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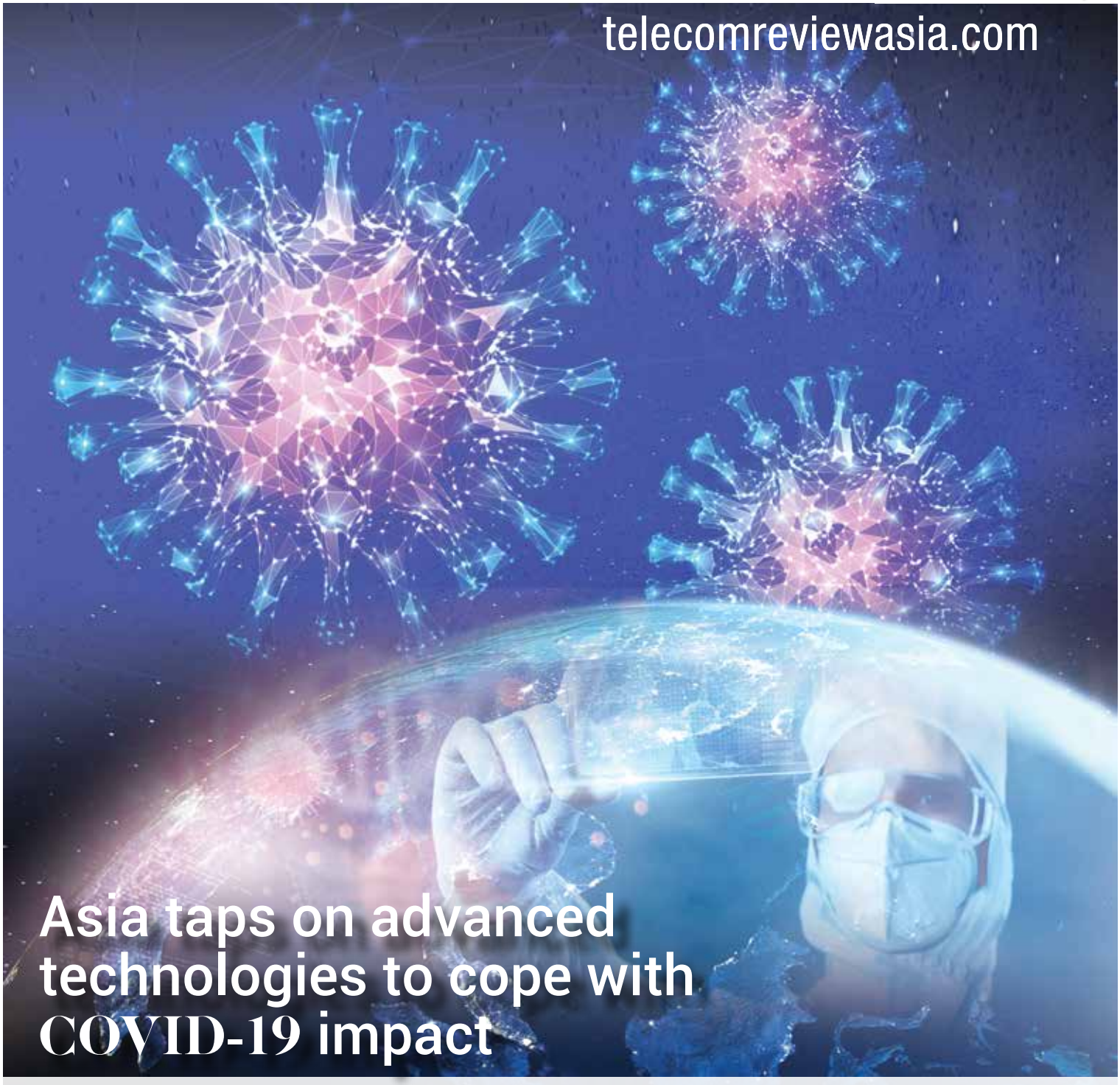

Asia taps on advanced technologies to cope with COVID-19 impact

ZTE revolutionizes industries through paving the path for the digital economy

How key Asia Pacific countries are faring against one another in **5G adoption**

5G and the impact on next-generation **data centres**

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- S91 -

Toni Eid,
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5G: A real opportunity for telecom operators

As we partner with leading vendors of 5G technologies such as Nokia, Huawei, and ZTE, and with leading telecom operators around the world, we are seeing clearly that 5G is not gaining ground only because of the low latency it provides, but also because of its important benefits such as huge network capacity allowing for more developments of 5G fixed networks - which we at Telecom Review have experienced during our hybrid Summit last November - or more 5G deployments for mobile services.

5G is not only faster than 4G. Let's focus on the support 5G networks can bring and what they can deliver in the fixed or mobile services.

5G can support a lot of advanced services such as security (video surveillance), smart services (in the health sector for example),multi-media, video on demand services, gaming, virtual reality (VR), and automated applications (robotics, autonomous vehicles) and it is also very important to the cloud services and real time response and connectivity.

The 5G network will transform business models as we know them and open new revenue streams for both enterprise services and consumers. It will create opportunities for telecom operators which hadn't been available ever since OTTs started cutting down the operators' revenues and income.

Asia taps on advanced technologies to cope with COVID-19 impact

The world ushered in 2020 with anticipation and merriment, only to have moods quickly dampened when a novel coronavirus reared its ugly head. Before long, COVID-19 gripped countries globally. By the end of last year, the pandemic killed about 2 million people worldwide.

As countries struggle with the impact of the pandemic, emerging innovations and advanced technologies have come to the fore and paved the way to help us better cope during this time. While countries in Asia have been responding differently, what is worth noting is the widespread use of technologies such as IoT, artificial intelligence (AI), big data analysis, automation and 5G.

China

A key strategy in China's COVID-19 effort is the use of AI and big data in various sectors. Most notably, the healthcare sector deployed AI in public screening, risk assessment, assistive diagnosis and even vaccine development. For instance, Nankai University and Inference Technology tapped into deep learning algorithm and medical knowledge databases to process a large volume of high-resolution CAT scans, referencing these scans with case data to reach a diagnosis within mere seconds.

Tech giants like Alibaba, Baidu and Tencent have also contributed to the country's effort to contain the outbreak; Alibaba used an AI-powered diagnosis system operating on a gene-sequencing algorithm to make quicker and more accurate diagnoses.

Companies started to share their algorithms to raise efficiency in the country's epidemic monitoring, testing and research effort. Baidu Research, for one, shared its algorithm with prevention centres, gene-testing institutions and R&D institutions to predict and examine the virus' RNA secondary structure in just 27 seconds, instead of 55 seconds. Using model molecular structures obtained from AI, China could also carry out research into effective drugs to treat the virus.

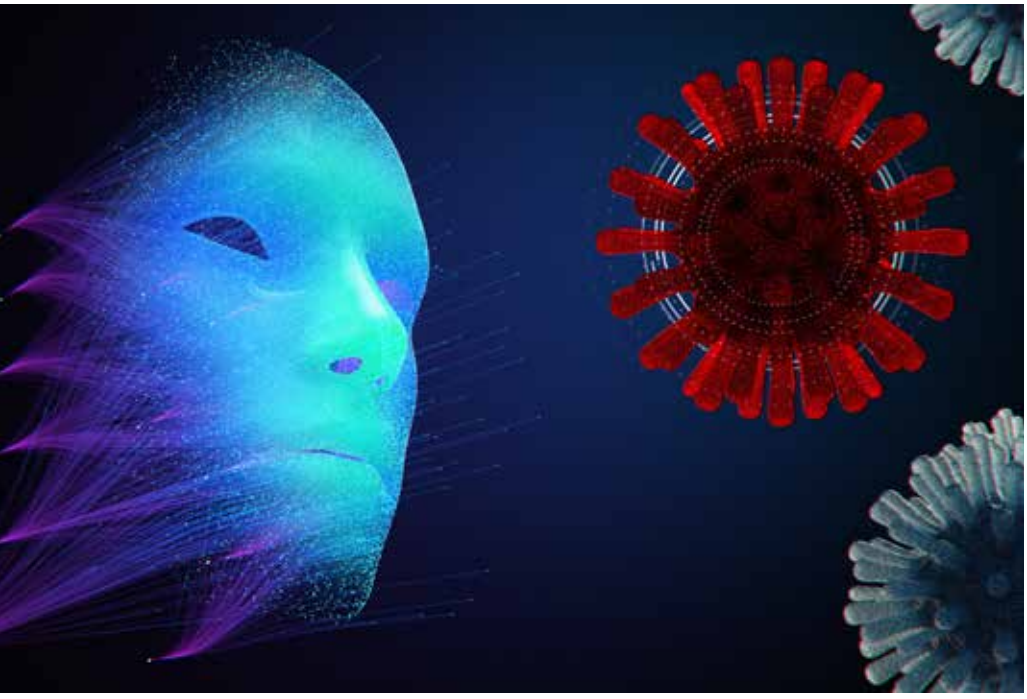
Part of the strategy was also using human-computer interaction to reduce transmissions. A Chinese firm developed contactless voice-controlled elevators. Passengers scanned a QR code to open an app that uses IoT and voice interaction technology to operate the elevator.

To reduce person-to-person contact, and hence transmissions, autonomous vehicles delivered medical supplies to hospitals. In Beijing, Baidu's autonomous micro-cars and autonomous driving cloud services could be accessed by companies that wanted to chip in to help the local community. In addition, Baidu used Baidu Maps to help in prediction and early warnings, analysing travel flow across high-risk areas. Using AI-powered mapping systems and big data, Baidu helped authorities track the movement of Wuhan's population in the initial stages of the outbreak. AI-driven analytics provided real-time insight into the spread of the virus to help authorities better prepare and respond to the virus' spread.

To assist frontline healthcare workers with menial and logistical duties, robots were deployed to disinfect hospitals and distribute medical supplies in isolation wards. In Hebei, China Unicom and a technology provider used epidemic robots to create a health hotline. Using big-data-based intelligent voice technology, these robots surveyed individuals about symptoms and travel history. Elsewhere in Wuhan, Huoshenshan Hospital deployed a cloud medical system to hold all hospital and laboratory data.

Blockchain technology was also critical in ensuring the openness and traceability of COVID-19 information. Lianfei Technology introduced a blockchain monitoring system to track COVID-19 situations in all provinces in real-time.

Likewise, businesses had to embrace innovation and data-driven insights to return to full functionality. Disruption



to pillar companies was minimised using intelligent surveillance systems. For example, Jiangsu Sunshine Group, an industry leader in textiles, biotech, pharmaceuticals and medical devices maintained open using intelligent devices that carry out risk analysis of its employees before they returned to work. These devices sense and analyse vascular conditions and body temperature, coupled with insights from video surveillance and facial recognition technology to assess an employee's health.

While most countries in the world are still grappling with the ills effects of the pandemic, advanced technologies combined with strict governmental interventions have helped China restore a large degree of normalcy.

South Korea

South Korea ranks 8 among 54 countries for AI capabilities, according to a Global AI Index released by Tortoise Intelligence. One of the global forerunners in innovation, South Korea was quick to turn to technology as a means of response to COVID-19.

Following the outbreak, authorities used mobile phone locations, credit card usage and data-mining of CCTV footages to trace movements of infected individuals. This information is shared with the public via an app, using data visualisation of infected cases to reveal detailed maps of infected individuals' precise movements. An Epidemiological Investigation Support System automated investigation processes, using R&D technology to collate and process a large volume of data to provide quick results within minutes.

Widespread testing was first administered using an AI-developed test kit, launched by a South Korean life sciences company in just under three weeks, compared to a few months using traditional methods. An AI-powered system improved diagnosis and provided patient classification. Infected cases were classified into mild, moderate, severe, or very severe, with each category of patients receiving different treatments and admitted to different facilities.

Also using AI, SK Telecom created a senior care system to monitor COVID-19 individuals in quarantine. This AI-powered system monitors seniors for words that suggest the need for medical attention. Another South Korean firm produced an AI-based handheld X-ray camera to scan the chest in just three seconds to provide a heatmap visualisation of abnormal lesions.

To prevent community spread caused by imported infections during the early stages of the outbreak, a mobile app for foreign visitors was used to allow individuals to conduct self-health checks and submit health conditions to the authorities. Through this app, telecommunications operators send texts and guidance on how they can report COVID-like symptoms. In the cities, drones were deployed to carry out disinfecting work and an AI-powered public chatbot was developed to inform the public of ways to respond to the outbreak.

Taiwan

Following the SARS epidemic in 2003, Taiwan has been prepared to face yet another healthcare episode. Given Taiwan's proximity to China and the number of flights between the two countries, Taiwan was perceived to be high-risk. But as soon as the outbreak emerged, the authorities wasted no time in collating data from its immigration and customs database, as well as a real-time national health insurance database to create a big data platform for analysis. Using this platform, authorities identified infected cases based on travel history, clinical visits and symptoms to provide real-time alerts to the population.

Crisis-ready citizens also contributed to a bottom-up approach. Within the community, tech-savvy individuals worked on open data, distributed ledger technology and chatbots to provide real-time data on masks stock levels in pharmacies to prevent panic buying.

A customised app tracked mobile phone signals of quarantined individuals for possible violations. Enforcement officers would be alerted via an automated system when these individuals are found outside of their quarantined zones.

These measures helped the country rein in on infectious cases. For months last year, Taiwan was COVID-free. To date, Taiwan has only recorded over 800 COVID-19 cases.

Japan

In Japan, smart masks connected to smartphones have been developed to ensure users abide by social distancing rules. Integrated with microphones, these smart masks also help to amplify the voice of the user.

With proper sanitisation being crucial to curtailing the spread of COVID-19, Japanese firm Fujitsu introduced an AI monitor that recognises complex hand movements. Developers created 2,000 handwashing patterns using assorted wash basins and soaps to detect people who are not using soap or not washing their hands according to guidelines issued by the World Health Organisation (WHO). In addition, Fujitsu rolled out an elevator with enhanced hygiene functions. This elevator features a contactless panel that uses infrared sensor technology to detect a user's desired floor when their hands hover over the panel. The elevators also provide a signal when it is crowded.

More recently, NEC launched a facial recognition system that identifies people even when they are wearing masks. This touchless verification system can be deployed at the security gates of buildings. It uses AI to ascertain if a person is wearing a mask, and uses exposed parts of the face to perform authentication. Using this system, employees entering office buildings do not need to tap their employee ID card.

Singapore

One of the earliest interventions rolled out by the Singapore government is contact tracing carried out mostly through mobile apps. Singapore became the first country to debut a national app for contact tracing to respond decisively to the outbreak. Eventually, a TraceTogether token was launched.

TraceTogether uses Bluetooth technology to exchange signals with other tokens or smartphones running the app to detect close contact within two metres and for at least 30 minutes with infected individuals. The token encrypts data of nearby devices and stores the information for over three weeks. The token or app only registers locations of users, allowing the authorities to map out contact with infected individuals in the past 14 days.

To address a shortage of ventilators and healthcare staff, ABM developed a tele-ventilator that allows healthcare staff to monitor and adjust ventilator settings remotely and safely through online portals. Compared to conventional means, this new technology is 25 times faster and creates 50 times less traffic to enable more responsive and secure patient care.

To cushion the impact of the pandemic on businesses, firms in Singapore are relying on IoT products and solutions to reap improved productivity, reduced operating costs and increased revenue streams. According to a study by Vodafone Business, 74% of Singapore firms that have adopted IoT decreased their operational costs by almost a third.

Augmented reality has been adopted by the Singapore Zoo and other tourist attractions, and furniture stores took their businesses online during a nation-wide lockdown, using AR to draw customers.

Moving forward, Singapore's Infocomm Media Development Authority (IMDA) has committed to injecting $30 million to accelerate the adoption and commercialization of 5G solutions to benefit individuals and transform businesses.

India

In India, an IoT-enabled mobile-based technology has been developed to provide real-time logistics management across vaccine cold chain monitoring to accurately check location, stock level and temperature of vaccines.

For businesses, COVID-19 exposed vulnerabilities of supply chains in the event of a pandemic. Businesses realised the importance of building resilient digital supply networks across locations and partners. According to Tata Communications, a major telecommunications company in India, increased demand for IoT solutions has expanded beyond manufacturing lines to the fast-moving consumer goods (FMCG) and pharmaceutical sectors.

The chemicals sector also began to favour IoT solutions. Indian specialty chemicals manufacturers who had to ramp up supply to cope with increased demands turned to IoT solution to connect with global supply chains. IoT could facilitate a real-time view of production, inventory and expected delivery times. Using algorithms, businesses could optimise machine settings and tweak production to better respond to supply-chain changes.

This year, tech innovations will continue to dominate many sectors in India. What had previously taken years to deploy will now experience a higher take-up among businesses to ensure continuity.

As COVID-19 continues to rage in India, zMed Healthcare Technologies recently announced a tie-up with the Municipal Corporation of Greater Mumbai (MCGM) to provide digital automation and remote monitoring system for MCGM hospitals' COVID ICU beds. Advanced technologies in healthcare will be utilised to deliver better clinical care to COVID patients, combining LAN, WIFI and IoT technologies to provide connectivity for medical devices with the server, database and web applications. This system features medical device data integration, clinical workflow automation, clinical decision support tools and Clinical and Radiology AI modules to provide comprehensive healthcare.

Conclusion

Globally, countries can no longer turn a blind eye to a digital-first approach to cope with the uncertainties ahead. On top of integrating big data analytics in public healthcare systems to provide enhanced medical attention, governments will rely on technology to roll-out and monitor vaccinations to the public when they become available. Across sectors, businesses will step up on digital transformation and lean towards AI-enable technology, industrial automation and smart logistics.

While COVID-19 has exposed shortfalls in many countries' public health systems and supply chains, it has revealed the potential and power of advanced technologies to overcome the many challenges. It has also been a catalyst for innovation no least.

As countries develop new innovations, collaboration is key as expertise and resources are promptly shared with one another to effectively contain a virus that knows no geographical boundaries. TR

Mr. Bai Yang, vice president of ZTE Corporation in charge of marketing and solution department of APAC

Revolutionize industries through paving the path for the digital economy

As digitalization becomes increasingly fundamental to Asia Pacific's economic growth, Telecom Review Asia Pacific interviews Mr. Bai Yang, vice president of ZTE Corporation in charge of marketing and solution department of APAC to glean insights into ZTE's innovations that help spearhead and support the region's industry digitalisation.

What are the prospects and key drivers of Asia Pacific's digital economy?

Asia-Pacific region is the fastest-growing digital economy in the world, with an annual growth rate of 7.7%. Digital economy has become a key driving force behind economic development. China, Vietnam, Indonesia, the Philippines and other countries have achieved impressive growth in their digital economy. The Asia-Pacific is a young and dynamic region with a huge digital economic potential. As per GSMA's prediction, mobile subscribers will increase by more than 250 million and mobile internet subscribers will increase by near 700 million by 2025. More countries and people will benefit from the improvements in productivity and efficiency, and the booming of digital economy brought by the improved capabilities of mobile services and growth in mobile subscribers. The developing trend of the digital economy in the Asia-Pacific region will become more obvious. Traditional industries are accelerating their transformation and upgrading in digitalization, networking and intelligence, as the scale of the digital economy continues to expand.

Industrial digitization is the main developing direction of digital economy, and 5G mobile internet development is the foundation and driving force of industrial digitization development. Industrial digitalization involves many industries and fields. 5G is the core that connects various fields and technologies, and is the path leading to digital economy development. The communication network with 5G as its core can solve the problems emerging from telemedicine, work, and education during the epidemic for the present. In the long run, 5G will drive the rapid development of other infrastructures, promote the digitalization and intelligentization of various industries, and jointly build a new 5G ecosystem of cross-industry integration and innovation and extensive participation of the whole society.

5G development is not evenly distributed across APAC. How does ZTE navigate these differences to support 5G deployment and its applications?

The Asia-Pacific region is the world's largest and most populous region, and the geographical environment, economic development and telecom policies vary greatly in different countries, which has led to the unbalanced development of communication networks and diverse needs. ZTE has complete 5G end-to-end product lines and integrated solutions in the telecommunications industry. By means of all series of wireless, wireline, services, devices and professional telecommunications services, the company is capable of flexibly satisfying the diversified requirements and pursuit for rapid innovations of different countries, different customers, and different development stages.

ZTE can provide wireless access solutions of full scenarios, frequency bands, and range. Full scenario means it can provide coverage solutions for dense urban areas, general urban areas, suburbs, indoors, hot streets, islands, high-speed rail tunnels and air routes. Full frequency band means it can support 700 MHz, 2.3 GHz, 2.6 GHz, 3.5 GHz, 4.9 GHz and other mainstream 5G frequency bands – it can match different 5G spectrum resources in different countries. Full range refers to multiple channel options such as 64, 32, 8, 4, 2, etc. For economically developed and densely populated areas, 64 channels of ultra-large-capacity devices can be selected; for general cities, 32 channels equipment can be selected, and for vast rural areas, they can choose 8, 4, or 2-channel cost-effective equipment. Operators can flexibly choose solutions and products according to their own 5G construction strategy to achieve cost-optimal network construction.

Some developing countries still have a large number of 4G network construction and capacity expansion needs. ZTE can provide Unisite+ solutions, which can accelerate co-site deployment of

> “ZTE has pioneered the industry's first 5G end-to-end network slicing solution, and has led the 3GPP to successfully establish a 5G slicing enhancement project to realize one network for thousands of industries, and helps operators to provide vertical industries with differentiated slices that are “agile, intelligent, open, and secure”

2G, 3G, 4G and 5G with fewer devices. It supports 1.8GHz+2.1GHz+2.6GHz, 700MHz+800MHz+900MHz at the same time, as well as 5G AAU equipment that supports 4/5G common mode and NSA/SA, which can achieve 4G to 5G smooth upgrade. SuperDSS, the industry's only tri-RAT dynamic spectrum sharing solution, can enable tri-RAT dynamic spectrum sharing of 2G/4G/5G and 3G/4G/5G. SuperDSS is an ideal way of enabling fast 5G deployment on legacy FDD bands and at the meantime offering legacy voice service experiences, so as to maximize spectrum return on investment.

Besides, ZTE can provide 5G common core solution, which is a fully-converged core network solution meeting full access of 2G/3G/4G/5G/fixed networks that can save investment for operators. ZTE's precise 5G transport network solution can meet 5G's full-cycle needs from small-scale network construction to full coverage. The hardware platform can meet the 5G capacity requirements in the next five years.

Based on these, ZTE has pioneered the industry's first 5G end-to-end network slicing solution, and has led the 3GPP to successfully establish a 5G slicing enhancement project to realize one network for thousands of industries, and helps operators to provide vertical industries with differentiated slices that are "agile, intelligent, open, and secure" through a physical 5G network to meet the diverse needs of different industries and scenarios for bandwidth and latency.

In a hyperconnected digital era, how is ZTE positioned to serve enterprises across industries as business demands evolve and grow?

ZTE has collaborated with customers and industry partners to build demonstration projects, precisely empowering the digital transformation of industries, by virtue of its precision cloud networks and empowerment platforms. In the third quarter of 2020, the company had cooperated with industry-leading customers, such as the Guangzhou branch of China Mobile, China Telecom, Fuzhou Metro, China Southern Power Grid, and China Baowu Steel Group to implement innovative 5G applications in transportation, power, mining, commercial complex and other fields. ZTE's GoldenDB has become China's first domestic financial transaction distributed database commercially used in the core service systems of large banks. It has also supported the commercial use of China's first Distributed Database Joint Laboratory. Moreover, the company has commercialized its full-module data center solution and won the bidding for Tencent's centralized purchase while its remote security office solution has been increasingly adopted by large enterprises.

Increasingly, telcos need to deliver more than just connectivity. How does ZTE partner telcos in targeting vertical industries?

On one hand, to meet the fragmented needs of the industry, we build a precise cloud network. Focusing on industry scenarios, ZTE realizes "cloud on demand" through distributed precision cloud, and "network and cloud synergy"

ZTE has collaborated with customers and industry partners to build demonstration projects, precisely empowering the digital transformation of industries, by virtue of its precision cloud networks and empowerment platforms.

through deterministic precision network, supplemented by minimal maintenance, global coordination, and end-to-end security, to develop an integrated solution of precision cloud and network, and joint operators and industry partners to carry out extensive business practices to accelerate industry innovations.

On the other hand, we need to build an empowering platform to form an industry component library with common core technical capabilities, as a platform to empower industry customers and ecological partners, lower the technical threshold, and make it easier to use and upgrade by our partners, to accelerate application innovation and ecological construction. In this scenario, we have built capability components such as big video, big data, IoT, industrial control and telecommuting. All of these capability components can be opened to our partners, allowing rapid innovation application and achieving agile iteration according to industry scenarios.

Can you cite use cases of ZTE's innovative solutions in supporting industry digitisation?

ZTE and more than 500 industrial partners have jointly explored 86 innovative industrial 5G application scenarios.

In the smart port field, we have cooperated with Antwerp port to deploy the first large-scale 5G SA private network in Belgium and provide 5G applications in Antwerp port, Europe's second largest port, to build a 5G+ smart port together with industry partners. Together with the port of Antwerp and many well-known enterprises, we have realized the application of 5G technology in the industrial park.

The 5G SA network deployed in Antwerp covers ZTE 5G NR 3.5GHz 64T64R/8T8R and 700MHz base stations, adopting leading Massive MIMO technologies, 5G common core and end-to-end slice management system etc., as well as ZTE 5G mobile phones and data terminals. It not only features high speed and low delay, but also supports unique network slicing functionality, providing highly reliable networks for enterprises in the campus. The slice isolation feature and MEC function ensure that different enterprise data are isolated from each other and does not leave the campus, providing higher enterprise data security.

In the intelligent manufacturing field, ZTE's Nanjing Binjiang manufacturing base led the new infrastructure development "make 5G with 5G" to include a 5G enterprise private network and a mobile edge computing platform. 5G+MEC machine vision platform, 5G+AI quality inspection, autonomous driving and automatic loading/ unloading functions are deployed, which greatly improves production efficiency and reduces costs. Now in our factory, the production plant has been gradually unmanned through digital superimposition, smart warehouse, clouded AGV and machine vision. It is expected that by this year, the 5G production workshop will basically be fully unmanned.

Can you highlight strategic partnerships forged by ZTE in areas such as 5G and industry applications?

ZTE has established solid cooperation on 5G with important operators. In Europe, we are cooperating with Orange, Telefonica, Wind Tre, Open Fiber, Huchison Drei Austria, etc. In Asia, we have assisted Thai operators to complete the deployment and commercialization of more than 1,000 5G sites, and have signed 5G commercial contracts with operators in more than 10 countries including Indonesia, Malaysia, the Philippines, Pakistan, Myanmar, Belarus, Ukraine, and Uzbekistan and other countries, and will launch commercial 5G from 2021 to 2022.

Besides, ZTE and operators have already opted to work with industry partners. So far, ZTE and more than 500 industrial partners have jointly explored 86 innovative industrial 5G application scenarios, implemented 60 projects, and accumulated precious experience of 5G business model innovation. We have cooperated with industry-leading customers, such as Fuzhou Metro, China Southern Power Grid, China Baowu Steel Group, Tianjin Port, Antwerp port, and so on.

Moving forward, what are ZTE's vision and strategies for revolutionizing industries in the region?

As the "road builder of digital economy", ZTE will leverage our comprehensive advantages of "Device, Network, Cloud, and Platform", explore data perception and application industry ecology widely, and adopt a modular solution approach to assist the industries flexibly. By providing the "ultimate networks", "precision cloud-networks" and "empowering platforms", ZTE and our partners promote the digital and intelligent transformation of thousands of industries and help the digital transformation of our society.

We have been expanding our footprint in the high-end market. Asia-Pacific is one of the highly dynamic communication investing regions, where ZTE has seized the opportunity to deploy 5G. We are cooperating with more operators in the Asia-Pacific region to replicate the successful industry applications and business models of 5G in China and Europe, and helping traditional industries with digital transformation to promote economic growth. This year, we will join operators and industry customers in the Asia-Pacific region to create some demonstration sites for 5G+ smart manufacturing and other applications. In the future, ZTE will continue to expand our ecological resources, work closely with global partners to deepen 5G innovations, and promote digital economy together with more 5G commercial successes. TR

"ZTE and more than 500 industrial partners have jointly explored 86 innovative industrial 5G application scenarios."

How key Asia Pacific countries are faring against one another in 5G adoption

Asia Pacific (APAC) is a hotbed for 5G technology adoption. According to GlobalData, APAC will lead in terms of 5G technology adoption with over a billion subscribers, accounting for 65% of global 5G subscribers by 2024. In the region, South Korea, China, and Japan will dominate 5G markets.

The first to jump onto the bandwagon in the region, South Korea launched its commercial 5G non-standalone (NSA) network in April 2019. Today, South Korea has amassed about 10 million 5G subscribers, accounting for about 14% of the total population and 28% of total mobile data traffic.

During the first half of last year, South Korea's 5G network across Seoul and six major cities averaged a download speed of 656.6Mbps, according to the Ministry of Science and ICT (South Korea) – a marked improvement of just 158.53Mbps achieved by 4G LTE networks a year ago. However, newer reports in recent months which showed that over half a million South Korean subscribers have reportedly switched back to 4G LTE services owing to poor 5G coverage suggest a less rosy reality for operators.

In the midterm, though, consumers can look forward to better 5G experiences, as investments totaling US$22 billion will be spread out in the next couple of years to boost 5G infrastructures and expand 5G connectivity on select Seoul Metro lines and major highways in the country. In partnership with SK Telecom (SKT), Ericsson's MINI-LINK 6352 will also deliver 5G connectivity to remote terrains or National Parks where digging is prohibited. These efforts demonstrate the nation's commitment towards maintaining its first-mover advantage towards wider 5G adoption.

Whilst South Korea leads in terms of network coverage and speed, China, with more than 110 million 5G subscribers, is the largest 5G market in terms of size.

However, this only represents about 6% of the country's total population; 5G subscriptions are unable to help operators bear the brunt of high capital expenditure to develop new networks.

Owing to 5G's limited signal coverage compared to 4G's, as many as 10 million 5G transmitted stations need to be installed in China to obtain the same coverage that 4G presently has. To date, the country has only built around 600,00 base stations, although more are in the pipeline.

To overcome high capex, operators in South Korea and China share network infrastructure and expand coverage based on existing 4G infrastructures. In China, some 5G base stations are shut down during certain times of the day.

In Singapore, where a stand-alone 5G network has just been adopted, capex pressures are also mounting as subscribers might not be convinced to move on to 5G plans with limited 5G consumer uses. Similarly, in Japan, where 5G technology was launched a little earlier in March last year, the coronavirus outbreak disrupted sales and even delayed the launch of 5G services. Slow network developments mostly centered in Tokyo also deterred consumers from upgrading to 5G as they cannot reap its full benefits. It remains to be seen if Japan Olympics can deliver 5G applications as previously promised.

To motivate consumers, operators need to help them recognise the long-term benefits of 5G and its applications. In South Korea, for instance, free enhanced Mobile Broadband (eMBB) for gaming, entertainment, sports, and education is offered to subscribers.

B2B Uses are a Key Driver of 5G Success

But these steps are hardly enough – and this is where the B2B and B2B2X sectors fill the gap, and success in enterprises relying on IoT, cloud gaming, data analytics, enterprise cloud, and connectivity is essential.

According to a global survey conducted by GSMA, up to 50 per cent of operator revenue can stem from B2B enterprises. But first, 5G must be optimally integrated with technologies such as big data, artificial intelligence (AI), and visual technology, and used in virtual reality (VR), augmented reality (AR), and controls systems to support the transformation of industries.

In South Korea, smart office systems and smart factories are some 5G B2B applications already in place. There are plans for an ultrafast mmWave 5G network to commence for the B2B sector. It will then be another year or two before the mmWave 5G network is used for personal smart devices. This highlights the importance of enterprise success, as operators are eager to meet enterprise requirements across industries.

The on-going pandemic stresses new developments to innovative solutions to cope with increased demands, especially in the healthcare industry. In response, the industry has been quick to harness 5G in powering new applications that could not have been supported with the 4G network. In China, 5G technology is used to conduct CT scans remotely. Schools are also using cloud capabilities and 5G technology to launch remote learning. More recently, a state-run Chinese mining company launched a 5G network that beams signals into coal mines. Having said that, these applications are still in their infancy.

By 2035, 22.3 million jobs and $13.2 trillion of global economic output can be founded on 5G technology, according to statistics from Informa Tech. As digitalisation becomes high on the agenda for many governments, especially during this pandemic, 5G deployment is well-positioned to accelerate.

For now, 5G technology is a long way from achieving ultra-fast speeds, low latency, and ubiquitous coverage it has been envisioned for – remote surgeries, drone deliveries, autonomous vehicles, and smart factories. But similar to the trajectory of 4G's development, which spread over a decade long, 5G technology will eventually realise its full scope of benefits. Countries that are unwavering in embracing, developing, and harnessing the potential of 5G technology, like South Korea and China are in good stead to spearhead the future of technology. TR

How SD-WAN optimises SaaS for CSPs to grow offerings

Software-as-a-service (SaaS) is fast becoming the go-to technology for enterprises that require agility and flexibility when deploying new services or improvising existing ones. A significant departure from on-premise solutions, SaaS offers quicker and less complex deployments, as well as improved cost optimisation and reduced total cost of ownership (TCO).

SaaS allows enterprises to scale their infrastructure as needed, without incurring additional hardware costs and the ability to integrate and align with many applications. Available only on public cloud, SaaS is the solution to some of the problems faced by enterprises, not easily resolved with traditional network architectures.

As agility, flexibility and highly-resilient networks become new business requirements, communications service providers (CSPs) are pressured to introduce new products, services, or bundled solutions to meet evolving demands while driving down costs and increasing competitiveness. A trend that has since emerged is CSPs boosting their cloud capabilities through strategic partnerships or acquisition of cloud providers to grow their offerings and expand into adjacent markets as cloud, big data and IoT lead digitalisation globally.

In Asia, the manufacturing industry is one area of exponential growth as it transforms to keep up with connectivity, application performance and security when dealing with geographically dispersed factories and warehouses. Countries that serve as major manufacturing hubs in the region, such as China and Vietnam and Cambodia are turning to cloud-based operational models that are less rigid and easier to scale. To this end, SaaS is cloud-ready and can readily boost production and effectively manage supply chains using automated workflows or remote workers.

Other key industries include the retail industry, where analytics are used to drive traffic and improve customer experiences, as well as the financial industry, where high-capacity, low-latency and secured networks are fundamental to operations.

SD-WAN to support agile operations

In the past year, traffic has become more unpredictable. Enterprises that require greater connectivity, performance and flexibility are increasingly turning to Software Defined Wide Area Network (SD-WAN) to deliver secure, optimised and efficient management of real-time traffic management to improve the way users connect with cloud and SaaS applications.

Unlike traditional WAN, SD-WAN provides an architecture that integrates security, intelligent routing, centralised policy and orchestration to achieve improved bandwidth and performance. For instance, SD-WAN can route traffic to the next best-performing path to counter complex traffic patterns, or in the event of an outage to reduce enterprise network downtime. It can also be easily deployed and fully integrate into existing solutions to support real-time optimisation on SaaS applications, featuring segmentation capabilities to enable control, manageability and end-to-end security across multi-cloud environments.

In a research conducted by TeleGeography, Asia Pacific's SD-WAN market size is estimated at US$356 million in 2020, with China, Japan, India and Australia accounting for the majority of SD-WAN sites. Even though SD-WAN currently lags MPLS in terms of market size globally and in APAC, SD-WAN providers can expect greater upside in 2021 and the coming years. For CSPs, this means introducing SD-WAN as a value-added edge to complement its network services. In the region, operators such as Tata Telecom, Singtel, Indosat Ooredoo and China Telecom have already done so. More recently, Optus announced a partnership with VMware to launch SD-WAN solutions to enterprises and aid its 5G rollout.

According to Greg Bryan, Senior Manager, Enterprise Research at TeleGeography, "The global trend is that SD-WAN adoption has been rapidly increasing. When we first asked about SD-WAN adoption in 2018, fewer than 1 in 5 enterprises in our survey had installed SD-WAN, in 2020 that had increased to nearly 1 in 2. As adoption keeps increasing we expect within the next few years that other regions will catch up to the US and Canada and Western Europe, and the global distribution of SD-WAN will be close to the global distribution of enterprise network sites. So growth of SD-WAN adoption will likely be faster in APAC than in the US and Canada and Western Europe in the coming years, but will likely take a few years to reach the point where it matches those regions in terms of a the percentage of corporate sites with service rolled out."

"Improving network performance is the most commonly cited reason to adopt SD-WAN. The second and third biggest factors were increasing site capacity and using alternative underlay technologies such as direct Internet access (DIA) and broadband. The key motivating factors thus really come down to ensuring network performance through SD-WAN technologies such as forward error correction and load balancing and being able to purchase additional bandwidth without paying for expensive MPLS circuits," Greg added.

For CSPs, this means growing their capabilities and solutions to meet more complex enterprise needs in today's multi-cloud, multi-access and multi-SaaS application landscape where more work is migrating away from on-premises. As SD-WAN continues to gain momentum, CSPs will have to begin to embrace these changes to stay abreast with global competition. TR

5G and the impact on next-generation data centres

The shift from 4G to 5G yields benefits like increased bandwidth, decreased latency and increased connection density. These 5G benefits bode well against a global backdrop increasingly powered by IoT, driven by developments in artificial intelligence (AI) and machine learning (ML).

According to Gartner, global spending on data infrastructure will reach US$200 billion in 2021, increasing by 6% from a year ago. Even though data centre spending declined in 2020 from the preceding year – triggered by disruptions to construction plans as a result of the pandemic – Gartner expects year-on-year growth on data centre spending through 2024.

At the heart of accelerated 5G developments, data centres are critical building blocks of networks for IoT and cloud services. In Singapore, one of the most mature data centre markets in the Asia Pacific (APAC), Zoom will be doubling its data centre capacity this year. And by 2022, Facebook will complete its S$1.4 billion, 11-storey data centre in Singapore – the company's first data centre in APAC.

Increased edge computing and cloud services

As 5G infrastructure continues to infiltrate major cities and take root in more remote areas, service providers are pressured to bring IT to the edge to be closer to geographically-diverse users.

Edge data centres will then become part of a wider data centre ecosystem to help minimise delay for users and distribute heavy traffic loads. This also leads to increased reliability as core data centres are not pushed to their maximum capacity. In the event an edge network fails, traffic can be diverted to other edge networks within the ecosystem.

With increased reliance on connectivity attributed to work-from-home, telemedicine and e-commerce, edge data centres become critical extensions of core data centres to provide additional processing capacity when caching sudden spikes from local end users. Already a trend before the pandemic, cloud-centric infrastructure will also be on the rise to support digital resilience. In fact, Deloitte predicts that global cloud spending will grow seven times faster than overall IT spending this year.

Agility, flexibility and scalability in data centre design

The rise of cloud-edge-end devices architecture will become the new requirement for next-generation data centres. Given that AI and ML technologies require support from high-speed and high-capacity networks, and extensive data processing capabilities to drive the algorithms, core data centres are starting to deploy more high-functioning CPUs and sophisticated hardware. But that alone is inadequate.

Traditional data centres face the problem of scaling to higher-capacity and higher-density networking equipment to meet increased needs given limitations to physical space, power system capacity and even cooling capacity.

To resolve this, there will be more off-premise colocations and cloud services to reap both infrastructure and security, yet reducing the total cost of ownership (TCO). Increasingly, attention will gravitate towards hybrid, multi-cloud infrastructure to respond to more digital business requirements.

For telcos, an important strategy to go beyond connectivity to deliver higher value services is partnering cloud hyperscalers to boost MEC capabilities essential to many 5G applications. This enables distributed deployment closer to users to deliver end-to-end solutions to meet new market requirements and achieve vertical market opportunities. According to Deloitte, significant data growth will be generated from autonomous vehicles, smart factories, cloud gaming and HD surveillance, where handling of these data will be founded mostly on 5G MEC – a market estimated to be worth more than US$10 trillion.

In the coming years, modular data centres will also gain popularity with specific prefabricated modules (PFMs) tailored for different use cases. Such pre-tested modules speed up deployment time, reduce the commissioning time to just days and exhibit fewer quality issues.

Fortune Business Insights estimates that the global modular data centre will grow at a CAGR of 19% between 2020 and 2027 to reach US$65.66 billion. Of which, telcos will rely on deploying modular data centres alongside 5G cell towers to optimise network and services.

Increased O&M automation

Next-generation data centres will rely on intelligence for O&M out of the necessity to reduce costs and improve efficiency. Increased automation will also address a manpower shortage. Using intelligent O&M platforms, robots can perform predictive maintenance and perform AI-enabled fault predictions. O&M can also be automated with technologies like 3D visualisation to monitor equipment rooms remotely as needed.

More green data centres

Valuates Reports predicts that the global data centre power market size will grow from US$15 billion in 2020 to $21.5 billion by 2026. The surge in demand makes sustainability a priority for data centres moving forward.

Apart from supporting people and enterprises, data centres must consider the environment, while not compromising on performance. Green initiatives are also found to provide data centres a more positive brand image, greater return on investment (ROI) and lower TCO.

In November 2020, SK Telecom debuted Seoul's largest hyperscale data centre, designed with environmental considerations in place. Its efficient cooling system reportedly reduced cooling costs by 20%. The same time last year, SpaceDC opened its first Jakarta data centre JAK2, also its first environmentally-friendly data centre targeted at colocation. The facility offers natural gas power generator as a greener alternative for the local grid, as well as a combination of thermal wall technology and high-efficiency electric air-cooled chillers to substitute traditional air-conditioning.

For Singapore, a data centre hub in the region, about 7% of the country's total energy consumption is derived from data centres. In order to reinforce the government's effort to push sustainable data centre designs, Apple and Microsoft operate their data centres in Singapore solely on solar power.

At present, more than 95% of data centres in South Asia depend on air-based cooling. Increasingly, liquid-based cooling, which reduces power consumption by up to a third will become a new feature as more data is generated from AI, ML, IoT and 5G.

In Facebook's upcoming data centre in Singapore, for instance, an important green feature is an integrated liquid cooling technology. Another feature is the use of perforated lightweight materials to facilitate airflow and keep temperatures down. In the coming years, hydrogen and fuel cells will also emerge as alternative energy sources to ensure sustainability.

Without a doubt, 5G will alter the design and even role of data centres. In an increasingly hyperconnected world where data centres serve as the pillar of industries, we can be certain that data centres will evolve as industries transform along with newer business needs. TR

Huawei and China Mobile deploy world's first 4.9 Ghz 5G indoor network with peak rate exceeding 3Gbps

Huawei and China Mobile Shanghai deployed the world's first 4.9 GHz commercial LampSite network in Shanghai, China. This is the first time that an aggregate bandwidth of 200 MHz on the 2.6 and 4.9 GHz bands and distributed Massive MIMO have been simultaneously implemented in digital indoor networks. With the peak rate exceeding 3 Gbps, the performance is comparable to that of an active antenna unit (AAU), satisfying the network requirements to provide premium service experience at large stadiums where the traffic demand and user density are high.

This deployment was completed at the Shanghai New International Expo Center (SNIEC) where Mobile World Congress (MWC) Shanghai, an annual telecom industry event, is hosted. In 2019, nearly 60,000 people attended this event. The latest 4.9 GHz LampSite units supporting a bandwidth of 100 MHz were adopted to work together with the incumbent 2.6 GHz band to ensure a bandwidth of 200 MHz through carrier aggregation. This enhances the coverage of indoor networks at capacity-demanding indoor hotspots, including stadiums, airports, and railway stations, to deliver premium experience to mobile users.

China Mobile Shanghai has been a leading telecom carrier in developing 5G networks. To date, it has constructed more than 13,000 5G sites, basically achieving continuous coverage in the city
.
This telecom carrier boasts leading networks and evident technological advantages. It has been working with Huawei to explore innovative solutions to guarantee mobile excellent user experience in various scenarios. 4.9 GHz is an ideal option for telecom carriers to enhance coverage in indoor hotspots, ensuring premium indoor experience for toC services. This band is also important to ensure 5G coverage in high-quality toB applications.

China Mobile Shanghai will continue to work with Huawei to accelerate the deployment of 5G sites to deliver the continuous coverage required to ensure premium service experience across the city. It will also continue to promote the collaboration of the telecom industry with other industries, such as finance, shipping, and trade to cement Shanghai's leadership in applying 5G to vertical industries by leveraging their respective leading advantages.

US President Joe Biden temporarily lifts ban on TikTok and WeChat

What could come as a big relief to Chinese tech companies banned in the US, newly elected President Joe Biden has temporarily halted legal action against Chinese social media apps TikTok and WeChat, which could have been banned in the United States.

Outgoing president Donald Trump had sought to ban both apps, claiming they were a national security threat. However, the courts had temporarily blocked the White House's attempted ban, and the presidential election had put the issue in the back burner.

Both companies had taken legal action against the proposed bans.

The new administration has now asked for an "abeyance" - or suspension - of proceedings while it revisits whether the apps really pose a threat.

What the delay means is that both apps can continue to operate in the US while new staff at government agencies "become familiar with the issues in this case", according to the legal documents.

Trump had claimed that the spread in the US of mobile apps developed and owned by Chinese firms threatened "the national security, foreign policy, and economy of the United States".

Messaging app WeChat has more than one billion users worldwide, but says the US only accounts for 2% of its revenue. Video sharing app TikTok has about 800 million users worldwide, of which 100 million are in the US.

The app's owner, ByteDance, has been in talks with software company Oracle and supermarket giant Walmart to finalise a deal that would see TikTok's US assets shifted into a new entity, to avoid a ban in the country.

An earlier court filing had said the US Commerce Department was reviewing whether Trump's claims about TikTok's threat to national security justified the attempts to ban it from smartphone app stores and deny it vital technical services.

The US Commerce Department had blacklisted over 70 Chinese tech companies, preventing them from buying US-made chips and components. The companies including Chinese telecom giant Huawei, were added to the United States' "entity list" due to national security concerns.

GSMA unveils shortlist for 2021 Asia Mobile Awards

The GSMA announced this week the shortlist of nominees for the 2021 Asia Mobile Awards (AMO Awards). The AMO Awards celebrate the leading-edge mobile devices and pioneering leadership that continue to drive the region's innovative connectivity approach.

"We congratulate the nominees for the 2021 AMO Awards," said GSMA Director General, Mats Granryd. "The events of the past 12 months have created unprecedented global challenges, and I am especially proud of the mobile industry's response, resilience and continued innovation. Mobile technology will continue to play a pivotal role in how we live, work and play. We wish all those shortlisted the very best of luck, and we look forward to unveiling the winners at MWC21 Shanghai."

The '2021 Best Smartphone in Asia' award recognises innovation, performance and design. This award is judged by world-leading independent analysts, journalists and influencers. The nominee shortlist is:

- Apple for Apple iPhone 12 Pro Series
- LG for LG Wing
- OnePlus for OnePlus 8 Pro
- Samsung for Samsung Galaxy Note 20 Ultra
- Samsung for Samsung Galaxy Z Flip
- Xiaomi for Xiaomi Mi 10 Ultra

Additionally, the 'Outstanding Contribution to the Asia Mobile Industry' award recognises extraordinary contributions by individuals, organisations, or collaborations that advance mobile communications' value and benefits for people, businesses, and societies across Asia. The GSMA directly selects this award. In recent years, winners include Takashi Tanaka, Chairman of KDDI, Cher Wang, Chairwoman, CEO & President, HTC, Mr Shang Bing, Chairman of China Mobile and Mr Li Yue, CEO of China Mobile and Dr Hans Wijayasuriya, Chief Executive Officer, Dialog Axiata.

The results will be announced at MWC Shanghai scheduled for 23 to 25 February 2021. MWC21 Shanghai is a celebration of resilience and resolve. Taking place at the Shanghai New International Expo Centre (SNIEC), it is one of the most anticipated events of its kind in recent months and, for the first time, it will be live-streamed on the GSMA's virtual platform, My MWCS Online, to allow participants from around the world to experience the excitement with us.

The Outstanding Contribution Award winner will be announced 23 February, and the Best Smartphone Award will be announced 24 February.

Indosat Ooredoo partners Snap for augmented reality innovations in Indonesia

Indosat Ooredoo and Snap expand their partnership to accelerate the adoption of augmented reality (AR) in Indonesia. Through this strategic move, Indosat Ooredoo and Snap aim to drive innovation within the field of AR, while empowering creativity and engagement amongst IM3 Ooredoo users, Snapchatters, and brands.

Over the next year, Indosat Ooredoo and Snapchat will launch several programs to bridge the gap between the physical and digital worlds with AR, and bring communities and businesses closer together despite the pandemic. Some of these programs include the launch of an AR Creator Fund, opening the door to fund opportunities for Indonesian creatives working in augmented reality. In addition, Snap plans to launch a new AR Lens each week for Indosat Ooredoo subscribers; while Indosat Ooredoo will provide subscribers data offers for new Snapchat users on their plans enabling them to maximize their engagement with AR experiences on the platform.

As part of this partnership, Indosat Ooredoo has also been appointed as an authorized sales representative for Snap to manage advertising opportunities for the Snapchat platform in Indonesia.

Director and Chief Operating Officer of Indosat Ooredoo, Vikram Sinha said "Indosat Ooredoo is committed to bringing the most innovative digital experiences to people in Indonesia by teaming up with world leaders in this space. We're delighted to announce this collaboration with Snap to empower the creativity of Indonesian developers and designers and help brands to harness the potential of AR to engage customers and transform industries. We believe that an exciting digital future lies ahead and Indosat Ooredoo is committed to empowering young people to compete on the world stage by collaborating with Snap to build a thriving augmented reality ecosystem in Indonesia. We are also pleased to introduce iAds to our enterprise customers, positioned as an innovative digital marketing channel to help create awareness and generate sales leads for their brand."

Managing Director, International Markets at Snap Inc, Nana Murugesan said, "We are excited to announce our strategic partnership with Indosat Ooredoo to build on the momentum we are seeing in Indonesia. Snap believes that reinventing the camera represents the greatest opportunity to improve the way people live and communicate. Augmented reality allows our community to discover and experience the world around them in new and immersive ways. With this increasing engagement, we are also focusing on our growing community of Lens creators as well as extending the capabilities of our AR platform. We continue to invest in Lens Studio, our desktop application for creating augmented reality experiences. With Lens Studio, we are making the AR creation process easier, while simultaneously providing more sophisticated tools in order to unlock the creativity of our Indonesian community and brands."

Nepal selects frequency to embark on 5G services

Nepal's National Telecommunications Authority (NTA) has determined its 5G frequency as the country prepares to deploy 5G service. NTA will follow the recommendations set out by the National Frequency Management Forum, a body initiated by the NTA, the Ministry of Communications & Information Technology (MoCIT) and telecommunications operators.

According to NTA's spokesperson, Meen Prasad Aryal, the National Radio Frequency Policy Determination Committee has received a proposal with recommendations using 700 MHz, 900 MHz, 2300 MHz and 2600 MHz for the low-band spectrum, 3300 MHz, 3400 MHz, 3600 MHz and 4100 MHz for the mid-band spectrum, and 26 GHz for the high-band spectrum.

Established to manage existing and new spectrums, the National Frequency Management Forum performed studies for 5G spectrums before recommending a suitable spectrum for allocation. The National Radio Frequency Policy Determination Committee must now approve NTA's proposed frequencies before spectrums will be allocated to operators.

PCCW Global secures MEF 3.0 certification for international network and Console Connect

PCCW Global, a leading international telecommunications service provider, has validated both its international network and Console Connect platform via MEF 3.0 certification, confirming they both deliver the highest levels of performance, assurance and agility as set by the world's defining authority for global standardized networking services.

MEF 3.0 certification enables companies to confirm the quality of their services and technologies, and is playing a critical role in accelerating the industry's transformation to dynamic services across a global federation of automated networks. Globalized standards are transitioning providers currently operating as independent islands into a federation of cloud-like networks that support dynamic services and facilitate automated business-to-business interactions.

PCCW Global's network has now achieved MEF 3.0 Carrier Ethernet (CE) Service certification for Global Ethernet over MPLS services for both the company's Console Connect platform and its Switched Ethernet Services. With this certification, PCCW Global is the first provider in the world to implement all three services standards as defined by MEF, namely Certified MEF 3.0 CE, Certified MEF 3.0 SD-WAN and LSO Sonata API implementation.

In addition, PCCW Global has over 60 MEF 3.0 certified professionals, who help maintain and support the Console Connect and PCCW Global's services worldwide.

PCCW Global's IP backbone provides end-to-end connectivity to over 127 on-net PoPs in 52 countries and 81 cities, while total IP backbone capacity has already grown by over 17% in the past five months.

Now accredited with MEF 3.0 certification, Console Connect, the global platform for Software-Defined Interconnection®, is leading the way to full network virtualization, by enabling users to quickly spin up high-speed connections between data centers, business-critical apps and partners in seconds.

The automated Console Connect platform makes the process of connecting to cloud-based, business-critical applications and geographically distributed offices, partners and clients simple, predictable and secure. The platform incorporates network automation software that manages access via PCCW Global's dependable, high-speed international private MPLS network, providing users with a one-touch portal for seamless global connectivity.

Console Connect is home to a growing global ecosystem of carriers, enterprises, cloud, XaaS, IX, IoT and other NaaS partners, and provides the ability to instantly self-provision private and dedicated interconnections between leading data centres worldwide. Positioned at the core of PCCW Global's business, Console Connect is 100% integrated into the provisioning of PCCW Global's MEF accredited network services.

Mr. Frederick Chui, Chief Commercial Officer, PCCW Global, said, "While gaining MEF 3.0 accreditation certifies us as one of the world's leading global network carriers, what is going to be more important for our customers going forwards is the ease-of-use, scalability and agility that is provided by our Console Connect platform. The certification of MEF 3.0 confirms the quality of our global network and Console Connect provides fast, secure and easy access to those services with a few clicks from almost anywhere in the world."

Mr. Kevin Vachon, Chief Operating Officer, MEF, said, "MEF congratulates PCCW Global for being one of the first global service providers in the world – and the first based in Asia Pacific – to offer both certified MEF 3.0 Carrier Ethernet and SD-WAN services. PCCW Global's rollout of certified MEF 3.0 services follows its industry leadership in being among the first to implement MEF LSO Sonata APIs for inter-provider service automation. Together, these innovative solutions position the company to deliver a superior customer and partner experience through efficient interconnection, end-to-end automation, and accelerated operations."

ZTE partners China Telecom and MediaTek to complete industry's first E2E commercial verification of FAST

ZTE Corporation, a major international provider of telecommunications, enterprise and consumer technology solutions for the Mobile Internet, announced that the Sichuan Branch of China Telecom, ZTE and MediaTek have jointly completed the industry's first end-to-end commercial verification of FAST in Chengdu.

Based on ZTE's 5G-NR system and MediaTek's UE imbedded with Dimensity chipsets, the Sichuan Branch of China Telecom has conducted the verification of FAST in commercial network of 2.1GHz and 3.5GHz. According to the verification result, FAST, compared to 3.5 GHz single carrier, increases the speed rate of uplink about 3 times for a single user at the cell edge.

FAST, as the main solution of uplink enhancement technology, can deeply and effectively take full advantages of TDD-NR and FDD-NR to boost the 5G uplink performance. With FAST, uplink timeslot availability can be enhanced up to 100% under the condition of the dual-stream capability of UE, realizing the maximum spectrum utilization in both time domain and frequency domain.

In 5G network commercialization and innovations, China Telecom, ZTE and MediaTek will continue to deepen their cooperation to explore new features and applications of 5G, so as to provide better services for their customers.

Rosenberger deepens partnership with China Mobile for 5G technologies

Rosenberger Technologies Co., Ltd. and the Suzhou branch of China Mobile Group Jiangsu Company Ltd, signed a 5G strategic cooperation agreement in Kunshan (Jiangsu Province). This is yet another major cooperation project between Rosenberger and China Mobile, that involves Rosenberger and China Mobile carrying out trials of different applications of 5G, including mobile networks development, construction field testing, and building of industrial ecosystems, etc. This agreement is of great significance, as it fosters the continuous innovation and development of 5G technologies, bringing substantial benefits and value creation potential for both organizations.

According to this new agreement, both parties will commit to sharing R&D resources and their respective technical advantages to carry out the following strategic framework:

China Mobile (Suzhou) will continue to promote Rosenberger's global networking services and products; provide Rosenberger's staff and associates with a prioritized use of related 5G mobile products and China Mobile Heyi charging in Suzhou, cloud video services, intercom and 5G smart factory construction related services; aid in the development of 5G technologies within Rosenberger product family; provide Rosenberger technical support, aid with the coordination/ organization of different technologies field tests and application analysis of its base station antenna products; promote the joint development of 5G related technologies in conjunction with network field tests, construction and technical verification phases; commit to learn and share information and results related to 5G technical standards and application development; and commit to facilitate the resources of China Mobile 5G Innovation Laboratory in Jiangsu.

In addition, the two parties will also carry out extensive cooperation in 5G technology innovation, digital transformation, and talent training. Rosenberger is proud to maintain a close exchange with China Mobile, and to share the results of joint research projects, giving all parties involved the chance to accelerate the development of the industry and strive to lead the direction of technological development in the 5G field worldwide.

Over the years, Rosenberger has built a comprehensive development strategy with a strong emphasis on research and development, world class manufacturing, a robust quality management system, and agile logistics/distribution supporting services, in order to meet the growing global mobile communications data traffic requirements with a leading product portfolio. Today, Rosenberger provides a wide variety of 5G antenna solutions, including massive MIMO, multi-beam, 8T8R beamforming, small cells, multi-band and FDD/TDD hybrid antennas.

Challenges and opportunities for the telecommunications industry in 2021

The telecommunications industry has been the pillar of societies worldwide – tasked with the mammoth role of supporting the abrupt shift to work-from-home, remote learning, and other virtual activities in a pandemic-stricken environment mired by lockdowns.

This has led to an increased reliance on online services and a widespread surge in mobile data consumption and broadband, and hence greater connectivity. In 2021, it is estimated that 30 billion IoT devices will be connected globally. With 5G powering IoT to facilitate the demand for IoT applications and solutions across industries, the onus is on telecommunications companies to step up on its 5G and IoT capabilities to navigate a vastly different business landscape compared to before the pandemic.

Globally, countries have been pushing for faster digital transformation to help industries recover from the pandemic. This year, for example, Australia will schedule allocations of both high-band and low-band 5G spectrums to provide 5G network key to raising productivity in areas like smart farming, automated vehicles, and robotics. Similarly in India, 5G technology is picking up momentum, albeit at a slower pace. And in China, 6G deployment is already in the pipeline as the country launched

an experimental 6G test satellite in November 2020.

As remote activities continue to dominate our lives, the telecommunications sector is challenged to establish user-centric networks that focus not only on delivering more robust, reliable, and omni-channel communications, but also understanding customer trends to yield positive customer perception and retention.

Part of a reliable and robust network is ensuring seamless connectivity and security. In an increasingly digital world dominated by higher bandwidths and increased speeds, telecommunications companies need to step up against cyber attacks that have become more rampant and sophisticated.

Last week, New Zealand's central bank was hit by a cyberattack. In August 2020, New Zealand's stock exchange suffered a series of DDoS attacks, which forced the exchange to halt trading. According to New Zealand's agency Computer Emergency Response Team (CERT), cyberattacks increased by 33% year-on-year in the country. In the face of heightened data breaches globally, the sector is pressured to better circumvent these breaches. At the same time, more needs to be done to provide a secured network to safeguard consumers' data and comply with regulatory guidelines.

With 5G roll-out core to many telecommunications companies, networks are also challenged to raise capex efficiency and leverage on technology to create new products and services to find new avenues for growth. This means focusing on the benefits of 5G for consumers, and in particular, enterprises. At the same time, telecommunications companies are pressured to reduce energy consumption and carbon footprint as increased 5G deployment and greater bandwidth results in an inevitable hike in energy consumption.

Opportunities are abound

The need for robust broadband connections motivates consumers and enterprises to upgrade to 5G and leverage on RAN for higher connectivity, greater data speed, and reduced latency for shorter load times. With technology being instrumental to consumers and corporations, telecommunications companies can seek growth in delivering more connected and intelligent devices, and maximise the values of innovations.

According to GSMA, 5G will generate an economic worth of US$700 billion in the enterprise sector in the next five years. Telecommunications companies are exploring options to form strategic vertical or horizontal partnerships to provide industry-specific end-to-end applications and use-cases to address gaps in enterprise markets.

Moving forward, the sector can support new business patterns and markets through integrating 5G, edge computing, and AI to yield optimisation. By 2023, for instance, 5G is forecast to account for 25% of all mobile data traffic, of which one-fifth of use-cases will depend on edge computing to speed up the processing of real-time data. Telecommunication companies who leverage this technology beyond their role of providing connectivity are in good stead to move up the value chain and gain a first-mover advantage.

Within the sector, focus on real-time analytics driven by artificial intelligence (AI) and machine learning (ML) to achieve better customer service, network optimisation, and even fraud detection is critical to yield greater efficiency and even increased revenue.

Finally, the emergence of more smart cities highly-dependent on network and infrastructure provides opportunities for telecommunications companies to shape societies. In Southeast Asia, for instance, the drive towards digital transformation has led to the launch of the ASEAN Smart Cities Network (ASCN) to promote the development of smart cities in the region. Elsewhere in Europe, Barcelona's pilot smart city – developed by the government, telecommunications companies, and IT firms – serves as a precedent for other cities to position themselves as future-forward cities. TR

High band 5G mmWave takes 5G to the next level

As 5G technology becomes increasingly widespread, attention is veering towards high band 5G mmWave spectrum to deliver greater capacity and faster performance levels for data-intensive 5G mobile communications such as video communications, as well as virtual and augmented reality.

With mobile experiences become more sophisticated, networks are pressured to expand wireless spectrums to support large bandwidths and high data rates for 5G systems to drive technology evolution. For mobile operators, 5G mmWave presents an opportunity to deliver unparalleled performance benefits for fixed wireless, enterprises and industrial applications for a broad set of use cases such as smart factories, supply chain visibility and indoor navigation.

Even though high band mmWave is not new, it fell short previously owing to challenges such as high propagation losses and sensitivity to blockages by human bodies and buildings.

But these issues can be resolved as mmWave combines line-of-sight (LOS) and non-line-of-sight (NLOS) signals with distributed antenna designs and advanced beamformers to expand a network's coverage.

While 5G low bands deliver 5G coverage over long distances, 5G high bands or mmWave deliver optimal coverage over short distances, and best complemented with low and mid bands for improved capacity and coverage. The earliest adopter of 5G mmWave is the US, which opted for high band spectrum first in its 5G strategy. This is contrary to most countries, which opted for mid-band spectrums first, before pursuing high band mmWave.

For mmWave to pick further momentum now, stakeholders such as regulators, mobile operators and vendors must come together. For regulators, it means embracing 5G and freeing up mmWave bands to mobile operators to grow their coverage beyond low- and mid-band spectrums, and hence enable high capacity delivery and enhanced handling of peak rates. By fuelling 5G performance levels, countries that make digital transformation a priority can yield greater economic benefits in the long run. Likewise, vendors must support this evolution by continuing to roll out suitable and even improved mobile devices and customer premises equipment (CPE) that are accessible and affordable.

According to GSA, about 106 operators in 20 countries and/or territories hold public licenses of 5G networks utilizing mmWave spectrum. Of which, only about 24 operators in 15 countries and/or territories are using mmWave to power deployed 5G networks. In November 2019, World Radiocommunication Conference (WRC-19) identified new frequencies for IMT. While 5G mmWave is more predominant in the US and Europe, Asia Pacific is slowly coming into the picture, with Japan being the earliest adopter, followed by South Korea.

Other countries such as Singapore and Thailand have just awarded mmWave allocations last year. Of which, Singapore Infocomm Media Development Authority (IMDA) awarded three mobile operators 800 MHz of 26 GHz and 28 GHz mmWave. One of the operators, Singtel, has switched on mmWave in certain areas in the city, with dedicated experiences zones to provide users 3.2 Gbps streamed content powered by 5G mmWave. The mobile operator will also be working with enterprise customers to develop autonomous guided vehicles and mixed reality.

Meanwhile, Thailand's National Broadcasting and Telecommunications Commission (NBTC) auctioned 26 GHz to three mobile operators, namely AIS, Dtac and TrueMove H. In the region, Australia is the latest to open applications for auction of 26 GHz and 28 GHz mmWave spectrums. India is very likely to carry out 5G spectrum auctions soon.

On the other hand, in anticipation of the rise of mmWave in the region, Taiwan-based semiconductor firm MediaTek recently unveiled M80, its first mmWave-capable modem. Launched in the same month, M80 will be in direct competition with Qualcomm's new Snapdragon 5G modem.

Also competing in the emerging mmWave space, NEC leverages on its expertise in digital beamforming technology and Massive-MIMO in launching a distributed-MIMO technology that delivers three times the number of simultaneous connections and transmission capacity in the 28 GHz mmWave frequency band – using a large number of distributed antennas rather than in a single tray.

It also helps that there are new technologies to support a denser and more cost-effective 5G mmWave network to deliver the desired low latency and high speed. Using integrated access and backhaul (IAB), base stations not only provide wireless access for users, but also wirelessly backhaul from nearby base stations using the same mmWave spectrum. This results in improved performance, greater efficiency of spectrum resources and lower costs, thereby allowing operators to expand their mmWave networks readily and more affordably.

Even though APAC is behind in terms of mmWave adoption, when compared to the US, some countries are quick in catching up. Taiwan, for instance, claims the first spot in launching a smart factory powered by a private 5G mmWave network.

According to Research and Markets, the global mmWave technology market is predicted to grow from US$1 billion in 2020 to US$3.4 billion by 2025. During this time, APAC is projected to grow at the fastest rate. Clearly, 5G mmWave is an important criterion worldwide, and particularly in APAC as countries grow their network bandwidth and capacity to enable full-fledge 5G services and experiences. TR

5G and MEC: The new frontier for telecommunications operators at the edge

According to GSA, 144 operators in 61 countries or territories have launched commercial 3GPP-compatible 5G. As digital transformation becomes a global trend in today's 5G environment, Multi-access Edge Computing (MEC) offers telecommunications operators computing solutions at the edge to leverage on 5G promises and monetize 5G infrastructure to reap revenue from next-generation services.

By 2023, IDC forecasts that more than half of the world's GDP can be attributed to products and services from digitally-transformed industries. In anticipation of increased digital activities and widespread 5G deployment to deliver reduced latency, many operators are developing a MEC platform to harness the benefits of both on-site MEC and distributed MEC.

According to Tilly Gilbert, senior consultant at STL partners, "Operators at the Asia Pacific are rolling out 5G deployments faster than their counterparts in Europe and the US, with countries like South Korea, China and Japan being more dominant. Compared to Europe, where focus is placed more on supporting smart factories, APAC's focus is more on consumer edge computing, such as AR and VR uses cases in cloud gaming and tourism."

Indeed, APAC operators appear to be taking the lead. Globally, SK Telecom was the first telecommunications operator to develop a 5G MEC platform in 2019 to build up edge infrastructure and capabilities. The Korean operator boasts an open, hybrid cloud approach, relying on its own MEC platform and

third-party platforms to support its MEC ecosystem.

Admittedly, MEC is still in the nascent stage, albeit accelerated by the pandemic in the past year. Currently, many operators are still at the proof-of-concept (PoC) stage, with some advancing further to more widespread commercial deployments. It would take at least a few more years before edge computing starts to go mainstream. To deliver a 5G network that lives up to its hype moving forward, operators need to leverage on MEC to tap into the new value created at the edge and brand itself as a provider for connectivity, infrastructure and applications.

In today's market, some key industries in APAC that benefit most from edge-oriented services are healthcare, gaming, retail and manufacturing. The onus is on operators to identify key use cases and applications for these industries. To successfully tap into new domains of growth, operators need to consider the enterprise landscape and establish strategic partnerships with hypercloud providers to solidify their position for new service offerings for a specific industry.

In Singapore, for instance, Singtel announced this month that it would launch its 5G MEC infrastructure for enterprise customers on Microsoft Azure Stack to process applications such as AR/VR, drones and robots. With trials starting this year, enterprises can look forward to delivering applications with low latency of less than 10 milliseconds.

Gaming and e-sports

As gaming and e-sports become more immersive and interactive, there is a greater need for ultra-low latency and real-time processing capabilities. Omdia estimates cloud gaming revenue to reach US$4 billion this year. By 2025, cloud gaming revenue is predicted to triple to reach US$12 billion. As cloud gaming continues to trend, Chinese operators such as China Mobile and China Unicom have begun to utilise 5G and MEC to offer the required low latency and high-speed connectivity and seek innovation in AR/VR to take cloud gaming to another level.

Manufacturing

Enterprises with many manufacturing facilities in different parts of the world process a vast amount of data obtained from a range of devices such as sensors, cameras, robots and machines. In a data-intensive industry like manufacturing, edge computing addresses delays that occur when a large amount of such data is sent back to a centralised data centre or public cloud, which impedes real-time decisions critical to the facility's functioning. For this industry, a use case is detecting out-of-spec conditions via video surveillance on production lines to facilitate predictive maintenance and asset performance. The aim is to achieve an autonomous-controlled manufacturing facility that reduces operations and management costs.

Healthcare

The pandemic has placed a strain on healthcare systems in many countries. This makes in-hospital patient monitoring a critical use case to ensure that the system is not overwhelmed. When monitoring devices are connected to on-premise edge in hospitals, the local processing of data also ensures data privacy and compliance. Using AI to identify patients' trends and behaviours, medical personnel can instantly attend to any anomaly. In June 2020, ZTE and China Mobile partnered to launch China's first 5G medical edge cloud platform to support healthcare functions like remote diagnosis and surgery, amongst others.

Retail

Using a 5G and MEC platform, operators can combine AI, AR and sensor-based analytics to improve customer engagement and inventory efficiency. This is being carried out jointly by Verizon Business, SAP and Deloitte, with one of the uses cases utilising real-time actionable intelligence to manage out-of-stock shelf inventory. When inventory is down, store associates will receive an automated replenishment alert to stock up shelves, while distribution centres are notified to add inventory. Another use case in retail is biometric authentication payment systems.

Across industries, there are more use cases, such as autonomous driving, smart ports and connected farms, just to name a few. Now is the time for operators to go beyond connectivity to fully exploit 5G and MEC to open up new opportunities for incremental revenue. TR

Infinet Wireless expands footprint with new regional office in Delhi

Infinet Wireless, the global leader in fixed wireless broadband connectivity, has opened a new regional office in India in line with the company's growth strategy of accessing emerging markets. This new presence will be managed by Hari Shanker Pandey, a Regional Director. Mr. Pandey will steer the strategic growth directions of Infinet Wireless by applying his knowledge and skills to work on expanding Infinet Wireless' presence in India and nearby countries.

Infinet Wireless' office in this region was opened at the beginning of 2021. At the moment, the company is actively preparing the ground for testing deployment of its equipment and dealing with local partners and integrators. Infinet Wireless' goals in the market are to reach out to local telecom segment, including connection provision to corporate and municipal clients, as well as middle-scale and large-scale operators; organizing radio links with mobile objects in the mining industry and deployment of technological lines for customers of different types.

Infinet Wireless is planning the launch of its innovative solutions to a completely new market for the company, starting with its Quanta 5 / Quanta 6 product family aimed at organizing PtP radio links. In addition, Infinet Wireless can offer base stations and subscriber terminals of InfiMAN Evolution product family. These provide excellent throughput for PtMP radio links, and are compatible with Infinet Wireless products of previous generation, enabling operators to both deploy new infrastructures and expand coverage of existing networks in the 4.9–6.5 GHz range.

One of the most outstanding features of Infinet Wireless devices is that it can work in the harshest weather conditions, as are typical for India, which is famous for its extremely high humidity and heavy rains, while in the highlands, low temperatures and strong winds can be a feature as well. Infinet Wireless products are also well-known for having one of the world's longest mean times between failures, which is almost 10 years. It can be said that Infinet Wireless solutions represent carrier-grade products, whose quality is assured by Service Level Agreement (SLA).

'India is a very prominent market for Russia, and we're proud of the fact that Infinet Wireless, being a company of Russian origin, has an opportunity to enter this market and open a regional office there. Taking into account the close and cordial relationship between Russia and India, we count on a warm welcome for our solutions. India is a huge market with a developing infrastructure, and we're sure that our products will be integrated perfectly into this strategically important sector for country's economy ', said Roman Smirnov, Commercial Director at Infinet Wireless.

Currently the company's representatives are actively negotiating a certification of Infinet Wireless solutions and building the first testing zones

Nokia partners StarHub to deploy standalone 5G services for Singapore

Six months after launching Singapore's first non-standalone 5G services for consumers and enterprises, longstanding partners, StarHub and Nokia have teamed up again to deploy a new cloud-native 5G core network to manage 5G standalone (SA) bandwidth demand that has been projected to grow rapidly and tremendously.

The 5G SA network rollout is well underway and spans core, radio, software, security and professional services with a 5G SA data service launch for StarHub's customers expected in later this year.

This 5G SA upgrade will enable StarHub to run 5G technology independent of existing 4G network technology. With 5G SA technology, StarHub can simultaneously connect a vast number of devices and offer game-changing mobility solutions that thrive on ultra-high speed, low-latency, secure campus networking capabilities for the benefit of consumers, businesses and government agencies in Singapore.

With StarHub 5G services delivered via SA architecture using the 3.5GHz spectrum, customers can enjoy new digital services such as AR for entertainment, education and healthcare, and the industry will have the opportunity to deliver the promised massive Internet of Things, allowing interconnection of many devices and applications for a smarter society. In turn, businesses can use 5G enhanced mobile broadband service to enable e-sports and augmented reality/virtual reality live feeds anywhere. StarHub can create several secure mobile campus networks for localised functions through network slicing capability. The operator can also leverage mobile edge computing services to host AI-based solutions such as facial recognition services and to deploy advanced IoT solutions.

Playing an active role as a forerunner in Singapore's 5G space, StarHub partnered with Nokia to deploy a 5G SA trial network at IMDA's 5G testing facility Living Lab@ PIXEL in one-north, which is dedicated to helping industry players develop new 5G solutions and develop technical capabilities. StarHub is also working with industry players, including Nanyang Polytechnic and National University of Singapore to explore innovative 5G solutions that can enhance higher education experiences, address industry needs and test use cases.

Partners pass ZTE 5G Messaging Openlab access authentication test

ZTE Corporation announced that Beijing Guodu Interconnection Technology Co., Ltd., Shanghai Dahan Tricom Co., Ltd., and Nanjing Shumai Information Technology Co., Ltd. have become the first three partners to pass the ZTE 5G Messaging Openlab Technical Certification test, which indicates that the ZTE 5G Messaging Openlab has become the preferred platform for the 5G Messaging partners to test and incubate their new services.

The ZTE 5G Messaging Openlab, as an open cooperation platform for ecological partners, is not only a laboratory, but also a platform for joint incubation and verification of the "ZTE & partner" 5G Messaging solution, to enhance product competitiveness and improve customer value and satisfaction.

The certification test of the 5G Messaging platform, based on the GSMA UP2.4 series standards, focuses on the functionality and interaction of the Chatbot. And it is used to evaluate the functional completeness and the technical competency level. It plays an important role, as an authoritative reference for the operators and industry customers, in selecting the CSP.

"Guodu is one of the first three partners to pass the ZTE 5G Messaging Openlab technical certification test. It further deepens the strategic cooperation between ZTE and Guodu, and also fully recognizes the capabilities of the 5G101 platform of our company for 5G Messaging operation," said Shen Li, General Manager of Beijing Guodu Interconnection Technology Co., Ltd.

"Dahan is one of the first three partners which have passed the ZTE 5G Messaging Openlab technical certification test, and has become ZTE's strategic partner in the 5G Messaging field," said Gao Bibu, Chairman of Shanghai Dahan Tricom Co., Ltd., "Based on this cooperation, ZTE, together with its ecological chain partners, will launch all-round cooperation in the 5G Messaging field, grasping the development opportunity of the 5G Messaging service, and accelerating the commercial process of the 5G Messaging service, empowering partners with technologies to share the 5G ecosystem."

Hu Gang, Chairman of Nanjing Data Pulse Information Technology Co., Ltd., said, "Through the successful certification test conducted in the ZTE 5G Messaging Openlab, our company has become one of the first batch of strategic partners in the 5G Messaging field. The successful test marks that ZTE fully recognizes our capabilities of the 5G Messaging R&D and operation. It is also an important milestone of strategic cooperation between both parties."

To date, ZTE, by means of the Openlab, has actively supported operators' external ecological expansion, and provided E2E, unified development and verification environment and service innovation platform for its partners such as terminal, enterprise and service providers. The authentication test will facilitate the partners to promote the application, improve the capabilities of rapid R&D and incubation of the 5G Messaging service, and help the industry leap from the test verification stage to the actual application stage.

Tata Communications partners Google Cloud India for public cloud services

Tata Communications announced its partnership with Google Cloud to drive cloud adoption and transform Indian businesses. With this partnership, Tata Communications has further expanded their managed public cloud services portfolio to include capabilities for Google Cloud.

The partnership between Tata Communications and Google Cloud India will enable organisations to deploy and access Google Cloud services through Tata Communications' IZO™ Managed Cloud while providing them ease-of-use coupled with end-to-end services, including cloud architecture planning, workload migration and ongoing operational support.

As a Google Cloud India Partner, Tata Communications will support organisations with services across infrastructure modernisation, data centre transformation, application modernisation, smart analytics, multi-cloud deployments and more.

Tata Communications IZO™ Managed Cloud provides the right expertise, infrastructure, and support services to drive business growth and improve performance. Tata Communications' IZO™ Cloud Command portal offers a single-pane-of-glass orchestration tool which integrates different enterprise IT environments into a single dashboard and simplifies the management and orchestration of the IT estate, offering a unified cloud experience. It provides a comprehensive view of IT resource utilisation (across on-premise, private, Google Cloud), thus enabling greater control for the customer, resulting in cost efficiencies and improved productivity.

With the current global scenario, there is wider recognition for business resilience and agility that cloud enables; most businesses are now beginning to explore a cloud-first model. DevOps, a set of practices that combine software development and IT operations, has become an important requirement for enterprises. To make applications future ready, businesses are modernising them by leveraging Containers and Kubernetes (an open-source platform for container orchestration), as they offer businesses the scalability and portability they need to be agile and build a competitive edge, enabling self-service provisioning and capacity on-demand with ease.

ZTE assists China Telecom in industry's first NodeEngine pilot for smart industrial park

ZTE Corporation, a major international provider of telecommunications, enterprise and consumer technology solutions for the Mobile Internet, and the Yangzhou branch of China Telecom, have completed the industry's first NodeEngine pilot on the commercial network in Yangzhou. Based on "5G existing network & NodeEngine traffic offloading service", ZTE has assisted China Telecom in rapidly deploying the "smart industrial park" services.

In this project, ZTE and the Yangzhou branch of China Telecom transmit video contents over wireless network, leveraging 5G large-bandwidth and guaranteed QoS network features. It is the first time that ZTE has co-deployed the NodeEngine traffic offloading service by virtue of the existing websites.

Video streams can be forwarded to the closest monitoring platform of the park to satisfy the requirements of low-latency video backhaul in the park. Only by deploying one computing board in the existing network base station, the fulfillment of local traffic offloading service can be well realized, effectively reducing the project deployment cost and shortening the deployment period.

Besides, with the help of the local traffic offloading and eBridge service for the inter-connection of part facilities, video files can be rapidly forwarded to the industrial park center platform. Meanwhile, the platform can access the cameras and other terminals to obtain the required on-site information timely.

"For the project, ZTE stands out with its capability of commercial delivery of NodeEngine solution," said Tang Xue, Vice General Manager of RAN Product Line at ZTE. "ZTE NodeEngine solution, featuring zero engineering delay, board-level deployment cost, plug-and-play support-ability and quick service commissioning, saves the deployment cost of vertical industry applications, facilitates the development of vertical services and accelerates the digital transformation in the park."

Console Connect and Princeton Digital Group partner for cloud businesses in Singapore

Console Connect by PCCW Global and Princeton Digital Group (PDG) have teamed up to provide businesses in Singapore with secure, fast and flexible connections to leading cloud providers located throughout Asia.

Console Connect has recently launched a Point of Presence (PoP) at PDG's SG1 data center in Singapore that enables PDG customers to directly connect to the Console Connect digital platform, giving them access to international connectivity on-demand linking more than 400 data centers in over 50 countries. Through Console Connect, users can instantly provision direct and private connections to over 900 entities worldwide, including all major private and public cloud providers, and a growing number of carrier, data center, SaaS, UCaaS and IoT partners.

The platform supports the growing cloud connectivity requirements of enterprises in Singapore, which are among the highest adopters of public cloud services in Asia. Using either the secure Console Connect web portal or its API, PDG customers can quote, order, deliver and manage their network connections to leading cloud platforms including AWS, Alibaba Cloud, Google Cloud, IBM Cloud, Microsoft Azure, Naver Cloud and many others.

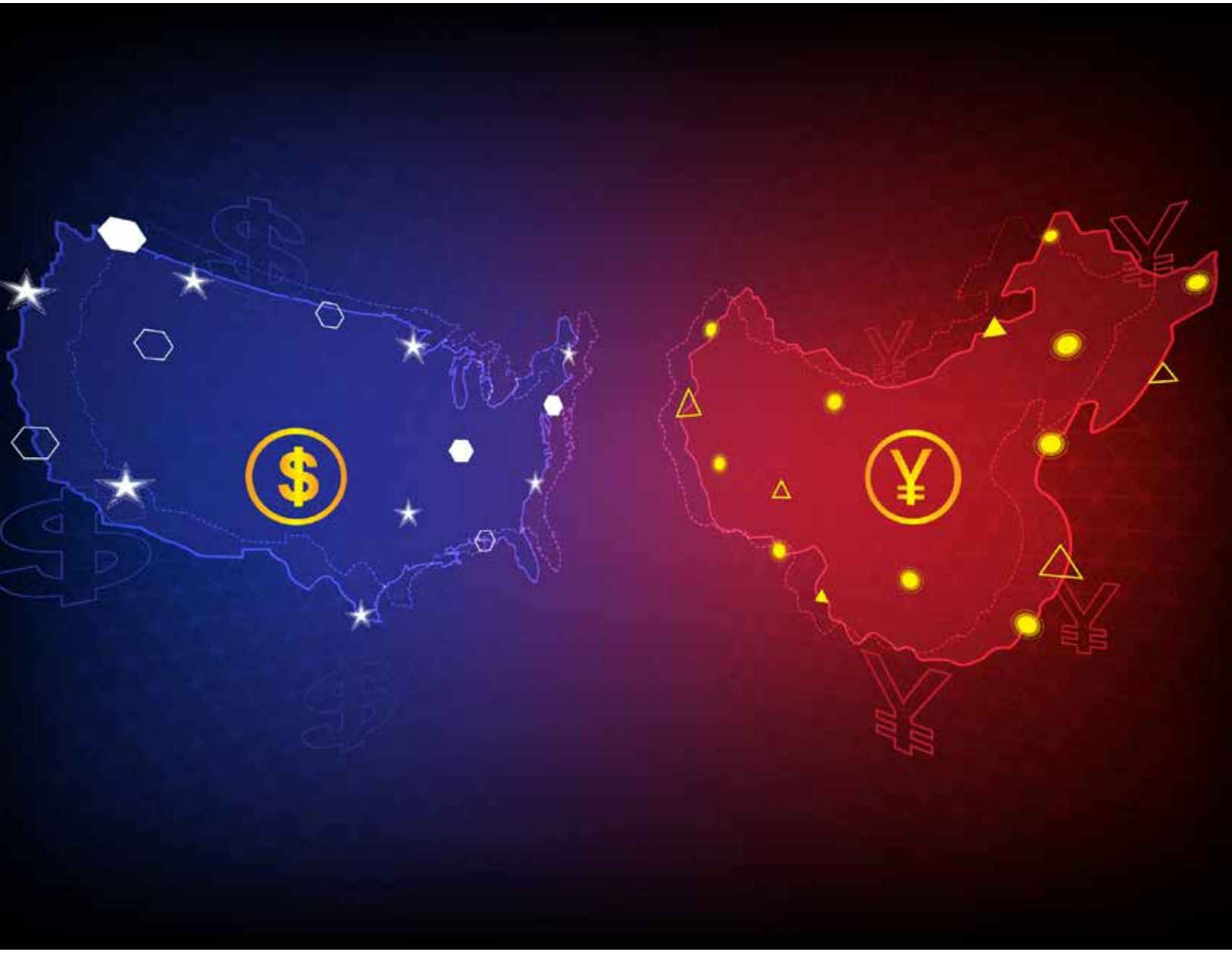
Console Connect is the only Network-as-a-Service (NaaS) platform which is underpinned by one of the world's largest Tier 1 networks. This network offers extensive coverage across Asia, with pay-as-you-go pricing available to Console Connect users for on-demand bandwidth between key Asian markets such as Australia, Hong Kong, Indonesia, Japan, Malaysia and Singapore, as well as beyond to Europe, Africa and the Americas.

Console Connect's new Internet On-Demand (IO-D) service will also soon be available to PDG customers at the Singapore data center, enabling them to purchase more carrier services through one access port.

Mr. Michael Glynn, Vice President of Digital Automated Innovation, PCCW Global, said, "Singapore is one of Asia's most important hubs and a key growth market for Console Connect in 2021. I am delighted to welcome Princeton Digital Group to the Console Connect ecosystem, while extending the availability of our platform in Singapore. As businesses in the country accelerate their journey to the cloud, they are more reliant on networks to access digital infrastructure and services. Console Connect not only improves the overall security and performance of connections to the cloud, it also gives enterprises greater agility as they embark further on their cloud journey."

SG1 is located in the heart of Singapore and is a strategic location for hyperscale cloud providers and enterprises that are looking to expand their operations or require additional capacity. The facility is located near the existing cloud and network hub of Tai Seng, providing direct access to the SGX trading platform and other FSI ecosystems.

As a pan-Asian digital infrastructure service provider, PDG provides the building blocks for hyperscalers and enterprises to scale their business in key digital economies in Asia. PDG has 18 data centers in 12 cities across Asia, including Surabaya, Jakarta and Shanghai.



Chinese tech giants blacklisted amid China-US tech war

What started as a trade war between the world's two superpowers evolved into a tech war with no sign of abating, as the US targets Chinese telecommunications providers in one of the latest tech retaliations against China before the end of Trump's presidency term.

During his administration, Trump signed an executive order which took effect on 11 January 2021 requiring investors to unload Chinese firms perceive to be a threat to US national security. Officials also claim that these firms fail to comply with US audits as the Chinese government tends to withhold information.

This order prompted the New York Stock Exchange (NYSE) to announce on 31 December 2020 that it would delist China Mobile, China Telecom and China Unicom. But a mere four days later, NYSE abandoned its initial plan to delist, only to announce on 6 January 2021 that it would proceed to delist the companies after all.

Amid the NYSE saga, Trump signed another executive order on 5 January 2021 to ban transactions involving eight Chinese apps. Alipay, WeChat Pay and Tencent QQ are among the companies affected. According to US officials, the order is meant to encroach on China's big data strategy and prevent the alleged use of Americans' personal data by the Chinese government. This order comes into effect 45 days later.

Battling the future of technology

Undermining Chinese telecommunications companies, or Chinese tech firms for that matter is not new amid estranged China-US relations. With 5G shaping the future of technology, crippling Chinese 5G companies is one way for the US to dent China's efforts to gain foothold in global tech dominance.

Huawei, one of the earliest Chinese tech firms targeted in this battle, had to stop production of its high-end Kirin 9000 chipset in September 2020 owing to US sanctions. TrendForce predicts that Huawei will experience a significant drop in smartphone production and 5G market share in 2021, with its smartphone production falling from 170 million units to 45 million units, and a global 5G market share from 30% to just 8%.

However, despite boycotts in the west, Huawei has since turned its focus to other regions, having sealed major deals with telecommunications firms in the Middle East, as well as Indonesia last year.

As the only providers of China's broad telecommunications network, China Mobile, China Telecom and China Unicom – all operating under the Chinese government and critical to the country's agenda to secure 5G leadership – have become natural targets for the US.

Overthrowing the US' claims, China Securities Regulatory Commission (CSRC) maintains that China Mobile, China Telecom and China Unicom adhere to US market rules and regulatory requirements. In a statement, CSRC cited that the impact by NYSE to delist the Chinese telecommunications providers is small, accounting for less than 2.2% of their respective total equity shares and a total market capitalisation of less than RMB 20 billion.

This year, the three government-backed telecommunications giants are expected to support China's push for at least 600,000 more 5G base stations, adding to the 700,000 already installed to date. Officials said that China will accelerate 5G coverage in major cities this year, deploying more data centres and computing facilities, as well as conducting pilot tests for industrial 5G, with its focus on 10 key industries.

China appears more strategic in its 5G deployment and has surpassed the US in terms of 5G subscribers and the number of base stations. By the end of last year, China garnered more than 200 million 5G subscribers. However, it should not be construed that a 5G subscriber possesses a 5G-enabled device or has access to a reliable 5G network. Instead, Chinese providers have been selling 5G subscriptions aggressively, and at much lower rates.

Even though Biden has temporarily lifted a ban on TikTok and WeChat, Chinese tech companies will be watched closely. With trillions of dollars of economic output at stake, the US will not give up on its fight for 5G leadership – not to China at least TR

“Undermining Chinese telecommunications companies, or Chinese tech firms for that matter is not new amid estranged China-US relations, during Trump's presidency at least. With 5G shaping the future of technology, crippling Chinese 5G companies is one way for the US to dent China's efforts to gain foothold in global tech dominance.”

The telecoms industry will never be the same again

When I think of the telecommunications industry, "What is essential is invisible to the eye" by Antoine de Saint-Exupéry in The Little Prince immediately comes to mind. From keeping us informed of the latest news and entertained while we stay home, to ensuring business continuity, we hardly notice our heavy reliance on the invisible networks that keep us connected – except when they disconnect.

Indeed, this year the telecoms industry has become even more central to modern society. Despite spikes in network usage and strained bandwidth due to more people spending time at home this year, telecoms have gone above and beyond to ensure connectivity and support essential services. Furthermore, as Asia Pacific nations march forward with 5G, Deloitte's telecommunications industry outlook pointed out that telecoms will be trying to determine the 'killer apps' for 5G. Urgent transformation is needed in the networks – in not only the access, transport and core, but also how they embrace automation and collaborate with partners to deliver on promises of low latency, higher performance and throughput.

New entrants will also continue to disrupt the industry, and we can expect telecoms to form strategic alliances to keep up with digital disruption and provide customers with a competitive array of offerings. They need to abandon the mentality of working in silos, take inspiration from the software industry and embrace a Lean-Agile Mindset: a way of thinking related to striving for higher levels of efficiency, teamwork, employee motivation and work quality.

It's all in the mindset

With a clear focus on innovation and collaboration to steadily deliver more customer value, telecoms have been shown to possess the capacity to adapt rapidly and deliver new service offerings at scale. But where do they begin?

1. **Start internally**

   According to the Oracle AI@Work Study 2020, COVID-19 has resulted in 70% of respondents feeling that 2020 has been the most stressful year yet. 85% of them have had stress at work affect their home life, and 75% of employees think that their company should ramp up conversations around mental health and do more to support employees' well-being. In the year ahead, future workplaces will need to prioritise staff wellbeing to maintain productivity.

   Next, pandemic or not, economic conditions and consumer behaviour are constantly evolving, and enterprises need to keep pace and stay ahead of these expectations. As COVID-19 has reiterated the importance of building resilient skills, business leaders are quickly realising that innovation and business growth are now inextricably linked to employee-first HR practices. The brightest minds will be looking towards those who invest in skills development, and when they can voice their opinions freely, fresh new ideas and use cases will begin to flow naturally.

2. **Focus on the customer experience**

   The most impactful names in technology have one thing in common – an obsession with user experience, powered by in-depth analysis of customer-interaction data. Traditionally, telecoms have access to this data, but they have not been optimised for insights and productivity. They must now go past digital channels, to use smart data and artificial intelligence (AI) from the front-end to the back office.

   Consumers today also expect hyper-personalised, omnichannel, connected experiences, and enterprises should look beyond their industry for inspiration. For instance, SingTel, a multinational telecommunications provider in Singapore, became one of the first in the industry to venture into the e-payments space when they launched SingTel Dash. Today, their customer-led innovation journey has enabled them to consistently break new grounds, including forming a strategic partnership with Grab Holdings Inc. to emerge as one of Singapore's first four digital banks.

3. **Be open to working with partners if you have to**

   Depending on the organisation's culture, competency, and size, you can go at it alone or form strategic partnerships. For instance, if you have huge access to an internal pool of competent and motivated talents, you have the option of looking internally to innovate and seamlessly transform all aspects of your offerings and your operations to meet market demands.

   That said, opportunities lie ahead even for companies who do not have access to a large and strong talent pool. Hyperscalers and proven technology partners, with their technology investment and large global footprints, can enable enterprises to achieve business objectives – whether it be improving customer service or expanding their suite of offerings at scale in minimum time.

4. **Innovate fast, but take careful steps**

   The clock is ticking, but the path ahead is uncharted. A persistent issue over the past few years is the worrisome trend of cyber-attacks and security lapses, which has resulted in significant economic losses and sometimes even unthinkable consequences. In fact, the Oracle and KPMG Cloud Threat Report found that cybersecurity and IT professionals are now 3 times more worried about corporate security than safety at home. This result should be unsurprising, given that prosecutors in Germany are looking into how a woman died from delayed treatment after a cyberattack at the hospital.

   For those reasons, we should expect to see more sandbox environment created to trial emerging applications, and set and manage expectations. In 2021, we will also continue to witness an uptick in regulatory scrutiny and consumer awareness on data privacy and security. For innovation to be meaningful and impactful, telecoms must first and foremost consider adequate governance measures, and be prepared to anticipate and manage potential risks and issues to win the trust of regulators and consumers. TR

By Emily Ng, Global Key Account Director, Oracle

TELECOM Review
virtual panels

Telecom Review's virtual panels' series continues in 2021

In light of the huge success achieved in 2020, *Telecom Review announces that the series of virtual panels will continue in 2021* with new and updated topics.

The 2020 series saw the participation of top notch speakers representing the industry's leading brands and registered a record number of online viewers.

The 2021 series is set to cover the topics of:

- 5G deployment, user growth
- Capacity
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- Cloud, Enterprise business
- Digital Transformation
- Cyber Security
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