out the US Chips and Science Act as a violation of fair trade that could potentially upset supply chains worldwide.

The new law called the "Creating Helpful Incentives to Produce Semiconductors and Science Act of 2022" is meant to deter foreign investments in advanced chip-making technologies in China, with the provision of $52.7 billion in subsidies over the next 5 years to attract semiconductor manufacturing to the US. The new law also includes a 25% investment tax credit for chip plants worth an estimated $24 billion over the next decade.

This new law has since received backlash from the CSIA, as the group claims that this new US law violates "fair, open and non-discriminatory practices in the industry". In a statement, CSIA said that this would harm the spirit of the World Semiconductor Council's charter and that of the World Trade Organization's as well.

As the largest semiconductor market in the world, China is facing

unprecedented demand from industries, including automotive, and is increasing its semiconductor imports to meet the domestic shortfall. According to official data, China's IC production reached 27.2 billion units, representing a 16.6% decline year-on-year.

However, there appears to be some respite soon regarding the situation. Data from the Semiconductor Industry Association (SIA) revealed that global chip sales in June slumped by 18% from May, marking six consecutive months of decline. This could be an indication that demand for chips is easing.

South Korea, being the largest producer of memory chips in the world, also reported slower chip exports for the fourth consecutive month in July. Regardless, semiconductors will continue to be contested between countries. Instead of alienating countries from resources, it might be a wiser decision to rally together, pool resources and secure demand for these all-important chips. TR

> Semiconductor Industry Association (SIA) revealed that global chip sales in June slumped by 18% from May, marking six consecutive months of decline

Sunsetting 2G and 3G to Focus on 4G and 5G Services

Increasingly, mobile operators are decommissioning 2G and 3G to make way for 4G, 5G and the future of connectivity.

In Europe, where this transition is most prominent, Orange is one of the latest operators to adopt the trend, announcing earlier this year that legacy 2G and 3G will be gradually phased out from 2025 to 2030. The mobile operator had said that doing so will allow it to optimize its management of networks and upgrade its infrastructure to facilitate the growing adoption of 4G and 5G. Orange noted that radio frequencies used for 2G and 3G will be used to enhance the overall capacity and coverage of 4G and 5G

networks, thus creating improved user experiences.

After Europe, Asia is another region that is leading this change. According to the latest findings from the Global mobile Suppliers Association (GSA), Europe and Asia are spearheading this trend, with Europe accounting for 63% of all switch-offs and second-place Asia responsible for 23% of all 2G and 3G network switch-offs. Both are followed by North America. Globally, 75 operators in 42 countries have completed or are planning the sunsetting of 2G, while 23 operators in 14 countries have already

completed this process. Similarly, 74 operators have completed or are sunsetting 3G in the pipeline, with 26 operators having already done so. The finding noted that the peak year for 2G and 3G decommissioning will be 2025.

Regarding this finding, Joe Barrett, president of the GSA, opined that 2G and 3G were highly important innovations when they were first introduced, but as greater technological advances have emerged, their importance has since waned, and usage of both technologies is now diminishing worldwide.

In Asia, NTT Docomo was the first to switch off 2G in 2011. The following year, South Korean operators followed suit. More than a decade later, countries like Singapore and Taiwan have already completely decommissioned 2G and/or 3G.

Currently, Indonesia is aiming to soon decommission 3G in order to focus the country's resources on 4G and 5G coverage. The Indonesia Ministry of Communications and Information, KemKominfo, has urged operators to "unwind 3G offerings". The phasing out of 3G takes priority over the decommissioning of 2G as the former will be superseded by more effective 4G and 5G, while the latter is primarily used for voice communications.

This year, Telkomsel has since commenced the shutdown of its 3G networks in East Jakarta, following the expansion of 4G networks in this area, as well as other parts of Jakarta. To support this switchover and allow customers to instantly switch to 4G services, the operator has partnered with vendors to launch 4G products at affordable prices.

Similarly, Airtel Lanka embarked on a process in June to discontinue 3G networks in order to free spectrum for 4G usage. Airtel is given 15 months to make this transition and convert its 3G customers to 4G, as granted by the local authorities.

In Malaysia, plans are underway for 3G networks to shut down by the end of the year, as commissioned by the Malaysian Communications and Multimedia Commission. As some parts of the country face 4G network issues with poor or no 4G coverage, the industry is time-pressed to improve and expand 4G networks to meet their projected timeline of switching off 3G in order to focus on 4G and 5G services.

In Australia, 3G networks are slowly being phased out by Telstra, Optus and Vodafone. Telstra has committed to switching off all 3G by June 2024, while Optus and Vodafone are, in the meantime, still operating on 3G for select spectrums. Meanwhile in

India, where 4G services are quite readily available, and 5G is still in the pipeline, 2G continues to dominate, as millions still do not possess a smartphone and rely on 2G services for voice communications.

Worldwide, operators are divided on their approach toward 2G and 3G. While some have shut down 2G and are now focusing on terminating 3G (such as in the US), others are doing the opposite. For instance, Dutch operator KPN switched off 3G earlier this year but intends to maintain 2G until 2025. And in Africa, unaffordable 4G devices have led to the continued use of 2G mobile devices for basic connectivity.

In one of the latest moves, SmarTone will terminate its 2G services on 14 October, as market demand for 2G services has been declining. The company revealed that as of April 2022, the number of SmarTone customers using 2G handsets or devices only accounts for less than 0.1% of its customer base. With this new development, current spectrum resources will be utilized for 4G and

5G networks to deliver better network experiences to customers.

Regardless of the approach taken by governments and operators, there is a unanimous desire to grow 4G and 5G penetration and usher in a new generation of mobile connectivity. **TR**

> Globally, 75 operators in 42 countries have completed or are planning the sunsetting of 2G

Kevin Susman, VP of Brand and Communications, MATRIXX Software

In Digital Transformation, Distinguishing New From Innovative Is Key

I lead innovation workshops all over the world for companies seeking to extract greater value from their digital transformation investments. While it may seem there is nothing left to teach on the subject, it is clear from the many individuals I work with that, somewhere between the intention of digital transformation and the implementation of it, businesses have lost sight of its commercial benefits.

It's not that the companies I counsel in my Art of the Possible workshops don't want to transform. They do. It's not that they lack expertise or capability or even desire or effort. These are smart, capable, experienced people. Yet they all share a common thread, a sort of analysis paralysis—with so many options to choose from, so many ways they could evolve their commercial models, they suffer paralysis of choice, and subsequently choose nothing. More than technology, more than analysis, more than consultation, what most teams need, at the risk of sounding cliché, is an instigator to help them think differently.

I hesitate to use the word "innovation," because it is so widely overused and misused. Many believe they are innovative, even more transact upon it. But innovation is precisely what these and so many organizations need, if only they could even agree to what innovation is. Which is why in my workshops, we have to begin by resetting entirely on what innovation even means: is it new or is it innovative?

At first glance, you may think these are one in the same. In fact, when I quiz participants whether a product is new or innovative, most aren't even sure where to begin with making the assessment. As we work to push deeper and the edges of both terms grow sharper, it becomes clear how new and innovative represent fundamentally different strategic objectives.

Are you defining innovation correctly?

For the purpose of my work, I define innovation as the fundamental reimagining of the established way of doing things. To compete on the innovation front, it's not enough to have something new that looks or performs differently or even better. Innovative features and capabilities are not enough, either. Instead, the entirety of the ownership experience must be fundamentally different. Tesla is a good example of an innovative

company. No matter what you think of their vehicles, it doesn't change the fact that everything from how you buy their cars to how their technology continuously evolves over time, has created a radically reinvented car ownership experience.

Setting aside the obvious reasons why creating an entirely new experience is so difficult, it is compounded for traditional, analog organizations that need to commercially transform themselves. In order to create true innovation, there must be an acceptance that the market is inefficient and/or flawed. For those incumbent players who have successfully thrived on those very market inefficiencies, there is a real struggle with letting go of the status quo. One of the reasons disruptors thrive is that, much like Tesla, they have the advantage of a clean slate. Many companies do not.

This doesn't mean analog companies should accept defeat and forego innovation entirely. Commercial innovation can yield tremendous benefit. Just as Sun Tzu pointed out in the Art of War, home-field advantage affords a huge upside. It forces your competitors to compete on your ground and your terms. Innovative products work in a similar way. By destroying established norms, you are, in effect, forcing everyone else to compete on the expectations your product has set. Unlike with first-mover advantage, commercial innovation truly disrupts competitors that are not fundamentally organized to compete against those new expectations.

The power of new
Innovation isn't the only way to make money in the marketplace, however. Apple is a brilliant example of a company that has become hugely profitable by monetizing the new. As a commercial strategy, new is built on a much simpler premise—to continually improve upon the product in order to extract greater value from it. In many ways, new is much easier to implement for a go-to-market and commercial strategy. As opposed to status quo-destroying innovation, the

success or failure of a new product or service is based upon already established expectations. Not to oversimplify, but winning with new is about better execution than the competition, as opposed to better innovation.

Which is exactly why it is so important for analog companies to distinguish between the two. Consider, for example, the BMW i3. It was launched in 2012, the same year as the Tesla Model S. However, unlike the Tesla, the i3 you own is the i3 you bought. The car is loaded with exciting, inventive features; however, from a market perspective, all those features simply added up to a new car, not an innovative BMW. The result? The BMW i3 suffered from being forced to compete on the terms being defined by the innovative Tesla Model S. The i3's disappointing sales numbers, and subsequent discontinuation in the US, are compelling proof of what can happen when new and innovative are confused.

Separating new and innovative and then making them both work for you
When considering digital transformation through the lens of innovation, it is tempting to want to always do more. Implement more technology, create more services or add more functionality to your product. This mindset leads many companies to fixate too much on the competition, or fall victim to an endless pursuit of the killer use case. In reality, the best way to overcome paralysis of choice is to relentlessly cull and do less. By rethinking the implications of innovation, analog companies can focus on delivering greater value for their customers, and that becomes the North Star for the innovation journey.

What about commercializing the new? Similar to the innovation journey, such requires abandoning the one killer use case. However, where it differs, is by recognizing that succeeding with new is about embracing a kaleidoscope of incremental improvements that collectively deliver improved value across multiple dimensions— rapid iteration, experimentation

as part of the culture. The result? New experiences, new services, new products, new journeys, new campaigns, all adding up to a better and more compelling experience for customers.

Embrace the difference to deliver successes
For analog companies looking to eliminate paralysis and succeed with transformation, disentangling the new from the innovative in a commercial strategy is imperative. As hard as it is to accept, there is no one-size-fits-all approach.

They will need their technology investments to make themselves better than the competition so they can compete with the new. Whether those improvements are in user experience, product mix, speed of experimentation, or all of these things and more, they will need to move quickly and experiment often to give their customers greater value which translates into a better bottom-line.

In addition, they must develop a greater tolerance for risk such that they can embrace innovation. This will require accepting that they have benefitted from market inefficiencies that now need to be destroyed, and then looking for ways to maximize the upside to their business while minimizing the fallout. Perhaps just as difficult, when they do pivot, they'll need to remember that their brand is built on their promises and the expectations of their customers.

In truth, the analog companies I advise will require both new and innovation strategies in order to succeed. What will add value in one market will be meaningless in another. What will work for one company won't for another, and none of it will happen overnight. But by culling options, and asking how they could do things entirely differently, participants can refocus on what's important - guiding their key stakeholders to identify where opportunities for new exist, and then shaping and informing innovation investments to achieve transformative results. **TR**

Lindsay Notwell, Senior Vice President, 5G Strategy & Global Carrier Operations, Cradlepoint

Private Cellular Networks for Next-Gen Enterprise Connectivity

Revenue for the global private cellular network (PCNs) market is poised to reach $8.3 billion by 2026, according to forecasts by the IDC. Tapping on the growth of this emerging market, Cradlepoint, together with Ericsson, converges technologies for private cellular that modernizes daily operations and communications for enterprises. Telecom Review Asia Pacific connects with Lindsay Notwell, Senior Vice President, 5G Strategy & Global Carrier Operations, Cradlepoint, to learn about breakthroughs in PCNs and their value to industries.

Private cellular networks, though still emerging, are quickly gaining traction. Can you tell us about the current market for private cellular networks globally and in the Asia Pacific?

The propagation characteristics of Wi-Fi are simply inadequate to support emerging enterprise use cases. While 2.4GHz Wi-Fi offers large coverage at lower data rates, 5GHz Wi-Fi delivers high data rates but a smaller coverage area. On top of coverage and capacity limitations, enterprises face security vulnerabilities – reasons that lend acceleration to PCNs. The advent of Industry 4.0, together with 5G innovations that bring capabilities such as low latency, edge compute and high bandwidth, drives further interest in 5G private networks to support connectivity at scale.

In the words of George Mulhern, CEO of Cradlepoint, "Anything that can be wireless, will be wireless." PCNs are transforming LAN, similar to the early days of SDN and SD-WAN. We believe that PCNs hold the future of connectivity.

Increasingly, enterprises and governments demand a greater degree of control in an end-to-end environment to achieve enhanced security and performance capabilities. Since Wi-Fi and public networks cannot provide the desired reliability and security in enterprise settings, private cellular becomes a requirement. Widespread adoption of MEC and edge computing fuel the need to be closer to the edge, making PCNs a value proposition. Currently, we are witnessing a rise in use cases across mines, large distribution centers, manufacturing facilities and transportation hubs, where security and interference-free connectivity are critical.

As we know, one of the lifeblood of PCNs is spectrum. Some world governments have started to make dedicated spectrum available for private networks to enable IoT and

other applications. For instance, Germany has opened doors to private networks by offering corporate licenses to spectrum. In the US, the Citizens Broadband Radio Service (CBRS) allows unlicensed, lightly-licensed and licensed spectrum to be shared. However, outside of the US, we find ourselves working with operators that possess licensed spectrum to deploy PCNs. Even though operators have been developing the ecosystem to provide private cellular, it is not the same when enterprises can deploy their networks.

What are the challenges for deploying PCNs and how is Cradlepoint making breakthroughs in this area?
Our first private cellular network was deployed about six years ago in the north of the Arctic circle in Canada, to conduct mining in a remote area. To provide wide-area connectivity, one of our partners built a dedicated, on-site infrastructure that provided Wi-Fi and ethernet using our endpoints. This was how we became a hub for wide-area connectivity and got started on PCNs.

In the market, PCNs have been slower to take off in countries when spectrum is unavailable or the process to obtain spectrum is unclear to enterprises. Yet, enterprises are still on the hunt for a solution that is affordable, reliable, secure and easy to implement and use to support new applications. But enterprises must understand that Private Cellular requires proper planning, many components, and expertise. An average enterprise simply does not have the resources that operators do, which is why it is so important to find vendors and system integrators that have the experience and know-how to select the right products for the enterprise needs.

In the industry, we recognize that many manufacturers and operators possess the infrastructure for PCNs, but do not have end-to-end solutions that enable easy private cellular deployment for enterprises. Take for instance CCTVs, robotics and drones that do not have 5G radio built into them: Cradlepoint comes in with endpoints that convert 4G or 5G into Wi-Fi and ethernet connectivity to enable private cellular connectivity. With Cradlepoint software platform, NetCloud Manager, enterprises have more visibility at the edge of the network, while also making it easy for them to manage thousands of endpoints so that these devices can operate seamlessly. Cradlepoint is dedicated to working with our integrator and ecosystem partners to help deliver the best solutions for every niche requirement.

Can you tell us about partnerships forged by Cradlepoint and elaborate on some real-world use cases?
One use case is the mining industry in Canada, where our endpoints powered by NetCloud connect 10-meter high autonomous earth movers that would otherwise incur a downtime cost of $100,000 per hour if connectivity is disrupted. Another use case is ports, where private networks cover a wide area to support connected devices such as cameras to track logistics, safety and security. These networks also play a big role in autonomous logging trucks, shipping cranes and autonomous vehicles for governments. These business-critical use cases require great precision and monitoring, as well as uninterrupted connectivity as it can impact safety. In these industrial-setting use cases, private networks triumph over Wi-Fi. In the wake of the pandemic, we are also seeing a lot of traction from the public sector, particularly in distance education, where PCNs help to control the content that students have access to. This is the same for corporations with large campuses, where private networks are deployed to ensure coverage, easy management and data that is stored internally.

With our NetCloud Services, we have a platform – not just a device – that eases management and the ability to communicate sensor data to the right places. Our framework has been expanded to platforms like Amazon IoT Greengrass and Azure IoT Central to bring relief to operational work. Essentially, we offer enterprises a private cellular solution at the edge that is easy to use, wide-area, secure and affordable when harnessing emerging technologies. **TR**

> Widespread adoption of MEC and edge computing fuel the need to be closer to the edge, making PCNs a value proposition. Currently, we are witnessing a rise in use cases across mines, large distribution centers, manufacturing facilities and transportation hubs, where security and interference-free connectivity are critical

Console Connect Partners With Master Concept to Deliver Cloud Networking Solutions to Businesses Across APAC

Console Connect announced that it has teamed up with cloud technology advisor, Master Concept, to provide cloud networking solutions to businesses across Asia Pacific. This partnership aims to help boost the efficiency of enterprises and improve overall business outcomes through a single management portal.

Through the integration of Console Connect Software-Defined Interconnection platform within its cloud solutions portfolio, Master Concept can provide added value to major cloud platforms and SaaS providers across the globe with more advanced network security and performance for its enterprise customers.

The single management portal will also allow Master Concept to offer a variety of cloud connectivity solutions for its customers. These include direct Layer 2 connections to hyper-scale cloud providers, such as AWS, Google Cloud and Microsoft Azure, and Layer 3 mesh connectivity between and among different cloud providers and cloud regions.

This platform offers wide-ranging end-to-end SLAs that enable it to access mission-critical and latency-sensitive applications and workloads. It can be integrated via API, which is bolstered by PCCW Global's high-performance network.

In a statement, Michael Glynn, senior vice president, Digital Automated Innovation, PCCW Global said, "Secure and flexible connectivity is fundamental to any cloud transformation project. We are excited to be working alongside Master Concept to enhance their cloud solutions portfolio and make it easier for enterprises to connect to the cloud across Asia Pacific and worldwide."

Meanwhile, Master Concept's Director and Co-founder Dennis Wong noted, "Through Console Connect, we have been able to quickly bring new cloud connectivity solutions to market and help our enterprise customers get closer to the cloud. We look forward to growing our collaboration further through the new PartnerConnect program."

Console Connect's PartnerConnect program is designed to drive revenue growth and customer success through the Console Connect Network-as-a-Service (NaaS) platform. The program helps managed services providers, systems integrators, value-added resellers and application providers extend their service portfolio and securely connect their customers, clouds and applications worldwide.

The benefits of the PartnerConnect program include the ability to integrate Console Connect services and applications via API, private connections over one of the world's largest high-performance networks with assured quality of service and the ability to scale and flex on-demand, and access to tools, technical and commercial support, training and sales/marketing expertise.

Converge ICT Now Offers Data Center Service Connectivity Solution

Philippines' fiber broadband provider Converge ICT Solutions, Inc. announced it is now offering its Data Center Express (DC Express) to address high-capacity requirements of its customers from the residential and business sectors.

DC Express delivers clear channel, dedicated connectivity between data centers, such as those used in BPOs, banks and multinational companies, through Converge's Data Center Interconnect Network. This product leverages the latest DWDM (Dense wavelength division multiplexing) technology for high-capacity requirements to reach data transfers of up to 100 Gbps to data centers in the Philippines and, in the future, key international data centers as well. DC Express is complemented by the Optical Transport Network, for customers who want to use their own network terminals for their high-capacity requirements.

Aside from supporting Ethernet connectivity, this service also supports different protocols to interconnect customer equipment housed in the data centers. For the subscriber's Storage Area Networking requirements, Fiber Channel is the best solution as DC Express supports FC800 (20G) and FC3200 (40G) for business-critical applications.

DC Express aims to cater to the connectivity needs of enterprises whose equipment is based in data centers. The service can be provisioned quickly, has enterprise-grade SLAs, and has a 24-hour support and restoration team.

Converge Chief Operations Officer, Jesus Romero, said in a statement, "DC Express is yet another expansion of our services, leveraging on our inter-data center connections, to ensure faster, better, and more secure data transfer for our enterprise subscribers."

Tencent Cloud Teams Up With Acclivis to Bring Cloud and ICT Offerings in SE Asia, Mainland China and HK

Tencent Cloud and technology services provider Acclivis Technologies and Solutions announced that they have signed a strategic partnership to bring private, public and hybrid cloud and ICT solutions to enterprises in Southeast Asia, mainland China and Hong Kong. Tapping Acclivis' presence in Singapore, Malaysia, Indonesia, Thailand, Philippines and Hong Kong as well as Tencent Cloud's expertise and experience in China, the collaboration primes both parties to be the go-to partners for Southeast Asian enterprises who want to access China as well as Chinese enterprises keen to expand in Southeast Asia.

The combined platform will offer Tencent Cloud's cloud computing services and industry solutions available for verticals including financial services, entertainment, gaming, media and entertainment, retail and more.

Additionally, the collaboration also provides a one-stop ICT platform featuring the internet services, managed services and IT end-user support provided by Acclivis to address the diverse and interconnected needs of every enterprise's digital transformation journey.

This full-suite ICT platform will allow enterprises to enjoy a better customer experience through simplified IT management using AI and machine learning, and also reap cost savings from the synergies expected from the partnership.

Further highlighting Tencent Cloud's commitment to bringing only the best cloud solutions to every part of the world, Tencent Cloud said it is pleased to team up with Acclivis to serve Southeast Asian enterprises who want to expand their reach to China.

Kenneth Siow, regional director for Southeast Asia and general manager of Singapore, Malaysia and Indonesia, Tencent Cloud International, said, "Enterprises all over Southeast Asia have clamored for cloud technology that would help them easily connect their businesses to China. We are pleased to enter this new agreement with Acclivis to help businesses and organizations expand their global footprints, whether they are from Southeast Asia or China."

Meanwhile, Marcus Cheng, CEO of Acclivis Technologies and Solutions, added, "Acclivis' mission is to provide reliable and comprehensive ICT solutions to help organizations realize the power of digital transformation. Leveraging on our deep roots in Southeast Asia, our internet connectivity and managed services capabilities, and Tencent Cloud's years of experience in providing cloud services to various industries, our new partnership will put us ahead of the curve to access greater opportunities in Southeast Asia and China."

Thailand, Malaysia Among the New Google Cloud Regions in APAC

Google has announced that it is planning to expand its cloud services in more countries in the Asia Pacific, including Malaysia and Thailand. The company said in a statement that the move is to meet the growing demand for cloud services in the region.

Google is bringing three new Google Cloud regions to Malaysia, Thailand and New Zealand — on top of six other regions that were previously announced: Berlin, Dammam, Doha, Mexico, Tel Aviv and Turin.

It said that these new cloud regions represent their ongoing commitment to supporting digital transformation across Asia Pacific. It added that it will continue to invest in expanding connectivity throughout the region by working with partners in the telecommunications industry to establish subsea cables — including Apricot, Echo, JGA South, INDIGO and Topaz — and points of presence in major cities.

These new regions will also be among the internet giant's 34 cloud regions currently in operation across the globe, 11 of them located in Asia Pacific. They deliver what Google says to be high-performance services running on the cleanest cloud in the industry.

It added that enterprises across industries, startups and public sector organizations across Asia Pacific will benefit from key controls that enable them to maintain low latency and the highest security, data residency and compliance standards, including specific data storage requirements.

"The new Google Cloud regions will help to address organizations' increasing needs in the area of digital sovereignty and enable more opportunities for digital transformation and innovation in Asia Pacific. With this announcement, Google Cloud is providing customers with more choices in accessing capabilities from local cloud regions while aiding their journeys to hybrid and multi-cloud environments," said Daphne Chung, Research Director, Cloud Services and Software Research, IDC Asia/Pacific.

Singtel to Divest 3.3% Stakes in Airtel for S$2.25 billion

Singtel's wholly-owned subsidiaries have entered into a share purchase agreement to sell a 3.3% direct stake in regional associate Airtel to Bharti Telecom, a joint venture between Bharti Enterprises and Singtel, at any time before November 23, 2022. The sale will unlock approximately S$2.25 billion as part of the Singtel Group's capital recycling strategy.

The transaction is expected to crystallize an estimated S$0.6 billion net gain on divestment for Singtel. This will follow a number of recent capital management initiatives to rebalance and optimize Singtel's associates portfolio, including an increase in stake in Intouch Holdings, the parent company of Singtel's regional associate AIS, and a partial divestment of Airtel Africa.

Arthur Lang, Singtel's group chief financial officer, said, "As long-term strategic investors and partners, the value of our stakes in our regional associates has risen substantially over the years but has not been properly reflected in our share price. This sale in Airtel will be our first ever and seeks to address this gap by illuminating the sizeable value of our holdings in Airtel. It is also part of our capital management approach to take monetisation opportunities that allow us to increase our return on invested capital and enhance total shareholder returns. With this transaction, we will raise over S$2 billion, which will help to fully meet the Group's needs for 5G and growth initiatives in the next few years, and put us in a strong position to grow

our dividends in a sustainable way in line with our dividend policy."

After this transaction, the Singtel Group is expected to own an effective stake of 29.7%, which is estimated to be worth S$22 billion. This comprises a 19.2% indirect stake through Bharti Telecom and a 10.5% direct stake.

Airtel is a global communications solutions provider with over 491 million customers in 17 countries across South Asia and Africa. India's digital economy has the potential to create up to US$1 trillion of economic value by 2025. With the availability of affordable smartphone devices and the pandemic further accelerating digital lifestyles, the number of active internet users in the country is projected to grow nearly 45% from 2020 to 900 million by 2025. 5G is anticipated to further boost demand for digital services and applications. Airtel plans to launch 5G services nationwide, starting with key cities, and further strengthen its leadership in the B2B market.

Ooredoo Plans To Exit Myanmar

Qatari telecoms giant Ooredoo is considering selling its Myanmar unit, a source with knowledge of the matter told Reuters, following the exit of Norwegian carrier, Telenor, in March this year.

Ooredoo is now the only foreign telecoms service provider operating in Myanmar amid the increasing pressure on the local industry, the result of the military coup launched in February 2021.

According to sources cited by Reuters, Ooredoo has notified the local regulator, Myanmar's Posts and Telecommunications Department (PTD), of its plans to sell its Myanmar unit for an undisclosed amount.

One insider also told Reuters that potentially interested investors could include local conglomerate Young Investment Group, Singapore-headquartered network infrastructure operator Campana Group, and telecoms company SkyNet.

No final decision has yet been made regarding the potential buyers. Reuters said the Doha-based telecom firm did not immediately respond to its emailed inquiry. The news agency also said it tried to reach the interested investors, but no immediate comment has been given.

The departure of Telenor earlier this year took place after Reuters last year reported that the PTD has issued a directive, which bans senior foreign executives of major telecommunications firms from leaving Myanmar without permission. After this ban, the junta then released a second order instructing telecoms firms to fully implement an intercept surveillance technology, enabling authorities to monitor various communication channels.

Telecom Review's virtual panels' series continues in

2022

Building on previous years' successes, we continue our mission of connecting the industry's leaders.

The 2022 series of virtual panels will address, among others:

- **5G** monetization
- **Digital transformation:** Progress, results, prevision
- Rethinking **wholesale and capacity** growth strategy in the digital age
- The challenge of **cybersecurity** in a more connected world
- **Network automation:** The key to success

ZTE Reports Double-Digit Gains in Revenue and Profit in H1

ZTE has posted its financial results for the first half of 2022. According to the results, for the six months ended 30 June 2022, ZTE achieved operating revenue of RMB 59.82 billion, 12.7% higher than a year earlier. During the period, net profit attributable to holders of ordinary shares of the listed company reached RMB 4.57 billion, an increase of 12.0%, and net profit after extraordinary items attributable to holders of ordinary shares of the listed company amounted to RMB 3.73 billion, representing a year-on-year increase of 65.8%. Basic earnings per share was RMB 0.96.

In the first half of 2022, ZTE, despite the challenges of the pandemic and complex external environment, has ensured the security and stability of its own supply chain, realized continuous delivery to its global customers and continuously improved the company's

operational quality and efficiency, leveraging its advantages of being an ultimate cloud company, rich experience in digital transformation, mature business continuity system, and its own self-developed cloud platform that can support tens of thousands of people across the globe to work online.

ZTE has been committed to strengthening its end-to-end R&D investment and innovations. In the first half of 2022, the company's R&D spending reached RMB 10.15 billion, accounting for 17.0% of its total operating revenue.

From January to June of 2022, ZTE's operating revenue in both domestic and international markets and its three major businesses (carriers' networks, government and enterprise, and consumer business) all achieved double-digit increase year on year. For the domestic market, the operating revenue reached RMB 40.60 billion, a year-on-year increase of 12.9%, accounting for 67.9% of the total operating revenue, while for the international market, the operating revenue amounted to RMB 19.22 billion, a year-on-year increase of 12.3%,

covering 32.1% of the total operating revenue.

In terms of carriers' networks, ZTE achieved an operating revenue of RMB 38.72 billion yuan, an increase of 10.5%, compared with a year earlier. In the operators' traditional network market, ZTE proactively participated in the global 5G constructions including 5G network, Gigabit fiber network and 5G transport network, and continuously strengthened the competitiveness of its products and solutions, building excellent cost-effective networks for its customers and optimizing the market structure accordingly.

To date, ZTE has entered into 5G cooperation with over 110 operators across the globe, covering major markets including Europe, Asia Pacific and the Middle East. Meanwhile, the company has actively seized the opportunity of domestic operators' cloud-network transformation, and deeply integrated its own capabilities with their requirements while providing its well-matched products and solutions. ZTE has secured the domestic operators' centralized procurements for multiple years.

India Offers Free 5G Test Bed to Startups and MSMEs

With an objective to boost the 5G ecosystem within India and to achieve the objectives of Aatmanirbhar Bharat and Make in India initiatives, the Government of India has decided to offer the use of Indigenous 5G Test Bed free of cost to the Indian government-recognized start-ups and MSMEs for the next six months up to January 2023.

It will be available at a very nominal rate to all other stakeholders. The Department of Telecommunications, Government of India has strongly urged all 5G stakeholders – i.e. industry, academia, service providers, R&D institutions, government bodies and equipment manufacturers – to utilize the 5G testbed facilities and expertise to test and facilitate the speedy development and deployment of their products in the network.

In keeping sight of India's specific requirements and to take lead in 5G deployment, the Department of Telecommunications (DoT) approved a financial grant for the multi-institute collaborative project to set up an "Indigenous 5G Test Bed" in India in March 2018 with a total cost of Rs 224 crore. The eight collaborating institutes in the project are IIT (Indian Institute of Technology) Madras, IIT Delhi, IIT Hyderabad, IIT Bombay, IIT Kanpur, IISc Bangalore, Society for Applied Microwave Electronics Engineering & Research (SAMEER) and Centre of Excellence in Wireless Technology (CEWiT).

The Indigenous 5G Test Bed was dedicated to the nation by the Hon. Prime Minster Shri. Narendra Modi on 17 May 2022.

The end-to-end test bed is compliant with the global 3GPP standard and the ORAN standard. Indigenous 5G Test Bed provides an open 5G test bed that enables R&D teams of Indian academia and industry to validate their products, prototypes and algorithms, and demonstrate various services. Further, it provides complete access for research teams to work on novel concepts/ideas holding potential for standardization in India and on a global scale. It provides the facilities of 5G networks for experimenting and demonstrating applications/use cases of importance to Indian society like rural broadband, smart city applications and intelligent transport system (ITS) and will provide help to Indian operators to better understand the working of 5G technologies and plan their future networks.

25ᵗʰ Submarine Network

The largest annual event for the global subsea industry, this event delivers over 100 of the most forward-thinking subsea leaders along with premier subsea technology companies from across the world. Happening in person in Singapore.

Place: Suntec Convention Centre Singapore

07 - 08 SEPTEMBER

Outcomes of Digital Transformation: Ongoing Mission and Vision

Digital transformation is no longer a goal to achieve but one of the pillars of success. Telecom Review will address the next phase of digital transformation in its upcoming webinar.

Place: Telecom Review virtual panel

14 SEPTEMBER

ACC 2022

As the leading telecommunications event in the Asian region, ACC 2022 is where innovation meets opportunity. This is the space where industry leaders learn to adapt to new trends, collaborate with top industry minds, and conquer new heights. This is the year to make your mark at ACC 2022.

Place: BORACAY, PHILIPPINES

19 - 23 SEPTEMBER

Byond Mobile

Connect with the 5G ecosystem, where industries convene with established suppliers and disrupting start-ups across the world, to provide insight and strategies for business leaders seeking to explore and evaluate the latest technology solutions and services.

Place: Samyan Mitrtown Hall, Bangkok

28 - 29 SEPTEMBER

Futurenet

FutureNet Asia focuses on the strategic and commercial priorities in today's digital world and the considerations for the future of the network, dedicated to driving the agenda around 'Network Automation and AI'. This event returns in 2022 as an in-person, networking and thought-leadership event, broadcast virtually too

Place: The Westin Singapore

18 - 19 OCTOBER

Telecoms World Asia

Telecoms World Asia is the premier conference focused entirely on digital solutions and services for Asian Telcos. An incredible line-up of over 120 Asian C-suite telecom leaders is being curated to discuss and debate the future of telco networks, 5G roll out progress, the digitization of customer services/processes and much more.

Place: Centara Grand & Bangkok Convention Centre at CentaraWorld, Bangkok, Thailand

07 - 08 NOVEMBER

Telecom Review Leaders' Summit 2022

The 16th edition of the leading ICT gathering will be held in a hybrid mode where the latest industry trends will be tackled.

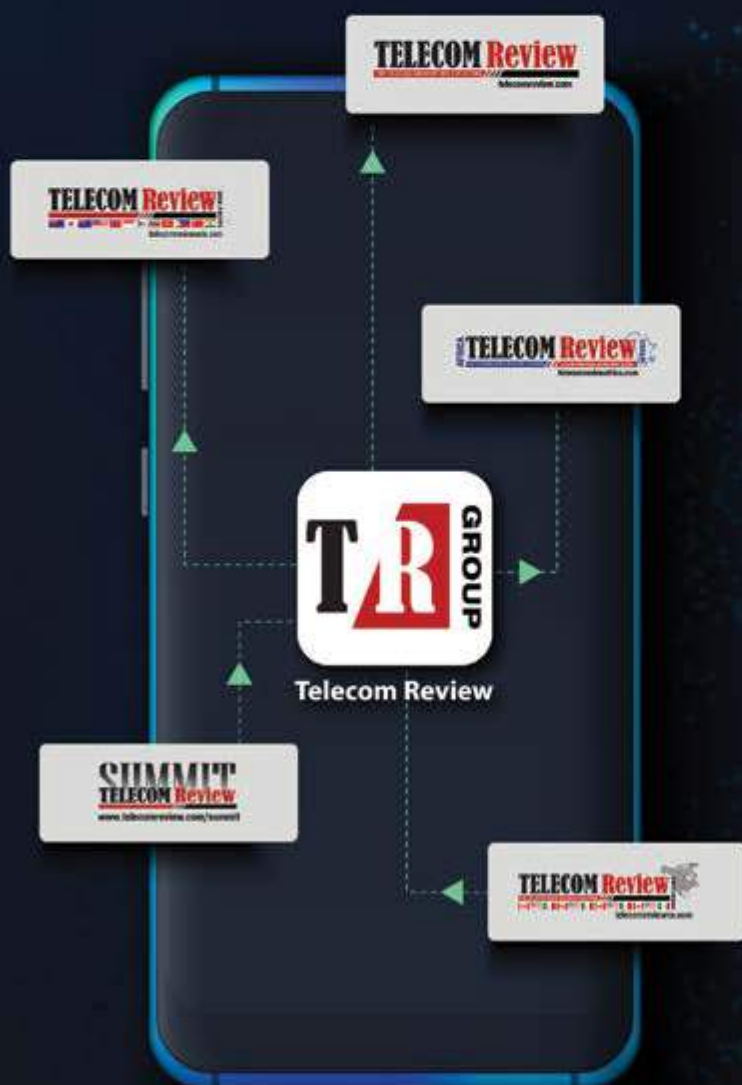**Place:** InterContinental Dubai Festival City, UAE

07 - 08 DECEMBER

Latest updates on:
www.telecomreviewasia.com

TELECOM Review

Leading global ICT media platforms

Middle East

Arabia

Africa

North America

Asia