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Rebuilding the Future:
A Glimpse of How Some 'Smart Cities' Will Look in Asia

Rebuilding the Future: A Glimpse of How Some 'Smart Cities' Will Look in Asia

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Larger Edition, More Exposure, New Opportunities

"Global, Regional, Digital" is the theme of the 16th Telecom Review Leaders' Summit, and it is indeed all of these and more. This edition of our global summit will be the largest ever, with high-level international and regional participation gathered in a digital atmosphere.

On December 7 and 8, industry experts will share their insights and expertise at the Intercontinental Hotel, Festival City, Dubai, UAE. Over the course of the two days, new content will be discussed in keynotes and panels to shed light on the ICT and telecommunications industry's latest trends, namely sustainability, green tech, 6G, metaverse, the new generation of chipsets and the telecom sector's resilience. New panels such as "Women in ICT" and a special panel powered by AWS are also on the agenda.

Our partners this year are all industry leaders, and we're proud to welcome: du, e&, EY, AWS, Console Connect and PCCW Global, Huawei, MTN GlobalConnect, NEC, Netcracker, Nokia, Cisco, CSG, CommScope, Emircom, MYCOM OSI, Reailize, SES, Sofrecom, China Mobile International, GBI, Mavenir, MEF, ZTE and APTelecom.

The Telecom Review Leaders' Summit will host the ITU-CXO meeting on December 6, which will be attended by global CTOs and technology VPs from around the world. This will mark the sixth time that the Telecom Review Leaders' Summit has hosted this prestigious, invitation-only meeting.

Register now to attend the 16th edition of the Telecom Review Leaders' Summit, whether in-person or online.

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Rebuilding the Future:

A Glimpse of How Some 'Smart Cities' Will Look in Asia

Imagine a one-stop platform to access all government services – from birth records and tax transactions to updating information on one's mortgage loans and healthcare benefits; a surveillance system to help emergency operators foresee the need to deploy rescue teams to different locations; or robots that can help recovering stroke patients exercise and remind those with early-stage dementia to take their medication.

These are just some of the promises of "Smart Cities," which are being conceptualized and constructed to help develop more comfortable and livable communities.

According to the OECD-sponsored Emerging Markets Network, smart cities serve as a vital component of urban development. Cities and countries can apply smart services and smart technologies to create more efficient and livable urban environments, strengthen economic growth, promote well-being and enable citizen engagement.

Governments across the globe are actively seeking solutions to balance social, technological and economic growth. Many have started to develop smart city projects by investing in IT infrastructure and integrating innovative solutions in urban planning.

According to a 2019 study by UNESCO, Asia Pacific alone is predicted to account for 40% of the global smart city investments, or US$800 billion, by 2025.

In Southeast Asia, the idea of smart cities is seen as a viable solution

to the growing urban development that confronts and challenges many countries here, especially given the fact that about 70 million people are expected to migrate to urban areas by 2025.

The "Smart" concept is perceived to address the increasing problems brought on by urbanization. For example, such an approach could generate a more efficient and productive job market, as Southeast Asia is indeed expected to contribute nearly 1.5 million jobs. In a smart city, tens of billions of dollars could be saved annually as smart solutions are set to provide citizens with better housing options, lower energy bills and general household budget support.

Within the region, a newly formed collaborative platform, ASEAN Smart Cities Network (ASCN), aims to have regional members work together to achieve smart and sustainable urban development.

In other Asian countries, South Korea's smart-city policy has seen advancement as both local and national governments have been active in its promotion. According to the South Korean Smart City government website, 78 local governments nationwide have formed specific organizations for smart-city projects.

Meanwhile, Japan is now moving forward with what it dubs Society 5.0 – its new blueprint for a super-smart society. This project promises a sustainable socio-economic system for all with the use of digital technologies including AI, IoT and robotics.

And China, which is now leading the world with its smart city developments, is also delivering its concept to the forefront of urban planning across the country and in full support of its citizens' well-being.

As more countries embrace digital transformation, governments have also started charting roadmaps for their own smart cities. Here are some of the notable smart city-projects by different countries in Asia.

Japan

Some of the concerning social challenges that Japan is facing these days are the increase in its aging population, the decline in its birth rate, and the resulting lower numbers of the working-age population. These problems have led the Japanese government to rethink how it can continue to enable and promote a more livable society.

Japan is thus seeking to turn Society 5.0 into a reality.

As an updated blueprint for the country's super-smart society, Society 5.0 plans to completely transform the Japanese way of life by breaking the barriers between cyberspace and physical space.

With Society 5.0, the government envisions, among other things, self-driving cars and drones to deliver goods and services to residents in the least populated areas; remote medical consultation and robot-administered care for residents in nursing homes; and various energy supply and delivery options available to towns to meet their specific needs, no matter how far.

What was once merely a vision is today becoming reality in some cities and towns across the country, a testament to both the government and private entities working together.

Fujitsu is currently involved in projects aimed at the development of smart cities and smart communities in more than 20 regions.

One of them is in Aizuwakamatsu City, which is in the Fukushima disaster area. Fujitsu cooperated with the city government and a local electricity provider. The company plans to build an ICT platform to support widespread interest in renewable energy while contributing to and stimulating the local economy.

Panasonic, meanwhile, built the Fujisawa Sustainable Smart Town, located just 50 kilometers south of Tokyo near the town of Fujisawa. Situated on the site of a former manufacturing facility, it was the first of three sustainable smart communities that opened in Japan.

Among the continuing goals of this community is energy self-sufficiency, achieved by using solar power and other natural energy sources. In addition, residents there are also highly encouraged to minimize their waste and are provided access to apps that show their consumption levels along with tips on waste reduction.

Another smart city in the works is Fukuoka, which is planning to implement automation by AI automation and robotics, a focus that could introduce innovative concepts such as self-driving cars. Further, to streamline its healthcare system, Fukuoka proposes to advance telemedicine through enhanced communication networks and highly developed image and sound transfer, allowing remote yet thorough health examinations.

The Japanese government has developed a Smart City Reference Architecture framework to ensure smart cities develop in ways consistent with the principles of citizen-centricity, interoperability and sustainability. NEC has been deploying its own City OS platform, with its proprietary tech in biometrics, AI data analytics, ID management systems and full-layered security, which in conjunction with FIWARE can deliver unique solutions to regional social issues.

South Korea

The South Korean government is allocating a budget of $366 million to help its own companies secure orders related to smart-city projects.

The development of inclusive smart cities here is the government's response to many of the country's urban problems. It aims to establish a digital ecosystem and boost global cooperation using the innovative technologies of the 4th Industrial Revolution.

Each of the 78 local governments across the country has formed specific organizations for smart city projects,

and they are now scaling up those initiatives.

According to its portal, the national government is also developing national pilot cities on greenfield land, such as Sejong and Busan.

The country will be using new technologies including AI, blockchain and 5G to develop innovative solutions such as drones, self-driving cars and smart energy.

The smart city to be built in Sejong has a concept that is AI-based. It aims to transform the citizens' daily lives in various ways, including healthcare, mobility, education, jobs and energy, among others.

As one such example, Sejong plans to promote mobility-as-a-service by innovating a platform that optimizes transfers between different modes of transportation.

Meanwhile, the Busan pilot city will promote the concept of data and augmented reality. It is developing a state-of-the-art waterfront city focused on 10 factors, including water technology, energy and robotics. Among its goals is to produce its own energy by way of renewable energy sources. And its advanced smart-water technology will allow citizens to practice 100% water recycling using innovative solutions.

China

China is now embarking on an astounding 500 smart-city developments, which account for almost half of the world's total.

Such aggressive implementation is to address the potential challenges that the country could be facing in the coming decades. A study by the World Resources Institute indicates that China's population is predicted to almost double in the next 30 years, with nearly one billion more vehicles added to urban areas by then. China is also likely to experience an infrastructure problem as it looks to settle 300 million new migrants in its cities, a growth which will, in turn, add to problems like pollution, healthcare woes and demographic issues.

The country's technology hub of Shenzhen has already foreseen these urban challenges and is making great strides in translating its smart-city ideas into reality. It has, in fact, become a benchmark for smart cities across the globe, as evidenced by its receiving the Global Enabling Technologies Award from the United Nations Human Settlements Programme (UN-Habitat) and the World Economic Forum in 2020.

Shenzhen started introducing its smart-city concept as early as 2010, and the Shenzhen-based technology giant, Huawei, was the first technology firm to join the smart-city field.

Its development of smart infrastructure has delivered a wider range of smart services to its citizens and enterprises.

One of them has been autonomous driving. Data from the city government suggests that by the end of 2021, Shenzhen had opened roads stretching 145 kilometers for its autonomous driving tests.

Shenzhen is the first city in China to introduce regulations on fully autonomous, driverless vehicles. It has, so far, issued 93 licenses, including 23 for driverless tests with passengers.

To build an ideal smart city, Shenzhen has also combined its main infrastructure and city services. It has already employed a series of projects for its residents, providing smart technology to the transportation, healthcare, education and maritime sectors, as well as the entire community.

The city also boasts a cutting-edge water management strategy; the Shenzhen Water Bureau has applied water informatization to bring enhanced water management and water project construction.

Together with Huawei, it will develop a smart reservoir management platform to carry out automatic monitoring, alarm reporting and the smart management of reservoirs. Advanced technology such as 5G-driven drone boats and AI tools will be used for the maintenance of the reservoirs.

In terms of major urban transportation projects, the city will also open metro lines that will pioneer the use of computing and big data technologies to implement various subway service systems within the urban rail transit industry in the country.

When it comes to healthcare, a number of hospitals in the city can now enable online consultation services, and 22 have been granted an internet hospital license to deliver further consultation services for common and chronic diseases.

The Shenzhen government is also promoting the advancement of personalized services such as online deliveries of medicines, online home doctors and Internet+ medical care to allow citizens to have quicker and more convenient access to medical services in the comfort of their homes.

Singapore

"A digital-first Singapore is one where a Digital Government, Digital Economy and Digital Society harness technology to effect transformation in health, transport, urban living, government services and businesses."

This is how the Singaporean government envisions the city-state to be.

The future is on for Singapore as it continues to forge ahead with its smart-nation development.

Dubbed the smartest city in the world for three consecutive years by the IMD Smart City Index, Singapore boasts 94% digital government services from end to end.

Among the factors that have made Singapore's smart-nation initiatives a success are its application of big data for urban planning and resource management, its successful implementation of citizens' digital ID and its fast-growing fintech ecosystem.

Singapore's Strategic National Projects serve as the basis for realizing its smart-city vision.

The city-state now has the GoBusiness platform for enterprises across the country to access government e-services and resources.

To allow for more efficient and faster digital services, it also has a digital program it calls CODEX shared between government and private entities.

Singapore has also streamlined its financial transactions by continuing to develop a simpler and more secure digital platform that works across different systems.

Furthermore, it has introduced Smart Urban Mobility, in which digital technologies find intelligent solutions that improve its public transport system.

Singapore's smart-nation initiative additionally transforms the lives of its citizens by digitalizing healthcare. Its HealthHub now allows citizens access to all health records, while its Assistive Technology and Robotics in Healthcare features robotics and assistive tech that deliver solutions to better enable more mobility for the elderly and those with disabilities. Singaporeans can also access health care services remotely and manage their healthcare through its TeleHealth platform.

Moreover, Singapore has also ensured that technology is made accessible and available to all. The Singpass can now be used to access more than 2,000 services to more than 4.5 million users; it is also accepted at all government counters and is now available in all four official languages. The LifeSG app, meanwhile, delivers a one-stop platform for accessing over 100 government services.

To guarantee the necessary protection and security of all personal data from all cyberattacks, Singapore trained more than 450 officers from 33 agencies in the first whole-of-government ICT Data and Data Crisis Management Exercise in 2021. The knowledge garnered from that forum continues to be implemented today.

More cities in the region are expected to emerge as heralded smart cities globally. Among the most notable, Thailand earmarked $37 billion for its smart city near Bangkok and has already secured billions in investment pledges from global automotive, healthcare and logistics and robotics companies.

The Philippines is also starting to turn its smart-city dream into reality. Its ICT authority has said that locations outside of the regional capital of Metro Manila have set goals to develop more than a hundred thousand local jobs in their respective cities by 2025.

And Malaysia is also following its neighbors in developing smart cities in the country. The Malaysian government aspires to have a smart city that is powered by ICT, technology and innovations to resolve urban challenges, enhance the quality of life, foster economic growth, promote efficient urban management practices and much more.

In addition to being an impressive concept to address many urban development challenges worldwide, policymakers believe that the efficiency of these smart cities will only be successful by improving the quality of life of their people. TR

Huawei's David Wang: Stride to 5.5G for a Better, Intelligent World

During the Global MBB Forum 2022, David Wang, Huawei's executive director of the board and chairman of ICT Infrastructure managing board, delivered a keynote speech entitled Stride to 5.5G: The Foundation of the Future.

David Wang noted how, through concerted efforts, the industry has made significant progress and is ready to make the leap to 5.5G. To hit this milestone, Wang called upon all industry players to prepare on all fronts so that we can move faster towards the 5.5G era and eventually build a better, intelligent world together.

With the intelligent world fast approaching, the rapid changes we are set to experience will all be accompanied by increasing requirements for digital infrastructure. The next milestone we must hit on the path to this intelligent world is 5.5G. 5.5G will deliver 10 Gbps experiences, support hundreds of billions of connections, and help us achieve native intelligence.

Wang emphasized that, after two years of concerted efforts across the industry, 5.5G has seen huge progress and three things have become clear.

First, the standardization of 5.5G has been initiated and is right on track, making it more than just a vision.

Second, the industry has made breakthroughs in key technologies for 5.5G, and ultra-large bandwidth and ELAA can now deliver 10 Gbps experience.

Third, the industry has a clear vision for the IoT landscape. Three types of 5.5G-enabled IoT technologies supported by 5.5G — namely NB-IoT, RedCap and passive IoT — are developing rapidly and will support numerous IoT connections.

"The communications industry is constantly evolving. 5.5G has been kicked into high gear. Looking ahead, our task is to tackle these five new areas — standards, spectrum, products, ecosystems and applications. Together, let's stride to 5.5G and build a better, intelligent world," stressed Wang.

First, we need to set standards and promote key technological research.

Standards steer the mobile communications industry and will guide the 5.5G industry forward along a clearly defined path. We must work to ensure that Release 18 is frozen by Q1 2024, as planned, and will help 5.5G networks deliver 10 times better performance. Regarding Release 19 and beyond, we should come together to explore what capabilities 5.5G will require in order to support new services and scenarios as we continue to refine 5.5G standards. This will both maximize the potential of 5.5G and extend its lifecycle.

Second, we need to prepare more spectrum for ultra-large bandwidth.

We should fully utilize sub-100 GHz resources to build ultra-large bandwidth. mmWave is a key frequency band for 5.5G. Operators will need to acquire over 800 MHz of spectrum from this band if they are to realize 10 Gbps experiences. 6 GHz is also a potential ultra-wide band for 5.5G. When 6 GHz is promoted as an IMT band at WRC-23, it is likely that countries will need to auction off the 6 GHz spectrum. We can also refarm the sub-6 GHz spectrum to achieve ultra-large bandwidth for 5.5G.

Third, we need to prepare for 5.5G with mature networks, devices, and chips.

Both our networks and devices need to be upgraded to deliver 10 Gbps experiences. More specifically, our products will rely on ELAA technologies that can support over 1,000 antenna arrays suitable for mid- and high-frequency bands, and massive MIMO will be required to support 128T capacity. Additionally, more innovation will be needed in regards to 5.5G chips and devices to make them more intelligent, capable of supporting 3T8R or even more channels, and able to aggregate more than four carriers.

Fourth, we need to work together to build a thriving 5.5G ecosystem.

This thriving ecosystem will better address digital requirements in all scenarios. Take the 5.5G-enabled IoT ecosystem as an example. Operators and equipment vendors will need to improve plans for 5.5G networks in order to better connect both people and things, while device vendors must adapt costs and modular capabilities to application scenarios. In addition, the industry and app developers will need to act immediately to start incubating new apps.

Fifth, we should continue our work on groundbreaking applications.

As our standards, spectrum, products and ecosystem mature, 5.5G will become a reality, allowing even more applications to emerge. Multi-sensory interactions will transform the way we communicate. Intelligently connected vehicles are set to become a third mobile space and see wide adoption, while intelligent connections across industries will lead to the dissolution of information silos, driving industrial upgrade. A new generation of innovative applications is now emerging, and our vision for the intelligent world is becoming clearer. That's why all industry players need to work together towards the exploration and creation of these applications.

The Global Mobile Broadband Forum 2022 is hosted by Huawei, together with its industry partners GSMA and GTI. This annual forum gathers mobile network carriers, vertical industry leaders, and ecosystem partners from around the world to discuss how to make 5G a commercial success and other hot topics like green development, intelligence, and 5G evolution. TR

The next milestone we must hit on the path to this intelligent world is 5.5G

Atsuko Okuda, ITU's Regional Director for Asia and the Pacific

How ITU Is Bridging the Digital Divide

The International Telecommunication Union's (ITU) latest data suggests that roughly 2.7 billion people – or one-third of the world's population – still don't have access to the internet in 2022.

And while an estimated 5.3 billion people worldwide are now online, the trend indicates that without increased infrastructure investment and other new initiatives to support digital skills and digital services, the chance of connecting everyone by 2030 may still not be possible.

ITU's Regional Director for Asia and the Pacific, Atsuko Okuda, spoke to Telecom Review about what they see as the continuing challenges and solutions that they are implementing to address the digital divide in the region.

Okuda said that this slow growth in the number of people who have online access is worrying. "I believe this is something we should pay more attention to. And what's more worrying is that the majority of 2.7 billion people live in developing countries. There's still a huge number of people unconnected and underconnected.

While massive investment from different public and private sectors has been put in to support the drive for digitalization, Okuda said that ITU should continue to work on policy and regulation apart from its role of promoting collaboration, inclusion, transparency, fairness and competition.

And Okuda explained why there's still a huge digital divide in Asia Pacific. First, she pointed out the connection gap between the urban and rural areas. "The stark disparity between urban connectivity and rural connectivity in Asia Pacific is one of the worst in the world. The number of connectivity in rural areas is about half in urban areas."

The generational gap, Okuda said, is also among the factors adding to the wide digital divide in the region. She stressed that younger generations are mostly connected – about 80% of the youth have online access – while for the rest of the population, the number goes down to half, or even to one-third.

Another aspect that's affecting the digital divide is gender. Okuda said that there's

a disproportionate number of male users compared to female users, and there are also sub-regional disparities.

Okuda shares another observation that they at ITU saw when it comes to the shift from basic to meaningful connectivity. She explains, "When we talk about digital divide, we also need to understand those characteristics of the unconnected groups because each group has different challenges. In terms of geography, it's definitely very hard when the cable is not there. But even when the cable is there and the family is connected, we found out that one mobile phone for the entire family is not actually sufficient for five children to learn online concurrently under lockdowns. Even there are many families who had some sort of devices, they couldn't access to really learn in a meaningful way. Not to mention that the device itself was an issue; in many families, the smartphones were not affordable."

Okuda added that there is emerging evidence which shows that the lack of meaningful access to the internet affects e-learning opportunities, which in turn will affect the educational outcomes. "Gradually, we will see that the digital divide is actually cascading to other social-economic inequalities; If that's really evidenced, the stratified educational outcomes will consequently impact the job opportunities down the road. This means the current unconnected generation of people will face the consequences down the road."

Okuda said that to address this particular challenge, they started collaborating with other UN agencies, such as UNICEF, to encourage manufacturers of mobile devices to support the e-learning of underprivileged children.

And with their goal of not leaving anyone behind, ITU has so far worked to promote the productive and safe use of mobile phones among the elderly in Thailand, among others. Okuda explained, "Through mobile phones and applications, we would like to make sure that older people have access to health, medical services, as well as public information and conduct financial transactions safely and securely; With the ability to purchase goods and services, the technology can really meet the demands of different groups, including the older people."

Meanwhile, ITU has also come up with a program for girls and young women to encourage them to pursue a career in STEM, particularly in the field of information technology. ITU further partners with different public and private organizations to train these young women on online safety, digital agriculture, e-commerce and other related courses.

Smart Villages and Smart Islands

Moreover, ITU has also built the Smart Villages and Smart Islands concept to help expand the digitalization efforts to many unserved and underserved communities in Asia-Pacific.

Smart Islands is an initiative that takes an innovative approach to provide connectivity and scalable and sustainable services to disadvantaged island communities. Its objective is to improve the livelihood of the people from these communities by connecting them to a range of digitally enabled services and digital literacy programmes.

"Many development challenges – such as the migration of people caused by the size of economy, tightening job opportunities and climate impact – may be the reason why the Smart Village Smart Island concept owned by the Pacific member countries is so important because they believe that this is the future, perhaps the only viable future, for them to address efficiently and effectively [the] development challenges through creating jobs and being innovative," Okuda said.

Aside from this, Okuda explained that, while the investments by development banks and partners have been made in fiber optics and submarine cables, many of the community resources have been often left unused. And this has prompted the establishment of the Smart Island project to help mobilize the community resources and spur the economic activities of the people from these island communities.

"We started discussing the best way to stimulate social, economic, and environmental activities on the ground and connect people in a really meaningful way. That's where this Smart Village Smart Island came about, because it provides not only the connectivity but also capacity development, digital services and community engagement. And they can take advantage of all of it."

Currently, ITU has deployed approximately 100 ground terminals in nearly 10 Pacific countries, which ended in 2020. Okuda said that after a post-project assessment, they realized that even after the project ended, people were still using this infrastructure innovatively.

She added that the Smart Village Smart Island initiaitve allows people to take advantage of the available resources, and it also connects them to conduct different public service transactions.

In order to implement the Smart Village Smart Island initiaitive in the Pacific, ITU has also helped mobilize US$8 million from the UN Sustainable Development Goals Fund in collaboration with other UN agencies. TR

> The stark disparity between urban connectivity and rural connectivity in Asia Pacific is one of the worst in the world. The number of connectivity in rural areas is about half in urban areas

Eric Handa, CEO, APTelecom

APTelecom Captures Growth Opportunities in New Verticals and Emerging Markets

During the 25th Submarine Networks World, Telecom Review Asia interviewed Eric Handa, CEO of APTelecom, to learn more about its Vision 2025 business plan to support growing verticals as well as ambitions to bridge the digital divide in emerging markets.

APTelecom specializes in the subsea sector but has been expanding its services to benefit more verticals as part of the Vision 2025 business plan. Can you share with us some developments?

APTelecom started as a submarine cable specialist when it was first established about a decade ago, but we have since diversified our portfolio to include satellite and data center services. As part of this diversification, Vision 2025 enables us to pivot toward digital infrastructure consulting, with the subsea sector remaining our core competency, as we extend offerings to a wide range of verticals. This has led to strategic partnerships with organizations like Equinix.

Our team and client base have expanded as our offerings grow in terms of breadth and depth. For instance, APTelecom extends terrestrial connectivity – complementing subsea connectivity – to deliver power-converged connectivity. Already, many cable landing stations are also doubling as edge data centers. As many traditional ways of doing business are being transformed, APTelecom recognizes the need to pivot and better support businesses.

Earlier this year, APTelecom launched a new investment arm to spotlight edge data center opportunities. What is the motivation behind this?

From a technical and commercial perspective, proximity to the end user is driving the need for increased edge data centers. To cope with new demands, a typical data center needs to achieve a latency of 5-7 milliseconds to the end user – something that is not feasible from a connectivity standpoint from a single location to support applications including artificial intelligence and user-generated content.

APTProcure serves as the investment arm to capitalize on the growing need for more edge data centers to support emerging markets not just in Southeast Asia, but also in Africa and the Middle East, in the coming 5-7 years.

Can you tell us about some strategic partnerships forged and how APTelecom plays an integral part in bridging a digital divide?

We have forged many meaningful partnerships, including with Angola Cables in Africa, which has enabled us to provide connectivity for global hyperscalers to deliver modern technologies to otherwise neglected areas in the world.

Subject matter expertise and knowledge are critical building blocks to bridging a digital divide. APTelecom is able to bring both subject matter expertise and knowledge to the table to make a difference in underserved areas. Needless to say, capital is also required to provide much-needed financing. This is the impetus for establishing APTProcure, to provide opportunities to fund or finance projects requiring $4-5 million – projects often overlooked as they fall below a threshold of capital.

To APTelecom, emerging markets represent an opportunity to address a digital divide and bridge the "haves" and "have nots" from a connectivity standpoint. We see many commercial opportunities in emerging countries, where we are particularly keen to support their growth in the area of sustainability. We believe that existing climate concerns require more actions and executions than discussions, and emphasize the importance of bringing connectivity to areas in the world that can exploit sustainable and green power – an area that is close to our heart. Be it in western Europe, Africa or the Middle East, this is also a key area where we are working with clients to unearth sustainable, green power. We believe that future cables will be built and deployed to where power is green and readily available to support and grow more underserved areas. TR

> Vision 2025 enables us to pivot toward digital infrastructure consulting, with the subsea sector remaining our core competency, as we extend offerings to a wide range of verticals

Antti Kankkunen, vice president, Subsea PLM, Infinera

Infinera: Going Beyond Capacity Needs to Provide Public Service

Telecom Review Asia connects with Antti Kankkunen, vice president, Subsea PLM, Infinera to learn about new developments in the subsea cable market and how Infinera is delivering value to the region.

Can you share with us some of the latest developments in the subsea cable market?

The continuing high demand for subsea capacity, which is driven by the constantly growing internet, is the trend that is driving the subsea industry. The operators find enough demand between all continents to plan new cables along the shortest routes. Examples are crossing the Arctic region to get from Europe to Asia or going directly from Asia to South America. There is even talk about building a cable to Antarctica. The cables themselves are growing in the number of fiber pairs to increase the total capacity per cable to hundreds of Tbits per second. Infinera is a leading supplier of optical transponders to these cables, and like all transponder suppliers, we are experiencing strong demand. All transponder suppliers are dealing with constrained supply chains, and Infinera's strategy of deep vertical integration has proven to be a good match to the demands of the subsea market. We integrate all optical components of the transponder to a Photonic Integrated Circuit – or PIC - which we manufacture in our own semiconductor fab. This is enabling us to keep the transponder lead times at almost normal levels to be able to answer the demand placed on us by the market.

What are the advances in open optical line technologies and how is this imperative as the world steps up on digital transformation?

Transponders are the most rapidly evolving technology in the subsea ecosystem. Cables are deployed for a 25-year life, and they are filled with a new generation of transponders at least four or five times during their life. All new cables are open. Wet plant buying decisions and transponder buying decisions are independent of each other. The cables are also designed to allow transponders from different vendors to share the cable. All this is making the transponder industry extremely competitive. If we look at the Transatlantic cables as an example, the bit rate of the waves has grown from 10 Gbits per second to over 600 Gbits per second over the last twelve years. Going forward, this will be at least doubled over a few years. This is driven by the Moore's law on the silicon side, with the 5nm and 3nm technologies following the current DSPs based on 7nm CMOS. The other key enabling technology is the photonic integrated circuits – or PICs – which are currently running at 100 Gbaud but will be first increased to 150 Gbaud and then to 200 Gbaud. This will take a few years as the industry knocks down the technological barriers to achieving the higher signaling rates, which then translates to lower cost per bit.

How is Infinera working with industry partners to deliver benefits to the general ?

Apart from working with industry partners to address the constant demand for new capacity, Infinera has embarked on an initiative led by Google as more of a public service than an attempt to maximize profits. We are participating in an effort to instrument the existing subsea cables with seismic detection capabilities. Any mechanical stress on the optical fiber at the bottom of the ocean changes the state of polarization – or SOP – of light in these fibers. We are adding SOP analysis capabilities to our transponders, which enables us to locate the seismic event with the granularity of a subsea repeater, which is 50–100km. This can be done on the existing cables without any changes to the wet plant. We stream this SOP data to the Google cloud. If data from multiple cables is correlated with some artificial intelligence software created with the help of some seismologists, it is possible to locate earthquakes and predict tsunamis. This opens the door to a system where your Android phone can warn you about a coming tsunami. It is still early days with this system, and the main contributor here is Google, with our role being the collection of SOP data without transponder, but this is certainly a very exciting project with a lot of potential to do public good. TR

“Apart from working with industry partners to address the constant demand for new capacity, Infinera has embarked on an initiative led by Google as more of a public service than an attempt to maximize profits”

Vaibhav Magow, Vice President, International Division Hughes

Hughes: Multi-Orbit, Multi-Transport Satellite Solutions for Future Connectivity

Connectivity demand in the Asia Pacific has been on a steady rise in recent years, providing a unique opportunity for the satellite industry to capture new markets amidst new requirements. To learn about next-generation ground systems and their impact on the region, Telecom Review Asia Pacific connects with Vaibhav Magow, Vice President, International Division, Hughes for key insights.

Can you shed light on the current satellite ground segment market and discuss the future of ground systems?

We are at a very exciting period in the satellite industry. The first generation of high throughput satellites (HTS) brought more capacity but they utilized a static design where the coverage and capacity never changes. The latest generation of HTS systems feature flexibility where the coverage capacity can be changed while the satellite is in orbit. This enables operators to meet market requirements for increased capacity and broadband, as well as provides additional flexibility to both operators and customers. Of course, having the right ground system and technologies is a critical part of the equation for the satellite operators and this is an area where Hughes has put a lot of focus. Our JUPITER Series-3 features support for the latest generation of flexible satellites as well, bringing more throughput and efficiencies for the operators.

How has the satellite ground segment evolved, and what are the benefits delivered?

New ground systems offer greater operationally flexibility and scalability. Coupled with the ability to integrate private cloud infrastructure, the latest generation ground systems are very compact which also allows operators to reduce the footprint of their rollout.

With the JUPITER System, we have put a lot of focus on automating and simplifying the operation of the system. For instance, operations are simplified with dynamic channel reconfiguration to work around traffic patterns and cater to different profiles of customers, say in the mornings and evenings. With dynamic reconfiguration, the system automatically adapts to traffic patterns without the need for manual interventions from the operators. Especially for very large systems, where changes cannot be made very rapidly, these systems can

cater to changes dynamically, giving operators the flexibility to meet varying requirements and deliver greater capacity to more customers.

At the gateways, where there was only C-, Ku- and Ka-band previously, we are the first to commercialize the use of Q-band and V-band feeder links to bring in more capacity for satellites. We can uplink and downlink more capacity to achieve high speeds supported by VHTS to essentially bring down capacity costs for our customers. But with these higher frequencies come greater susceptibility to rain fade, so we have designed our system to enable very rapid gateway switchovers for these Q-band and V-band implementations.

Today's ground systems are also becoming more future-proof. To pave the way for future connectivity as 5G systems proliferate, Hughes recently successfully tested 5G satellite backhaul with the JUPITER System. Through a series of tests, we demonstrated that a 5G RAN (Radio Access Network or base station) can connect to the network core over satellite using the JUPITER System – thereby validating our interoperability of 5G networks for cellular backhaul. This paves the way for operators who may only have 3G or 4G networks today to support 5G with satellite backhaul as they upgrade their systems.

How can operators in the Asia Pacific region leverage Hughes solutions to meet growing connectivity needs to scale?

In many markets in the Asia Pacific and other regions, Hughes is enabling operators to leverage VHTS technology to deliver connectivity to 2G, 3G and 4G networks. In Indonesia, for instance, our partners employ the JUPITER System to power community Wi-Fi hotspots in digital divide programs, as well as contribute to consumer satellite broadband and enterprise requirements. With the new, next-generation satellites, our partners can provide the same user segment higher speeds at better prices to positively impact those in rural and underprivileged communities.

For example, in Indonesia, Hughes has a longstanding partnership with PT Pasifik Satelit Nusantara

(PSN). In April, we signed a new agreement for them to utilize the Hughes JUPITER System for the Nusantara Lima satellite to provide internet access to those living outside the reach of terrestrial broadband.. A total of 11 JUPITER gateways will power 100 Gbps of capacity across Indonesia, as well as provide capacity to neighboring countries moving forward. In this case, the JUPITER System enables PSN to scale, leveraging high-throughput satellites to provide its customers with higher speeds.

In the Philippines, we are partnering with Cignal TV, a premier DTH satellite provider in the country, to provide broadband services to its subscribers. Hughes is helping Cignal TV scale as traditional satellites are replaced with very high throughput satellites once they become available in the Philippines, using the JUPITER System to enhance satellite capacity and help them achieve their business needs.

Can you share with us some partnerships or collaborations and future plans in the region?

In the region, PSN is just one of many customers and partners that we work closely with. We also have customers and partners in Malaysia and Australia. Globally, we boast a strong presence in other regions. For instance, in Latin America, the JUPITER System is used to deliver high-speed broadband services to hundreds of schools to elevate communities.

In the Asia Pacific, I think what is most exciting is that we are seeing new VHTS satellites that will enable 100 Mbps and 200 Mbps services to subscribers. We will see VHTS and LEO systems serving new requirements with the acceleration of 5G to bridge a digital divide. These multi-orbit, multi-transport solutions will have a far-reaching impact on the region.

As these VHTS GEO satellites, LEO constellations and 5G networks come online, we'll be able to integrate them into robust, multi-transport solutions. By combining GEO and LEO, we will offer customers an amalgamation of services with the price advantages of a GEO and the low latency of LEO. In fact, we call this our ActiveComms Ecosystem – or ACE – which is our ability to deliver multi-orbit, multi-transport solutions, unlocking a mix of GEO, LEO and terrestrial capabilities, along with the enabling, smart technologies and managed services, to serve our customers' requirements. TR

“Today's ground systems are also becoming more future-proof. To pave the way for future connectivity as 5G systems proliferate, Hughes recently successfully tested 5G satellite backhaul with the JUPITER System”

How the Philippines Is Heading Towards a Digital Future

In the next three years, 5G connections across the globe will reach 400 million, according to a recent study by the Global Systems of Mobile Communications Association (GSMA).

Its Mobile Economy Asia Pacific 2022 report suggests that 148 million of these connections will include the Asia Pacific, with 333 million new mobile internet users in the region.

While among the countries that are still lagging behind its regional neighbors in terms of fast internet connectivity, the Philippines is now gearing up for large-scale projects supporting what its new leader envisions to be a Digital Philippines.

Most recent data provided by GSMA indicates that the Philippines has been advancing on 5G technology compared to its regional neighbors. Using Speedtest Intelligence data, Singapore stood ahead of its regional neighbors on median 5G upload speeds, recording 246.01 in the first quarter of this year, while the Philippines logged a median download speed of 163.51 Mbps. It also showed that LTE performance in the country has improved, from 11.15 Mbps in the first quarter of 2021 to 15.53 Mbps in the same period of 2022.

Despite the improvements in internet connectivity, the country still sees some crucial challenges, including the growing digital divide among Filipinos.

In light of the recent political transition in the country, how does it plan to bridge this gap as it moves forward towards a more innovative future?

President's Goal to Digitalize the Philippines, Bridge Digital Divide

During his first State of the Nation Address, Philippine President Ferdinand Marcos Jr. stressed his goal to digitalize

the country including government processes, as well as to enable universal connectivity. These are part of his plans to boost the development of the digital economy as a way to stimulate economic recovery from the pandemic.

Latest data from Statista.com shows that, as of February this year, the Philippines has 79.6 million internet users, a 72.7% internet users penetration.

The President stated in his speech, "As the world moves into rapid digitalization, the digital divide will be more pronounced. The depth and breadth at which these technologies will be transformative in our lives is fully expected."

He said that he sought the help of the country's ICT chief to deploy digital connectivity across various islands in the country.

In response, DICT Secretary Ivan John Uy told a local news agency that areas underserved by telecoms companies will be covered by a satellite-based internet to be provided by SpaceX's Starlink, with availability expected by the end of this year.

President Marcos further noted, "All relevant modes of digital transport should be utilized. These may be through a combination of terrestrial or submarine fiber optics, wireless, and even satellite technology."

Marcos added that they will address connectivity challenges by implementing two of the government's priority measures, including the common tower plan that will allow telecom and internet service providers to share towers. And another is the National Broadband Plan that aims to fast-track the development of the Philippines' network infrastructure.

He said that the Philippines cannot just "stand idly by" amid the scale and speed at which all these technological changes are happening across the globe.

Local Telecom and ICT Operators Pledge To Support Government's Plans

President Marcos' plans were welcomed by major telecom operators and those from the information and communications technology (ICT) sector, who have expressed their support and commitment to the new administration's goal to have a more innovative and technologically advanced economy.

Among them is the PLDT Group, who expressed their willingness to cooperate with the President's roadmap towards economic growth. In a statement, PLDT and Smart President and CEO Alfredo S. Panlilio said, "We support the government's thrust to connect our countrymen and make sure that no Filipino is left behind as the world becomes more digital."

He added, "We are also prepared to assist in the government's digitalization efforts, empowering its vision of an agile bureaucracy that is responsive to the needs of the public."

With President Marcos' aim to employ digital solutions in order to streamline public services across government agencies nationwide, PLDT Group also said that it has continued to broaden the reach and capacity of its fiber infrastructure, which now allows its fiber-to-the-home services to be extended to upland areas in the country.

It also continues to invest in its network, with 518.5 billion pesos spent in the last decade up to 2021. Network-related projects accounted for the bulk of the 89 billion pesos spent for 2021. Capex guidance for this year is 85 billion pesos.

Meanwhile, PLDT Group's major industry competitor, Globe Telecoms, has also echoed the same response to the new Philippine leader's call for a digital economy.

The company affirmed its support of the government's goal to digitalize government processes and deliver universal connectivity nationwide.

Globe's President and CEO, Ernest Cu said, "The administration can count on the universe of Globe's digital solutions– from new technologies our core telco business offers to our portfolio companies in fintech healthtech, edutech and more– to provide innovative services to make its digitalization and connectivity goals a reality."

The CEO and Co-Founder of Converge ICT Solutions also pledged support to the government's plans for universal connectivity. Dennis Uy said in his statement, "We're pleased that the new administration is prioritizing universal connectivity, especially at this critical time when digitalization is at the heart of everything that we do. Converge is supportive of this initiative, as we push for digital democracy in the Philippines."

Converge boasts its nationwide rollout of fiber network, which has now reached 12 million homes as of the first four months of this year. As of March, 645,000 fiber ports were installed in the country. TR

> Philippines logged a median download speed of 163.51 Mbps. It also showed that LTE performance in the country has improved, from 11.15 Mbps in the first quarter of 2021 to 15.53 Mbps in the same period of 2022

Elevating Customer Experience in the Telecom Sector

Communication service providers (CSPs) understand the value of elevating customer experience and digital engagements to stand out from competition. This shift to an increased focus on digital customer experiences is essential to CSPs' transformational journeys.

Customer experience is a critical aspect in every service business and a main differentiator in a competitive telecom landscape. Instead of merely being focused on upgrading network capabilities, CSPs are increasingly challenged to prioritize intuitive, seamless designs that simplify customer engagement in order to provide what they want and need. For instance, a single mobile app can serve as a one-stop platform for myriad services, even billing.

As CSPs reinvent their relationships with customers, cloud capabilities and features such as virtual assistants or chatbots are also becoming commonplace to streamline customer service processes. Looking ahead, customer experiences can be enhanced with augmented reality to support user functions across markets.

In a report specific to the Indian market, KPMG cited that improving customer experiences can help companies, including telcos, raise their valuation by 125% to 400%. Enhanced customer experience is key to building long-term customer relationships and creating sustained value to help companies grow.

Personalization Key to Evolving Customer Experiences

Personalization in services is important in elevating customer experiences. Big data and analytics are instrumental in creating tailored and specific experiences based on the characteristics of customers. They provide useful metrics that allow operators to track customer satisfaction and more.

Round-the-clock and consistent, reliable services add value to an omnichannel customer journey that facilitates meaningful touch points. Building from past behaviours and patterns, customer engagement is advanced to a new level that allows customers to access a multitude of services across multiple channels whenever desired, ensuring that an end-to-end experience is created for customers.

Multi-Faceted service assurance is key, as customers expect more from their voice, text and mobile services. With pay TV growing, operators need to have a unified view of customers wants and needs, leveraging real time analytics to achieve relevant breakthroughs.

In order to capture more subscribers, billing and payment is another area to target improvements. In one such example, countries such as Indonesia and the Philippines have implemented staggered mobile data plans so that subscribers who tend to spend in small amounts are not bound by long-term data plans. This includes giving postpaid pay-as-you-go subscribers the option to switch to volume-based plans should their data limit be exceeded, or a "pay-to-boost" option where needed.

SaaS to Gain Competitive Advantage

Traditional legacy models are giving way to engagement-centric SaaS models for customer engagement functions as one way to achieve scalability and quicker . Another benefit is lower set cost and increased IT cost savings, estimated by Analysys Mason to amount to as much as approximately 25% IT cost savings over the course of five years. The value of the global SaaS market for OSS and BSS is estimated to be at $10.7 billion by 2023, representing a 29.5% compound annual growth rate since 2018.

As CSPs continue to digitally transform, SaaS spending has been growing. In 2019, SaaS accounted for 5% of CSP's operational expenditure. This figure is expected to reach at least 11% by 2023.

In Singapore, Circle Global recently completed the acquisition of the mobile virtual network enabler (MVNE) business, a US-based cloud software, communications platform company. With this strategic move, Circle Global aims to expand its SaaS and 5G capabilities.

Service providers are also capturing growth opportunities in this market, as they roll out more SaaS in their service portfolios targeting CSPs that will need to update processes in the 5G era. As a cloud-first strategy takes root in the industry, CSPs step forward with a suite of easy-to-adopt solutions to take customer experience to the next level. TR

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Airtel Launches 'Always On' IoT Connectivity Solution

Bharti Airtel has announced the launch of the "Always On" IoT connectivity solution in India. Airtel's "Always On" solution comprises the dual-profile M2M eSim which allows an IOT device to always stay connected to a mobile network from different Mobile Network Operators (MNOs) in the eSIM.

The Airtel "Always On" solution complies with the Automotive Research Association of India (ARAI)'s AIS-140 standard, implemented by the Ministry of Road Transport and Highways (MoRTH). It specifies mandatory requirements related to connectivity and GPS tracking capabilities for devices in all passenger-carrying buses, private fleets and other public transport vehicles for tracking, safety and security purposes.

As per law, all registered buses and taxis are mandated to install this device. The government of India recently made it mandatory for vehicles carrying hazardous goods to also have a tracker installed that complies with AIS-140 standards. In addition to these, there are emergency vehicles such as ambulances; vehicles from the mining and construction industries working in remote locations; and other mission-critical and intelligent communication use cases that need higher availability and reliability of the network.

With its future-ready, GSMA-compliant platform; flexible API-based eSim lifecycle management on the feature-rich Airtel IoT Hub; and full compliance with Department of Telecom (DoT) M2M guidelines, Airtel is looking to acquire market leadership in this segment in the next few years.

Speaking about the launch of the "Always On" AIS-140 connectivity solution, Ajay Chitkara, director and CEO of Airtel Business, said, "We are delighted to bring 'Always On' connectivity solution to our customers. We believe this is the next big opportunity in the IoT segment. Our strengths in the network, a modern and GSMA compliant platform offering real-time access to data and flexibility to integrate the solution with custom APIs will make Airtel Business stand out in the market."

The AIS140 solution has already been tested and adopted by some of the leading companies in the industry, like Lumax ITuran, Loconav and e-Trans. Lumax ITuran Telematics is a renowned name in advanced telematics technology and offers telematics products and services to the Indian automotive industry. LocoNav is the world's fastest-growing fleet-tech company, with over 5 million vehicles on the road in over 50 countries. While e-Trans is one of the leading vehicle tracking solution providers with a Pan-India network.

Globe Deploys 252 More 5G-Ready Cell Sites on Philippines' Southern Island

Globe announced it has deployed 252 5G-ready cell sites on the Philippines' southern island of Mindanao. The telco giant's scaled-up deployment of 5G wireless technology across the country has yielded 933 cell sites in the first half of 2022.

As of June 30, Globe's 5G network had reached 85.8% of key cities in Visayas and Mindanao and 96.6% in the National Capital Region in terms of 5G outdoor coverage.

Data showed a steady hike in 5G usage in Mindanao, particularly in Davao City, which almost tripled in June from the January figures. Likewise, hefty increases were registered in June by Cagayan de Oro and the town of Libona. Nationwide, Globe saw a 73.4% increase in 5G data traffic from January to June this year.

"We continue to invest in the latest mobile technologies like 5G as part of our commitment to bring better mobile experiences that can uplift the lives of our customers no matter where they are in the country," said Darius Delgado, head of Globe's consumer mobile business.

So far, Globe has already spent more than half, or 50.5 billion pesos, of its 89 billion-peso budget for capital expenditures this year. It was used to build new cell sites, upgrade existing sites to 4G/LTE, accelerate the rollout of 5G connectivity and ramp up the fiberization of Filipino homes nationwide, as part of Globe's commitment to the United Nations Sustainable Development Goals.

By the end of the first half of 2022, the number of devices serviced by Globe's 5G network had increased by 52.6%, to 2.7 million, from 1.62 million in January.

Globe 5G has fiber-fast download speeds of up to 156.84 Mbps (nationwide average) and even higher in Metro Manila at 167.63 Mbps on average as of May this year. These speeds peak at 342.7 Mbps nationwide and 347.2 Mbps in the capital region.

Telenor Asia Headquarters in Singapore to Capture New Market Growth

Telenor Group has announced the formation of Telenor Asia, a more independent regional entity with headquarters in Singapore. Telenor Asia will take on full oversight and responsibility for the company's operations in Bangladesh, Malaysia, Pakistan and Thailand.

"The strengthened team at our Singapore headquarters will add value to our operations and safeguard our interests in the region. This will also help us ensure value creation of our assets, and we will explore structural partnerships or, in the future, a potential IPO," said Jørgen Rostrup, head of Telenor Asia.

"The foundation for our continued growth in Asia is how our services help improve people's lives and empower societies. In a recent survey we conducted of 8,000 people in South and Southeast Asia, a resounding 93% said that mobile connectivity improved their quality of life," he added.

Each market will now have dedicated Investment Management teams. These teams will take on an asset manager role and represent Telenor's interests in local boards. The team in Singapore will also be strengthened with expertise in finance, operations, risk management, governance, people management and responsible business.

In 2021, Telenor Asia signed merger agreements in Malaysia and Thailand. These mergers are the largest and second largest in Southeast Asia. When the two mergers are completed, Telenor Asia's portfolio will comprise leading telco players in three large Asian markets, with more than 200 million customers and US$10 billion in revenue.

To achieve a target of US$1.2 billion in cash flow by 2025, Telenor Asia will realize synergies from the two mergers and maximize opportunities across three areas.

The first is increasing mobile adoption and data usage in Bangladesh and Pakistan. There are more than 150 million people in these two countries without mobile devices, and 50% of the current customer base subscribe to voice services only.

Second, Telenor Asia will grow business-to-business (B2B) revenue. Current revenue contribution to Telenor Asia from this sector is around 5%, with large growth potential. Throughout the pandemic, when the overall telco sector was contracting, Telenor Asia's B2B revenue was up by 10%.

Third, focus will be placed on expanding customer value by offering services beyond core mobile connectivity, such as insurance, security and gaming products.

Telenor has been present in Singapore since 1998 and has a diverse workforce of over 180 employees. Singapore is also home to Telenor's global procurement company, where a team of skilled professionals manages complex supplier relationships and ensures responsible supply chains. Telenor Connexion, which provides cutting-edge IoT solutions, has a team of sales professionals covering Asia Pacific from Singapore. Telenor's journey in Asia began with Bangladesh in 1997. Fast forward 25 years, Telenor has 165 million customers in the region and is committed to supporting national digital ambitions.

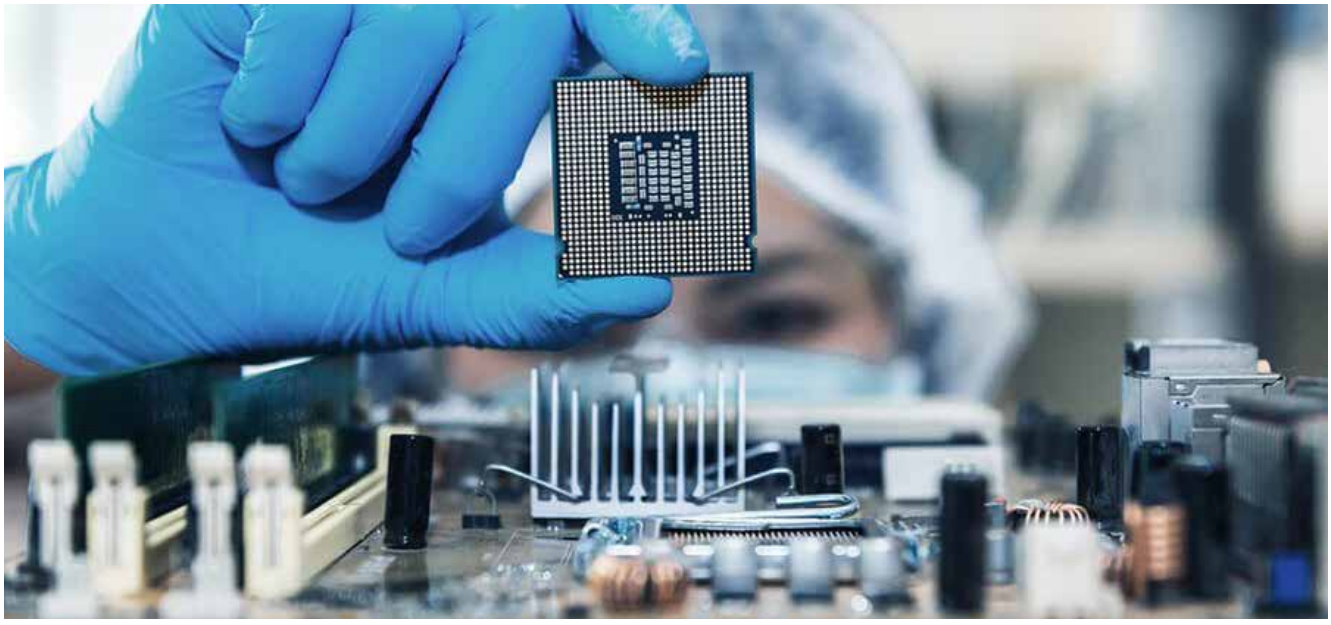
Maxis in Metaverse Aims to Provide Immersive, Engaging Experiences for Customers

Maxis is exploring the future of living, working, playing and learning in the metaverse. This is in line with its Rangkaian Kita Rangkaian Malaysia (RKRM) campaign to serve all Malaysians in every way possible and at all times.

RKRM is the reinforcement and deepening of Maxis' Always Be Ahead brand purpose. Maxis is driven by its evolution from a mobile telecommunications provider into a connectivity and digital solutions expert, one that offers solutions for every segment, powered by its leading 4G network and fiber coverage, as well as the best 5G innovation.

While still in its preliminary stages, Maxis in metaverse aims to provide a unique destination for an immersive experience with highly engaging, relevant and rewarding interactions. Through the platform, Maxis provides a glimpse into the possibilities of what the future may look like from multiple perspectives – from essential services, customer engagement, enterprise solutions, gaming, talent procurement and immersive education – and is building an ecosystem of partnerships with multi-industry verticals.

"The metaverse mirrors our brand purpose and our What's Possible core value as it expands minds to the possibilities of what we can do in the digital future to continue serving our customers in the best possible way," said Patrick Er, Maxis' chief sales and service officer.



Chipageddon: Asia-Pacific as the Leading Manufacturer of Semiconductors

The supply chain dilemma has impacted every aspect of technology. There are a vast number of industries that count on chips nowadays, and undoubtedly, the telecom industry is one of them. However, since COVID-19 swept the globe, these sectors have had to contend with a number of difficulties, including a global chip scarcity that may last until 2023, according to studies.

In the early 1970s, when the telecommunications sector first began to use chips, engineers Hodges and Gray merged analog and digital signal processing into a single MOS mixed-signal integrated circuit. Ever since, almost every electrical gadget and piece of equipment has been using chips, and all have recently been impacted as the demand for these chips outpaced the supply.

The Federal Communications Commission (FCC) has received warnings about a persistent global shortage of semiconductors that might hamper network installations and make it more difficult for them to meet important standards for a number of political programs. The shortage has a negative effect on almost every aspect of the industry, according to the Telecommunications Industry Association (TIA), hampering the equipment and services as well as telecommunications facilities.

The continued good functioning of a lot of telecommunications equipment depends on these chips, and in view of chip scarcity, a lot of associated products and services will be affected, as per Carritech. Moreover, production lines have shifted as a result of the United States' sanctions on Chinese manufacturers. For example, networks using Huawei equipment

have realized that they have been placed in a tricky position where they have had to decide whether to keep using the equipment, stockpile it if they can or switch to equipment from a new supplier. Large IT firms have asserted that this condition could cost the telecom industry billions in revenue.

According to GlobalData, China accounts for more than 30% of the semiconductor market in Asia. In light of recent events involving chip shortages, the US has recently approved a bill to provide $52.7 billion to enhance its own semiconductor production in an effort to boost competitiveness with China. However, the situation has actually worsened in response to this effort to support the semiconductor sector, the exact opposite of what was intended. According to analysts, East Asia's China, Japan, South Korea and Taiwan are the top producers of semiconductor chips worldwide, with the West's market share progressively dropping since 2021. The US, a nation that was for many years the unchallenged captain in the semiconductor sector, is now falling behind in this field and is seeking to reduce its reliance on Taiwan.

The world's largest semiconductor market is in China, which uses more than half of all semiconductors each year, both for domestic consumption and potential export. As a result, the demand in the country is growing quickly, which is good for the overall business globally. However, in telecommunications, as per a recent study, approximately 27% of the initial round of portable computer servers that China Mobile has bought for the years 2021–2022 – particularly those built by Huawei and the Chinese tech company Hygon – are powered by local semiconductors. China Telecom recently released a statement mentioning that they have bought 53,401 servers driven by domestic processors for the years 2022–2023. Compared to the 24,823 domestic servers they bought in the 2020–21 timeframe, this represents a huge rise.

China's Huawei, one of the top smartphone manufacturers, is now engaging with local chipmakers. In 2019, Huawei was denied access to American technologies and the world's chip industry. According to insiders, the objective was to construct manufacturing operations without U.S. intervention. There is currently no evidence that Huawei has shares in these manufacturing firms. It has recently invested in a variety of businesses that deal with chips, notably 15 in the last year.

Furthermore, in August, assessments by the Indian Cellular and Electronics Association (ICEA), which includes both local and foreign manufacturers, said that manufacturing facilities in Taiwan supply more than 75% of the chips required for mobile devices built in India.

In response to the ongoing global chip shortages in recent years, South Korean legislators enacted the Special Act to Protect and Foster National High-Tech Strategic Industry on August 4, 2022. According to the act, companies attempting to use strategic technology in strategic industries may benefit from future filings for tax reductions or exemptions associated with promoting innovation and investment in strategic industries. According to its president, South Korea is attempting to increase supply chain stability and assets in order to stay on top of the industry. By 2030, the country aims to increase its recent domestic procurement of 30% to 50% of its supplies, parts and apparatus used in semiconductor manufacture.

Despite their scarcity, chips are in high demand in the telecommunications sector due to the latest technological trends such as the Internet of Things (IoT), 5G and smartphones, and particularly because the sector is undergoing a digital transformation journey. According to Ernst & Young (EY), the industry is seeing an unprecedented amount of fragmentation and patterns pointing toward substantially greater semiconductor consumption because of each industry's necessitating various functions and technologies. Digitalization and technologies are always evolving, and although there may be issues along the way, the impact of these two has the ability to address the aforementioned problems.

For many years, Asia-Pacific has been developing semiconductors, and in order for the US and other rival nations to outplay China and Japan, they may face a difficult journey. Indeed, the human brain created chip capabilities to advance digitization and technology. Seeing the shortage that is happening nowadays, the resolution of this problem might take some time. However, several manufacturers are already starting to develop solutions that improve both chip demand and supply. TR

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Will Satellite Technology Be a Game-Changer in the Philippines?

The Philippines will soon have the first satellite-based internet connectivity in the country as SpaceX's Starlink is set to be up and running by the end of this year.

Starlink is a satellite internet constellation under Elon Musk's SpaceX, offering satellite Internet access coverage to 40 countries, and aims to expand globally. It features speeds of up to 200 Mbps and latency as low as 20ms for residential use.

In July, the company announced that Starlink Internet Services Philippines Inc. will already be available in the country, the first in Southeast Asia to be welcoming what is dubbed Starlink Technology.

The Philippine government said they welcome this latest industry development as this will help enhance connectivity nationwide. The Department of Information and Communications Technology (DICT) secretary joined SpaceX representatives in Manila during the announcement of SpaceX's rollout.

The country's ICT chief, Ivan John Uy, said that SpaceX stands by its commitment to provide satellite

internet access to remote areas in the country. "The DICT is closely following the directives of President Ferdinand Marcos Jr., that is to provide digital connectivity across the many islands of the Philippines by building the country's digital infrastructure, that will also lead to effective e-governance."

He added, "This will bridge the digital divide in the country especially in an archipelagic country like the Philippines where laying fiber cables or establishing cell towers in mountainous areas can be challenging."

According to a report by DataReportal, the Philippines' internet penetration rate reached 68%, or about 76 million internet users.

There are currently three major internet services providers in the Philippines, including those operated by two telecommunication giants, PLDT and Globe. But with many areas in the country still unserved or underserved, demand for internet connectivity continues to increase.

From this year into the next, the DICT aims to speed up the deployment of internet infrastructure to connect several regions in the country. The plan also includes building cell towers and hi-throughput satellites servicing certain provinces.

And with the introduction of satellite technology in the country, officials say that this will serve as a solution to connectivity challenges.

Starlink is expected to connect rural and remote areas where there's unstable or completely unavailable connectivity. Through this development, DICT said Filipinos from far-off areas can have better access to education, health services and online banking, among other digital needs.

And to ensure that people in these geographically isolated and disadvantaged areas get to access the internet, the government also said they may start the free rollout of Starlink-powered internet hubs by the first quarter of next year.

Moreover, satellite technology will also be ideal for those countries prone to natural disasters like the Philippines. Based on the company's experience in 40 countries since it began operation in October 2020, SpaceX Government Affairs Senior Manager Rebecca Hunter said that Starlink's technology has withstood "all sorts of inclement weather," including heavy rains and cloudy weather.

Some major natural disasters in the Philippines have affected communication access, including last year's typhoon, which damaged telecommunications infrastructure, leaving people without internet access.

How is Satellite Technology Changing the Local Telecom Industry

Since SpaceX unveiled its plans to launch its services in the Philippines, several other satellite internet services providers have also followed suit.

One of the largest telecom firms in the country, Globe, announced in April that it partnered with AST SpaceMobile Inc. to deliver the first satellite broadband service directly to standard mobile phones in the country. The company said this is part of its expansion to improve such service across the nation.

Its major competitor, PLDT also boasts that it has completed successful testing of high-speed broadband connectivity with Canada's Telesat's Phase 1 Low Earth Orbit satellite. This test allows opportunities for the telecom operator and its wireless unit, Smart, to use innovations in the satellite industry to expand high-speed mobile and Internet services to more hard-to-reach communities.

The Head of Technology at PLDT and Smart, Mario Tamayo, said in a statement, "This year, with our successful test with Telesat, we are a step closer to bringing satellite connectivity innovations and services to businesses and homes in the deepest rural and remote areas of the country."

The Smart wireless unit has also collaborated with US-based AST SpaceMobile and is scheduled to test space-based cellular broadband technology.

The third telecom player in the Philippines, DITO Telecommunity, recently announced that it is also planning to deploy satellite technology in a bid to expand its coverage, especially to those underserved areas.

Local media reported that the company was already in talks with prospective satellite service operators to achieve this goal.

Last year, internet service operator, Converge, also partnered with a foreign satellite company to provide satellite broadband connections to more than 2,000 public schools.

A report by local media, Business World, also suggested that the local telecommunications regulator is expecting more foreign satellite broadband providers to enter the market. However, no further details were revealed.

Earlier this year, telecommunications firm Philippine Telegraph and Telephone Corp. (PT&T) teamed up with Singapore-based next-generation broadband satellite operator Kacific Broadband Satellites Ltd. to "offer high-speed satellite internet at a more economical cost."

In 2019, the Asian Development Bank signed a deal to provide a $50 million financing package to Kacific to deliver satellite-based, low-cost, high-speed, wholesale broadband internet connections to the Philippines and other countries in Asia and the Pacific.

As to whether or not satellite technology is a threat to existing telecom service providers in the country, PLDT Group's President and CEO, Al Panlilio, doesn't think so. During a stockholder's meeting last June, he said that they welcome new technologies, including satellite, as these would enable wider reach, including to remote communities.

SpaceX Executive Rebecca Hunter, in concurrence, said that Starlink will not compete with the country's telecom operators, but instead will fill in the gaps particularly in the unserved and underserved areas in the country to further expand connectivity. TR

APTelecom Appointed as Inligo Networks' International Sales Partner

APTelecom, an internationally recognized digital infrastructure consulting company, will be Inligo Networks' international sales partner.

Brian Evans, CEO of Inligo Networks, said, "APTelecom's reach and expertise spans a wide range of global markets which are well aligned to the planned footprint of our network, and we are pleased to engage their services as our international sales partner. The relationship will support the onboarding of international capacity buyers and will also assist Inligo Networks in managing the wide range of existing business opportunities we have for the Asia Connect Cable System."

The Inligo subsea cable network (ACC-1), announced earlier this year, will span just over 17,000 km with initial landing points in 8 key markets, including Australia, Indonesia, Singapore, Timor-Leste, Philippines, Guam, Hawaii and the continental USA.

The cable will have up to sixteen fiber pairs with an initial capacity of 256Tbps and an ultimate design capacity of a minimum 16Tbps per fiber pair. It has been engineered to be highly flexible, incorporating the latest in WSS technology to support customers' evolving needs. In addition to the ACC-1 subsea network, Inligo is in parallel developing an Australian terrestrial long-haul fiber network called "Unite" between Melbourne, Adelaide and Darwin which will directly connect with the ACC-1 Cable in Darwin, providing the lowest latency path between Australia and Southeast Asia.

Sean Bergin, president of APTelecom and chairman of the PTC Board of Governors in Hawaii, said, "The Asia – US route remains underserved despite recent announcements of other planned transpacific cables. The unique value proposition offered by Inligo Networks will be well received by the market."

Nokia and AIS Fibre Trial Fastest Broadband in Asia

Nokia and AIS Fibre announced the first trial of their 25G PON solution in Asia. AIS Fibre in Thailand trialed the technology using its existing optical line terminals (OLT), which have already been rolled out nationwide. The OLT was connected simultaneously to three end-user devices with a combined speed of 37.5 Gb/s using a 25G PON optical network terminal (ONT) at 25 Gb/s, an XGS-PON ONT at 10 Gb/s and a GPON ONT at 2.5 Gb/s. All services can be served with the same single fiber at the same time.

AIS Fibre was the first operator to offer 100% optical fiber broadband services in Thailand. With this successful trial concluded, the company is set to realize its ambition to build the most future-proofed fiber optic home Internet network in the country.

As new applications like virtual reality gaming and hologram calls enter the mainstream, AIS Fibre will be able to offer the services with super high speeds and low latency. Since AIS Fibre will be able to run GPON, XGS-PON and 25G PON services on the same fiber line, it can offer customers a full choice of speeds up to 25 Gb/s on the existing platform and without the need for intrusive excavation and laying of new fiber.

25G PON also gives AIS Fibre the opportunity to offer enterprises a 10G + and lower latency replacement to Point to Point (P2P) connections which can be costly and are less scalable. The operator will also be able to use the technology for 5G backhaul, which will become increasingly important as it builds more cell sites required for higher frequency 5G.

Thanit Chaiyaboonthanit, acting managing director of Fixed Broadband at AIS, said, "AIS Fibre prioritizes innovation that will provide the best services to our customers and gives us network technology which meets users' future needs in terms of both speed and flexibility. This partnership with Nokia to trial 25G PON technology has yielded favourable results, inspiring us to believe that we can deploy it in the future."

Ajay Sharma, head of Thailand and Cambodia at Nokia, noted, "With enhanced speeds provided by 25G PON, fiber networks are evolving into being able to connect everything, everywhere. They play an important role in delivering any service to any endpoint, including residences, businesses and cell sites. We are proud to have been part of this important milestone."

ZTE Seals 5G Innovation Cooperation Agreement

ZTE has signed a 5G innovation cooperation agreement with True Group, a leading digital lifestyle enabler in Thailand. Under the agreement, both parties will focus on the 5G joint innovation center to develop 5G networks, digital services, smart islands, intelligent manufacturing, research innovation, talent training and other fields, with a great commitment to comprehensively carrying out 5G-oriented innovative technology and business cooperation.

"True is ready to support the sustainable intelligence development of Thailand. True Group, with the strong collaboration with leading domestic and world-class international partners, is the only operator that has the complete range and coverage of 7 frequency bands, as well as the smart 5G technology with extensive network coverage of 77 provinces in Thailand," said Manat Manavutiveth, president of True Group. "Under such circumstances, we are delighted to form the cooperation with ZTE to jointly drive network and infrastructure development and bring changes to the telecommunication sector in various dimensions."

"One of the highlights is the joint innovation lab at True Digital Park, reflecting True Group's intention to focus on innovation development to create value for society and the country as well as our potentials and expertise in True Lab Innovation Centers located in the famous universities across the country. What's more, the cooperation in the 'Super South+' Project in Phuket will help improve mobile network to serve the tourism industry in the southern area, which is one of the major destinations for tourists in Thailand. We are confident that this cooperation will create a complete True5G eco-system, develop innovation technology for maximum benefits as well as strengthening True5G genius network in order to sustainably enhance the life quality and provide ultimate experiences for Thai people and forge Thailand ahead to digital transformation," added Manavutiveth.

"ZTE continues to practice its own positioning as a driver of digital economy and insists on continuous technological innovation. Through joint innovation, ZTE will give full play to ZTE 's advantages in 5G technology, R&D innovation and 5G industry application," said Mei Zhonghua, senior vice president of ZTE Corporation.

NTT DOCOMO and NEC Test Energy Efficiency of AWS Graviton2 for 5G SA Core

NTT DOCOMO and NEC Corporation announced the completion of a trial to test the energy efficiency and high performance of AWS Graviton2 processors across key elements of the 5G core network (5GC). The trial demonstrated an average of a 72% reduction in power consumption against incumbent x86 processors using NEC's 5GC software running on AWS Graviton2. The trial tested performance within a 5GC hybrid cloud environment leveraging AWS Graviton2 and DOCOMO's on-premises Network Functions Virtualization (NFV) infrastructure.

These results support the future realization of a hybrid cloud environment for telecommunication networks, which enables mobile operators to provide enhanced disaster-resilient networks to customers.

AWS Graviton2 processors deliver a major leap in performance and help reduce the carbon footprint of IT workloads through energy efficiency. Traditionally, many telecommunication workloads need to reside on edge infrastructure, which have power and real estate constraints. AWS Graviton2 offers efficiency with very low cost, low power and a low hardware footprint. In this proof of concept, the use of Graviton2 was able to reduce power consumption of 5GC by 72% on average.

"We are delighted to announce that we achieved significant reduction of power consumption of 5GC thanks to NEC's advanced, cloud-native 5GC software and AWS's innovative and highly efficient Graviton2," said Naoki Tani, executive vice president, chief technology officer and executive general manager of the R&D innovation division of NTT DOCOMO.

"The significant power reduction achieved through this trial indicates a big step forward in commercializing environmentally friendly, sustainable, next-generation mobile infrastructure. NEC will continue adopting cutting-edge, low-power technologies, such as Graviton2, for its UPF and vRAN domains. Our aim is to further contribute to building a sustainable society through provision of sustainable virtual networks and the realization of next-generation, low-power mobile infrastructure," said Atsuo Kawamura, executive vice president, NEC.

"AWS is committed to building a sustainable business for our customers and the planet and is thrilled to see the power savings Graviton2 delivers in telecommunications. We look forward to continuing to work with NTT DOCOMO and NEC to further expand the use of cloud and AWS technologies to advance sustainability and resiliency goals," noted Adolfo Hernandez, vice president and general manager, telecom industry business unit at AWS.

Automation: Moving CX From Engaging With Service Providers to Deep Interaction With Products

Telstra's Angela Logothetis, explains how the next phases in automation are to constantly evolve customers' experiences of using cloud, edge and network products.

Ms. Logothetis is executive group owner of edge, cloud and industrial networks at Telstra, which encompasses dedicated and private networks. Her job is to accelerate the adoption of these technologies by enterprises in parallel to and stimulated by the convergence of "the best of global compute with Australia's best connectivity." Although she has only been in her post at Telstra since February of this year, her rounded CV has prepared her as well as any for her pioneering role in crucial new territory for Australia's biggest telecoms service provider.

"We are really looking at automation from the aspect of how we best deliver an amazing product experience to organizations across Australia. Our automation goes all the way from our network through our IT stack and to the way we build strategic partnerships, including with cloud hyperscalers. We want automation around all those capabilities and to make them modular and expose them through APIs," Logothetis states.

She stresses the importance of decoupling the architecture "to build a highly digital, highly automated, amazing product experience using those capabilities. This enables us to be intuitive and agile in what we can deliver to the market; quarter after quarter, we're getting more and more product experience out to the market. The [decoupling approach] gives us a high degree of reuse: I can reuse the capabilities in edge products. I've used them in cloud products and private network products. We are starting to get that consistency of experience across products as well."

The modular, API-enabled operating model is also fundamental to being able to collaborate efficiently and effectively with partners. Telstra works with cloud hyperscalers as its cloud compute and edge compute partners, plus some of the large data center vendors and dominant OEM-type vendors. In this ecosystem, Telstra takes on either part or all of its partners' technology stacks in this modular way via the APIs, then figures out "how we bring that together into a product we can market to our customers," Logothetis explains. "Luckily, I work with partners that are building technology natively in this way."

She clarifies that "natively" in this context means both cloud native and softwarisation – building offers as-a-Service using APIs. She notes, "We are doing that inside Telstra and relying on our partners to do it so we can create this experience for the customer."

Automation Beyond Self-Service

"People tend to think about automation as being about how a customer buys something from and engages with an organization; the order-to-activation process has always been key for telcos... Once we start to build automation, we look at the onboarding experience to make it faster and simpler for customers, so it's just a clicking this or swipe that type of exercise."

Logothetis further stresses, "We have very good digital portals, in the consumer and enterprise spaces, and will continue to develop them. But the more recent innovation we're working on with our customers is understanding how they use our products and what they want, including using telemetry data." For example, if a Telstra customer has a cloud tenancy, how can they scale it up or create a new tenancy? How can they add AI on top of it? How can they move the tenancy closer to them? In other words, "It's less of an interaction with us through a digital channel and more of an interaction with the product itself," she details.

While in the first instance, automating this product interaction is geared to the enterprise market where Telstra expects "really deep engagement with products," according to Logothetis, "I think as we look out into AR and VR [augmented and virtual reality], immersive experiences, and the metaverse – depending on [what] it ends up being – it becomes a very similar sort of scenario, right? It's about how consumers engage with the product or act inside the product versus engagement between them and our organization."

Cloud Matters

In the meantime, she says, "We talk about key things like hybrid and multi-cloud, which enable our customers to put their workloads in the place that best meets their demands. Some are best placed in the public cloud with any one of a number of public cloud vendors. For sovereignty and security reasons, some might need private cloud. For legacy reasons, some might run virtualized technology on a public or a private cloud. Other customers want private cloud workloads. We offer that spectrum."

Telstra has multiple partners at all layers of the cloud stack, and this is where edge compute comes into play. Logothetis says, "We start to talk about distributed computing, because customers will have more and more applications and data workloads with unique sets of requirements. Some they'll want to have much closer to them because it's data intensive – they want to collect, store and process the data close to where it is – or because they need actionable insights from it to correct a safety issue, say, or change a manufacturing process."

Distribute, Compute

However, these needs might only apply during the day, not overnight, when instead some applications could run at the network edge or in the cloud. Logothetis explains, "I think this notion of distributed compute, with very good connectivity between it, and some smart software sitting on top, for an enterprise or a government organization, places workloads in the right place at the right time.

"That's what we're working on. We already offer all those components today but where we see this industry and demand heading is that all those components work seamlessly together."

This is not an easy undertaking. So what are the challenges in this level of automation? And are the limitations of AI an issue? Logothetis' view is that it depends on what you're trying to automate and why. She says, "From my role, the trickiest thing is to establish what we are trying to deliver to the customer – a better experience of something they have today or using automation to come up with a fundamentally different experience, maybe something that didn't exist before."

Starting With Desired Outcomes

It's refreshing to find an organization that starts by thinking about what they want to achieve and then reverse engineers to where it is today to figure out how to get there. It's more common for telcos to focus on a shiny new piece of technology, then figure out what they can do with it and how to justify the investment. This common wrong-headedness is often compounded by technology becoming "legacy" at the fastest rate ever.

Logothetis agrees, and furthers, "That all comes back to the principles of decoupled architecture with the APIs around it; then building this product experience we've talked about on top of that – that architecture and that way of interacting will enable us to be really agile in getting things to market and changing things quarter on quarter, based on what we see the customers doing with it."

Internal Ops Enable External Experience

Telstra is also working on AIOps because, as she says, "If you have a highly manual back office or operations, it is very difficult to automate the experience. Even if it looks great on the surface, underneath, it's like those images of swans sitting serenely on the surface, but their feet are moving frantically under the water. So internal automation and customer experience absolutely are linked, but not tightly coupled because we take a modular approach that is API-driven; then build this experience layer on top. As things change in the underlying organization or in the capabilities of ecosystem partners, we can bring things in without having to build a brand new product from scratch."

Logothetis emphasizes how important this is and that the ecosystem is "developing very quickly, particularly around the edge cloud and in private networks. The customer-facing parts are very much an ecosystem play, because customers want a broad spectrum of capabilities, and there's no single vendor that they want to be totally tied into. Customers want multiple different things, and a big part of our role is to work as a part of that ecosystem and make it easy for our customers to work in that ecosystem as well."

She concludes, "We need to build the ecosystem from the experience for the customer and the engagement with the product, as well as building automation behind scenes, which is probably what you hear most about in the industry – things like automating provisioning and billing. That's happening, but what we're doing is really interesting – the automation of experience and interaction with products."

A version of this article was first published in September 2022 on the FutureNet World website. TR

IoT's Impact on the Telecommunications Sector

The telecommunications industry significantly utilizes the internet of things (IoT), and the latter heavily relies on the former as well. The dependency of telecoms on IoT has attracted more research than the opposite. It is only the use of telecommunications in the Internet of things that is deeply known by many.

The Internet of Things (IoT) has long been served a purpose in variety of fields or even in our abodes. Computer scientist Kevin Ashton first used it to employ radio frequency identification (RFID) chips for device tracking. In the telecom industry, the Internet of Things allows clients to have full access to software as a service (SaaS) assets for resolving business difficulties. As per Berg Insight, there will be 21.2 million IoT subscribers by 2026.

To monetize IoT solutions, telecom companies must provide innovative products and services. Conversely, the IoT provides the telecoms industry with enormous prospects. Now, the only thing that network providers have to do is to make it simpler for people and technology to interact because of the IoT.

Telecom companies may offer their customers completely new solutions and services by using IoT technology, which further works with vast volumes of data, and so greatly strengthening their place in the industry. Offering connection services to clients who hold IoT devices is the fundamental Internet of Things usage for telecom operators. In addition, 10% of the world's population has exposure to terrestrial connection services, creating a huge market prospect for satellite IoT communications.

Another benefit of IoT is that it creates more job opportunities in the telecom sector as a result of the deployment of new technology and the creation of new alternatives. From a business perspective, this can also guarantee further income growth and increase sales over time since telecommunications firms will likely acquire new customers.

In terms of security, the Extended Internet of Things (xIoT) safety technology is believed to be crucial to the region's quickly expanding businesses. xIoT is the only security feature in the world that can provide extensive sensor and sensitivity, and threat surface control to the entire array of IoT, OT, and network-connected devices. Phosphorus, a top supplier of comprehensive and innovative security for the xIoT, has collaborated with CyberKnight as a potential supplier in the Middle East and Africa (MEA).

These are the impacts of IoT across telecommunications. IoT is making ways for greater range of telecoms, more sophisticated technologies, and tighter security. TR

In terms of security, the Extended Internet of Things (xIoT) safety technology is believed to be crucial to the region's quickly expanding businesses

Accelerating Digital Upgrades in the Public Sector

Huawei has been working with governments across the globe to help them build a national digital foundation based on "one cloud" and "one network"; to promote the construction of national digital infrastructure; to further open key opportunities in various markets such as government, healthcare, education and emergency response; and to accelerate the digital upgrade of the public sector.

Huawei leverages its wide-ranging ICT capabilities of cloud-network synergy to deliver basic computing support and high-speed network services for inclusive digital services and converged public governance.

In an interview with Huawei's Global Public Sector team, they delved into the latest developments and business scope of Huawei's Global Public Sector and shared their future strategic direction and vision of how to promote the upgrade of national digital infrastructure.

"One cloud means we are focusing on providing cloud services and cloud infrastructure to the various segments of public sector. We are building government cloud, education cloud and cloud to all these segments, as well as network, which is also very important. We are building the government's national backbone. We provide the networking for the schools, hospitals and various scenarios. And at the same time, we are looking for ecosystem partners across the globe to provide end-to-end solutions for global government and public sector," said Simon Zou, Huawei's vice president for global public sector.

Huawei's one cloud, one network strategy has so far covered more than 700 cities in more than 100 countries across the globe. Among the major successful projects that serve as a good example is their partnership with the government of Thailand. Huawei sees Thailand as a promising digital hub in Southeast Asia for its policies as well as its constant support of the digital economy.

Among Huawei's remarkable projects in Thailand is at Srinakharinwirot University (SWU), which is seen as a global demo site for smart education, and this also sets a new standard for the digital transformation of universities and colleges across the globe. Huawei's Intelligent Multi-Service Network Solution for Higher Education now serves as a complete response to the complex network requirements of SWU by offering campus-wide network connectivity, multi-network convergence and high-speed interconnection. "We provide the connection to millions [of] students across the world so they can have the internet access to the content they should enjoy. By doing this, we provide the students the equal rights of education," Zou added.

IMDA and SUTD to Launch First 6G R&D Lab in Southeast Asia

The Infocomm Media Development Authority (IMDA) has partnered with Singapore University of Technology and Design (SUTD), one of the leading scientific research institutions in telecommunications, to advance Singapore's future comms and connectivity capabilities and talent.

In preparation for Singapore's 6G future, Minister for Communications and Information, Josephine Teo, launched SUTD's Future Communications Connectivity Lab (FCCLab), the first physical 6G lab in the region that will also look to combine 6G R&D with SUTD's AI Mega Centre.

Situated at the SUTD campus, the FCCLab is part of Singapore's S$70 million Future Communications Research & Development Programme (FCP). FCP is hosted by SUTD and supported by the National Research Foundation, Singapore (NRF), under its Research, Innovation and Enterprise (RIE) efforts. Also supported by IMDA, the FCP will coordinate multidisciplinary research efforts across the RIE ecosystem, with Research Institutes (RIs), Institutes of Higher Learning (IHLs) and other RIE efforts.

FCCLab Testbed will follow 3rd Generation Partnership Project (3GPP1) and Open RAN Standards to support easy evaluation of research outcomes. Network components can be individually replaced to facilitate targeted research.

Lew Chuen Hong, chief executive, IMDA, said, "The innovations of today are not possible without constant investment and keeping our eyes on the next bound. We are excited to partner with SUTD to launch Southeast Asia's first 6G Lab. This is the start of our efforts to tap into the promise of future communications tech and become a global node of excellence."

SUTD President, Professor Chong Tow Chong, said, "SUTD is pleased to partner with IMDA to progress the industry's research and educational institutions for talent development in Singapore's wireless communications ecosystem. We look forward to accelerating the research translation of future communication technologies."

ITU: Internet Growth Slows, 2.7 Billion Remain Offline in 2022

An estimated 2.7 billion people – or one-third of the world's population – remain unconnected to the Internet in 2022.

New data from the International Telecommunication Union (ITU), the United Nations specialized agency for information and communication technologies, points to slower internet user growth than at the height of COVID-19.

An estimated 5.3 billion people worldwide are now using the Internet. While continued growth is encouraging, the trend suggests that without increased infrastructure investment and a new impetus to foster digital skills, the chance of connecting everyone by 2030 looks increasingly slim.

"The COVID-19 pandemic gave us a big connectivity boost, but we need to keep the momentum going to ensure that everyone, everywhere can benefit from digital technologies and services," said ITU Secretary-General Houlin Zhao. "This can only be achieved with more investments in digital networks and technologies, implementing best practice regulation and a continued focus on skills development as we move to a post-pandemic era."

ITU's new estimate of 2.7 billion people unconnected compares with an updated estimate of 3 billion people unconnected worldwide in 2021.

In 2019, prior to the COVID pandemic, an estimated 3.6 billion people, or nearly half the world's population, were unconnected.

Amid concerns over slowing progress, ITU analysis indicates two major challenges in terms of advancing the world's digital transformation:

First, achieving universal connectivity – which in effect means bringing the remaining one-third of humanity online – will prove increasingly difficult. Most relatively easy-to-connect communities now have access to technologies like mobile broadband, spurring rapid and widespread uptake of digital services. Those still offline mostly live in remote, hard-to-reach areas.

Second, the shift from basic to meaningful connectivity – by which people not only have ready access to the Internet but are able to use it regularly and effectively to improve their lives – is complex. Often, such challenges are overlooked or under-estimated. Barriers can include slow Internet speed; limited affordability of hardware and subscription packages; inadequate digital awareness and skills; and linguistic and literacy barriers, as well as disparate issues like gender discrimination or the lack of a reliable power source. All these need to be addressed if everyone is to enjoy equitable access to online resources.

Doreen Bogdan-Martin, director of the ITU Telecommunication Development Bureau, said: "While the rise in the number of people using the Internet worldwide is positive, we should not assume the robust growth witnessed in recent years will continue unabated. Those who are still not using the Internet will be the most difficult to bring online. They live in remote areas, often belong to disadvantaged groups and, in some cases, are unfamiliar with what the Internet can offer. That is why our target needs to be not just universal connectivity, but universal meaningful connectivity."

ITU defines "meaningful connectivity" as a level of connectivity that allows users to have a safe, satisfying, enriching and productive online experience at an affordable cost.

SIM Cards Must Now Be Registered With Telcos in the Philippines

Mobile phone users in the Philippines must now register their SIM cards with their telecom provider after the country's President, Ferdinand Marcos Jr., signed into law the SIM Card Registration Act.

According to the official dispatch, the new measure aims to promote accountability in the use of SIM cards and help law enforcement to track those involved in crimes committed through mobile phones.

Under the new law, all public telecommunications entities or direct sellers must require the SIM card user to show a valid identification document with a photo.

The registered SIM card details will not be disclosed unless the user authorizes access to his information.

Law enforcement agencies which conduct probes on purported crimes committed through phones may also submit a written request to telco firms to disclose the details of the SIM card holder.

The two telecom giants in the Philippines, Globe Telecom Inc. and PLDT Group, had previously expressed support for this measure, saying they would be helping the government in preventing crimes committed electronically.

The law is the consolidation of the bills approved by the House of Representatives and the Senate.

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Doreen Bogdan-Martin Elected to Lead the ITU

Member States of the International Telecommunication Union (ITU) have elected Doreen Bogdan-Martin of the United States of America as the organization's next Secretary-General.

In historic elections, Bogdan-Martin received the majority of Member State votes, pledging meaningful connectivity as her goal. She will be the first woman to lead the UN specialized agency in its 157-year history. Bogdan-Martin will begin her four-year term as ITU Secretary-General on January 1, 2023.

The election took place during ITU's Plenipotentiary Conference (PP-22) in Bucharest, Romania, with representatives of Member States voting during the meeting's morning session. Bogdan-Martin won the position, receiving 139 votes out of 172 cast.

"Whether it's today's children or our children's children, we need to provide them with a strong and stable foundation for growth," Bogdan-Martin said. "The world is facing significant challenges – escalating conflicts, a climate crisis, food security, gender inequalities and 2.7 billion people with no access to the Internet. I believe we, the ITU and our members, have an opportunity to make a transformational contribution. Continuous innovation can and will be a key enabler to facilitate resolution of many of these issues."

Mr. Toni Eid, CEO of Trace Media and Founder of Telecom Review Group, expressed his warmest congratulations to Ms. Bogdan-Martin: "I congratulate Ms. Doreen Bogdan-Martin on winning the position of ITU's new Secretary-General. Such a victory is a testimony to the influencing role of women in the telecommunications and ICT industry and to the need to promote gender equality across all sectors. I am confident that Ms. Bogdan-Martin will make a great difference in today's world."

Ms. Bogdan-Martin has held leadership positions in international telecommunications policy for over two decades. Throughout her career, she has brokered innovative and visionary partnerships with the private sector, civil society and other United Nations agencies to accelerate digital inclusion and connectivity.

The Secretary-General-elect has pledged "to continue driving this institution to be innovative and increasingly relevant for our Member States, better positioning all of us to embrace the digital environment and make progress on achieving UN Sustainable Development Goals and connecting the unconnected."

Bogdan-Martin was endorsed by her country's government as a candidate to make the digital future inclusive and accessible for everyone, especially in developing countries.

US President Joe Biden, in a September 20 statement backing her candidacy, said: "Ms. Bogdan-Martin possesses the integrity, experience and vision necessary to transform the digital landscape."

As chief architect of ITU's development work in recent years, Bogdan-Martin has emphasized the need for digital transformation to achieve economic prosperity, job creation, skills development, gender equality and socio-economic inclusion, as well as to build circular economies, reduce climate impact and save lives. Her current term as Director of ITU's Telecommunication Development Bureau ends on December 31, 2022.

Among her campaign priorities, she said she would "lead ITU into a new era of global and regional partnerships," adding that the organization "must evolve and sometimes break from old ways" to stay relevant.

5G Launched, India Aims to Take Lead in 6G

India has officially launched 5G at the India Mobile Congress, with services commencing in some cities this week. Prime Minister Narendra Modi inaugurated the launch of 5G to usher in a new chapter in telecommunications in the country.

Telecom Minister Ashwini Vaishnaw announced that over 200 cities in India will have access to 5G services in the coming six months, with services being eventually extended across the country in the next two years.

Bharti Airtel, for instance, has already rolled out 5G services in about 8 cities. Jio will be launching 5G services by the end of this month. Meanwhile, Vodafone has yet to firm up plans on when 5G will be launched, and BSNL will not be launching 5G until next year.

Vaishnaw said that 5G will bring about fundamental changes across sectors, including healthcare, education and agriculture. He also went on to state that "India will take a lead in 6G."

Public Cloud Services to Reach US$165.2 Billion in 2026

The public cloud services market in Asia Pacific, excluding Japan, will reach US$165.2 billion in 2026, according to IDC. The PCS market is to grow at a higher year-over-year (YoY) rate in 2022 at 31.4% in comparison to 30.0% in 2021, as cloud migration continues to accelerate. However, IDC expects the YoY growth rates to slow down beginning in 2023 with a YoY growth of 28.3%, to 22.4% in 2026.

Infrastructure as a service (IaaS) will achieve a market value of US$80.7 billion and make up 48.8% of the Asia-Pacific PCS market in 2026. IDC predicts more organizations will continue to accelerate IaaS adoption to reduce risks associated with capital expenditure and to operate more efficiently and profitably. Organizations are progressively pursuing consistency, security, performance and compliance across all resources by deploying, operating and scaling digital infrastructure in dedicated datacenters (DCs), private cloud, PCS and edge locations.

Platform as a service (PaaS) will reach a market value of US$27.4 billion, contributing to 16.6% of the Asia-Pacific PCS market in 2026. Growth is fueled by organizations that are gradually shifting application development in-house to have better control and those exploring ways to allocate development functions to non-IT staff using low-code/no-code platforms.

Software as a service (SaaS) will grow almost three times, from US$20.8 billion in 2021 to US$57.1 billion in 2026, contributing to 34.6% of the entire Asia-Pacific PCS market by then. SaaS growth is attributed to continual adoption of core enterprise applications, such as customer relationship management (CRM) and enterprise resource management (ERM). These remain top priorities as organizations desire to obtain 360-degree visibility and better service for their customers and to improve internal planning and operations by streamlining business processes and activities.

Globe's 'Historic' Subsea Cable Project to Be Completed by April 2023

Globe has announced that it has landed fiber optic cable in eight provinces within just two months, on track to complete the landmark project by April 2023. The $150-million Philippine Domestic Submarine Cable Network (PDSCN), the longest domestic subsea cable project in the Philippines, has landed in Lucena City, Boac in Marinduque, Calatrava in Romblon, Placer in Masbate, Iloilo City, Bacolod City, Roxas City and most recently, the tourist island of Siargao in Surigao del Norte.

"This is a historic subsea cable project that will bring better connectivity and data capacity to several communities who rely on communications for their day-to-day needs, including education, work and livelihood," announced Globe Group President and CEO Ernest Cu.

The sites are among 33 landing points of PDSCN, which has a total cable distance of about 2,500 kilometers. The project commenced in July and is set to finish covering all sites by April next year.

"Despite disruptive weather events this wet season, our PDSCN project has been touching down its landing points as planned, bringing reliable fiber connectivity to remote and underserved areas," said Arlene Jallorina, vice president for strategic infrastructure investments for Globe Business, Enterprise Group.

The project kicked off in July at the Subic Bay when Globe, Infinivan, Inc. and Eastern Communications, along with Japanese vendor partner Kokusai Cable Ship Co., started transporting fiber optic cable manufactured by global firm Nexans to the landing points across the country.

The project is seen to deliver connectivity crucial to the country's recovery from the pandemic, as it will support the government, education, business and even recreational needs for reliable communication facilities. Further cable landings will be made in the coming months, including in Mactan, Cebu and Boracay, Aklan. Fiber connections will be activated thereafter.

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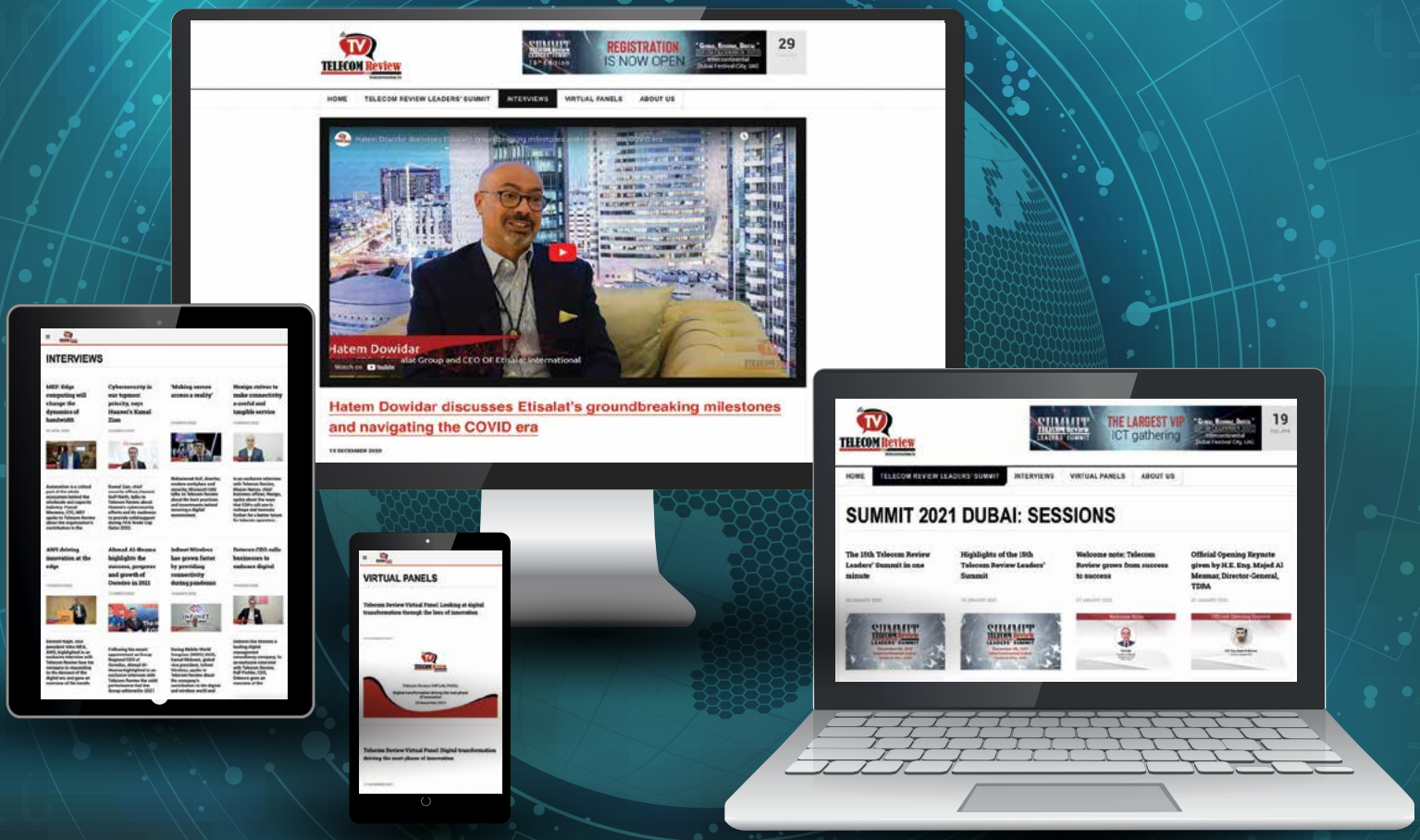

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