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Exploring the "cloud for business" model within the 5G ecosystem

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Looking to Asia and Africa as future hubs for digital economic development



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TELECOM Review



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Technology at the service of humanity

n October 1st, Health Canada approved the use of ID NOW rapid COVID-19 testing device— a move that could result in millions more tests for communities grappling with a surge in coronavirus cases.

Toni Eid, founder editor in chief

Telecom Review International

The Abbott Laboratories-backed point-of-care devices can be administered by trained professionals at places like pharmacies, walk-in clinics and doctors' offices without the need for a laboratory to determine if someone is infected with the virus.

The approval comes only a day after the federal government announced that it would buy some 7.9 million ID NOW tests from the U.S.-based firm for distribution in Canada.

Moreover, Air Canada received the approval of Health Canada for a rapid test for passengers using Abott portal ID machine (2.99Kgs), which can give result in an average of 15 minutes or less starting with crew and volunteers to continue with passengers. This can limit the impact airlines have been having on their profitability due to COVID-19.

ID is using isothermal technology, proprietary enzymes and constant temperature control to achieve the fastest available RNA amplification. This proven molecular system greatly reduces the time for results. ID NOW is one of the most widely-available molecular point-of-care testing technologies in use in the U.S. Since its introduction in 2014, it has been used in physicians' offices to rapidly detect influenzas A & B, strep A, and respiratory syncytial virus (RSV).



Exploring the "cloud for business" model within the 5G ecosystem



Given the potential and promise of 5G, it comes as no surprise that the next generation mobile network is dominating technology industry headlines. However, while 5G is a generational boost for wireless networks, it's important to recognize a more significant technology shift which impacts the migration to 5G networks: the cloud for business.

t is easy to think about telecommunications as just a cluster of large towers supporting bundles of fiber optic cables, copper wires and other heavy infrastructure. Yet today, telcos are moving to the cloud in a big way In recent years, the cloudification of communication networks, or telco cloud, has become a byword for telecom modernization. Today, as the industry moves to 5G, operators will have opportunities to move forward on a path to an increasingly cloudnative future When it comes to telco clouds, the basic concept is similar, though the implementation varies from operator to operator. Some have built their own cloud infrastructure, or private clouds, and others are embracing public clouds. Depending on their purposes, ambitions, and technology readiness, operators have moved to cloud native in many ways. An example of this is Japan's e-commerce giant Rakuten. a company that is widely regarded as being at the forefront of the industry's move toward virtualized, cloud-native, open wireless networks. From the outset, the aim was to build "the world's first end-to-end fully virtualized cloud-native network."

Earlier in the year, the company succeeded in commercially launching its virtualized 4G network, and claimed it saved 40% CAPEX and 30% OPEX compared with conventional monolithic networks. The company also said it expects to spend around \$1.8 billion upgrading to 5G by September.

Rakuten represents the shift away from reliance on hardware and legacy infrastructure and plans to hire no more than 350 people to operate the entire cloud-based network, compared with thousands of employees working for the incumbent DoCoMo. As a result, it can offer comparable packages at about half the price of its competition.

Vodafone Idea, created through the so-called "world's biggest telecom network integration" between Vodafone India and Idea Cellular, has opted to migrate to its own "universal cloud", using an open source infrastructure based on Red Hat's OpenStack. All the operator's telco workloads, IT operations including the billing system and enterprise applications are run on this cloud platform.

"Through our collaboration with IBM and Red Hat, we are adopting open standards and leading with highly automated, machine learning based hybrid cloud solutions to create India's first Open Universal Hybrid Cloud that supports our most



mission-critical operations across network and IT systems, and B2B enterprise customer offerings. This is part of our transformation journey to set up a robust, future ready network," said Vishant Vora, CTO of Vodafone Idea Limited.

All the exciting things that the industry is talking about, like 5G, relies on highly flexible, dynamic, programmable networks that can perform at scale. None of this can be done as envisioned without deploying telco cloud technology.

A key point that needs to be highlighted is the impact of Covid-19 on telcos and how this inadvertently accelerated their journey towards cloud migration for the continuation of business as usual. The changes wrought in business by the pandemic make business agility and flexibility the leading necessities in your digital transformation process. Cloud computing continues to drive incredible transformation by offering the required flexibility to adapt to rapidly changing business conditions.

If they were not already headed that way, many companies are now finding it necessary to accelerate their migration to multi-cloud platforms because of the global



health crisis. According to the IDC, more than 90% of enterprises worldwide will rely on a mix of onpremises or dedicated private clouds, multiple public clouds and legacy platforms to meet their infrastructure needs by 2022.

At the same time, companies have many data center assets that they can't move to the cloud. Some applications cannot be easily migrated. Other data may be subject to regulatory requirements that prevent that data from residing in public clouds. According to Gartner data, 80% of active virtual machine workloads still run on private infrastructure.

Just recently, the multinational telecommunications juggernaut Colt Technology Services announced a collaboration with Mitsubishi Research Institute DCS Co. Ltd (MRI DCS) through the implementation of its new service "Dibertas". The multicloud storage service aggregates data from various environments, enabling its customers to access and utilise data across multiple cloud services and on-premises environments.

Takashi Gouda, the Managing Executive Officer of the Digital Transformation Unit Head at Mitsubishi Research Institute DCS Co. Ltd. said, "One of the most important advantages of using Dibertas is that our customers can access their data at various locations securely and quickly. We use our own data centre based on the concept of keeping our customers' data safe and secure at the specified location. Typically, the server and the storage are in the same place and connected by a cable, but this time, they are in different places and connected by a network. Therefore, we needed bestin-class connectivity. We are satisfied with Colt's extremely secure and low latency network."

Gouda added, "Last but not least, Colt brought us great satisfaction in terms of cost performance as well. Initially, we considered using another carrier as a backup, but the increased cost was a concern. However, Colt's fully redundant ring configuration reassured us that we could provide a stable network using just one carrier. Upon this consideration, we evaluated Colt was the best in terms of stability, reliability and cost-efficiency."

His sentiments were echoed by Minoru Ando, the ICT Business & Systems Group Data Technology Division General Manager at Mitsubishi, "The consultancy service at Colt helped us a lot in the process of connecting to the public cloud, so that we were able to design and develop the network environment in the public cloud that matches the customer whether there is IP duplication."



Cloud computing continues to drive incredible transformation by offering the required flexibility to adapt to rapidly changing business conditions



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BICS Asia: Our goal is to support 5G across the Asia Pacific region

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The Asia Pacific (APAC) region at the beginning of the year looked vastly different than it does today. Roaming was exploding in the area, led by huge increases in international travel and a surge in demand for IoT.



Despite the COVID-19 outbreak disrupting this trajectory, the APAC region is still poised to capitalize on machine-to-machine (M2M) communications in the short-term and to continue its growth path post COVID.

During and after the pandemic, it is crucial that connectivity, including IoT and roaming, can be seamless across borders and provide in-depth visibility and management of connected assets. This will ensure a consistent, high quality of service and experience for enterprises, their customers, and operators' subscribers.

Telecom Review Asia Pacific spoke to Malcolm Chan, Managing Director for BICS Asia, to gain insight on how the company's global network is helping operators bridge their services to fuel new IoT opportunities to help operators take advantage of M2M connectivity demand.

Could you tell us a little about your role in the company and industry background?

As Managing Director of BICS Asia, I take responsibility for the entire BICS portfolio of telecom solutions. These solutions have been designed specifically to address the needs of mobile operators and enterprises in the region, including a Roaming-as-a-Service offering that helps operators quickly attain a global roaming footprint, anti-fraud services, special travel SIMs, and IoT connectivity platforms. As the leading global provider of reliable and secure mobility, voice and messaging solutions, BICS acts as the bridge between telecommunications operators and digital service providers in Asia and across the world.

I have more than 20 years' experience in the APAC telecoms industry, previously working in a variety of roles for Fortune 500 and telecommunication companies across the region. I joined BICS in 2014 to head the APAC branch of the business and we have significantly grown our presence in the region, capitalizing on our global leadership position in roaming as well as voice and capacity solutions. Our offices in Singapore and Beijing now serve more than 250 carriers, mobile operators and partners in the region.

The development of these hubs has brought us closer to our customers in Asia. It has helped to grow our footprint in the region and position BICS as a truly pan-Asian wholesale carrier.

International roaming in the APAC region has soared exponentially in the past few years. Could you please explain why and how COVID-19 affected this?

Before the crisis we conducted some research into roaming in the region, analyzing data from our global network. This network connects more than 700 operators and 500 digital service providers and carries more than 50% of the world's data roaming traffic. In doing so, we could reveal that data roaming traffic increased by 245% from 2018 to 2019 in APAC.

This surge in roaming traffic both in and out of the region is mainly attributed to exponential growth in IoT devices across the region. The majority of these connected devices rely on ubiquitous connectivity, allowing devices to switch operators and roam internationally as needed.

Due to the collapse of international travel as a consequence of national

lockdown measures, "human" roaming has clearly taken a significant hit. The travel industry in the region is anticipating that it will take at least two years to get back to pre-COVID numbers.



BICS acts as the bridge between telecommunications operators and digital service providers in Asia and across the world



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However, M2M connectivity continues to experience high demand and is likely fueled by the crisis. Being able to monitor buildings and systems remotely is critical given the current situation. Fleet and logistics management is also a rising use case to help businesses perform more effectively and efficiently. For this, BICS provides global IoT connectivity through our BICS SIM for Things solution, offering businesses reliable SIM or eSIMbased international connectivity, so that they can launch IoT devices or applications anywhere in the world. Running on our proprietary global network backbone, the solution



The mobile industry is constantly creating standards for connectivity with a strong focus on security



currently enables roaming for more than 120 million IoT devices in Asia and we are working with several companies across the region to expand this.

How has COVID-19 changed the 5G roadmap in the region in terms of security for IoT deployment?

Before the crisis, operators around the world were quickly developing their 5G roadmap and we have been working with the GSMA to help define the standards for this rollout, specifically providing 5G roaming services.

However, we see that many operators are delaying their 5G rollout due to the pandemic and there are only a handful of countries in the region that are pressing ahead. Nevertheless, our goal is to push ahead with our plans to support 5G in all regions and



ensure that we are ready to support our customers when they launch their 5G services.

When these services are rolled out, fraud detection and prevention will be even more important than it is today, especially considering the enhanced use cases from an IoT perspective. The mobile industry is constantly creating standards for connectivity with a strong focus on security, thus significantly increasing the protection of mobile subscribers and connected devices. 5G standards and specifications perfectly illustrate the trajectory of security by design, integrating enhanced and reinforced radio encryption, authentication, and integrity, alongside mechanisms specifically developed for IoT.

However, individual operators cannot always spot these fraud

traffic trends early enough to prevent them from affecting their networks and customers. This is where a global player like BICS, with a unique wholesale-level view of the network, can help. With an intelligent connectivity platform and high-quality global infrastructure, our IoT connectivity solution ensures protection of global connected device deployments from external attacks.

As the number of connected devices in the region continues to soar, how are businesses ensuring a consistent quality of experience for customers?

Whether companies are using IoT for consumer or industrial cases, quality is inextricably linked with choice. Many of us have experienced the importance of choice when roaming abroad. The ability to switch networks in order to get the best quality is critical to having that great



The ability to switch networks in order to get the best quality is critical to having that great user experience we have all come to expect



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user experience we have all come to expect.

BICS offers companies that same kind of flexibility for them to choose the best type of connection and the best operator for their needs. Our IoT platform, SIM for Things, provides ubiquitous connectivity, by connecting them to our roaming hub that includes 700 operators around the world. This also helps to accelerate their IoT deployments and effectively scale them since they no longer need to sign multiple bi-lateral agreements with operators in each country where they need coverage.

Therefore, businesses can develop simple, low-cost IoT offerings that give them autonomy and control over their IoT deployment without using a mobile operator as a gatekeeper, which is both inconvenient and expensive. With this freedom of choice, they can design the most cost-effective model while maintaining the best quality.

For operators, they can in turn capitalize on the growth of IoT by working with us as part of our roaming hub. This includes opening up their NB-IoT and LTE-M connections. Low Powered Wide Area Networks (LPWAN), which are expected to see growing demand from the electronics sector as this solves many technical, operational and commercial challenges compared to traditional 2G, 3G and 4G connectivity. This is evidenced by a recent agreement we signed with Avent Silica in Europe to deliver this IoT connectivity to OEMs, devices and applications.

Apart from IoT, have you seen any other major growth trends in the region?

Like most of us in the region, I have been working from home for most of the year. Remote working has seen a significant demand for Cloud Numbers and SIP Trunking solutions around the world to support both conferencing solutions as well as to call centers.

Either through the licensing of our own numbers or through partnerships with our telecom customers, we have been supporting this growth throughout the crisis. This is combined with our SIP Trunking solution to ensure that connections are seamless between VOIP and either landline or mobile numbers.

As homeworking becomes the new normal, we are also speaking with many customers about fraud prevention solutions. This can range from call encryption through our SIP Trunking solution to our Fraud Guard solution that can block fraudulent inbound and outbound calls.

We also expect to see a rising demand for bandwidth. To support remote working as well as the exponential use in streaming services, operators will need to ensure they have sufficient bandwidth in the backend to ensure quality. BICS is helping customers maintain their service levels by providing them additional capacity.



As homeworking becomes the new normal, we are also speaking with many customers about fraud prevention solutions





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Employing AI in the war against Covid-19

When Steven Spielberg's "A.I. Artificial Intelligence" first premiered in 2001, it was hailed as an ambitious foray into the unknown, into a dimension that the world had not yet ventured but was not completely unfamiliar with. The project was first conceived by legendary producer-director Stanley Kubrick, who handed over the production of "A.I." to Spielberg. The idea that artificial intelligence (AI) or machines that exhibit human-like emotions could be a reality in the not so distant future was both intriguing and downright mind-boggling. The film itself is set in the 22nd century in a post-climate change era.

nor Kubrick could have predicted that AI-powered machines and robotics would eventually be deployed less than 20 years later to help combat Covid-19, the global pandemic that has completely

upended the world as we know it.

either Spielberg

Long before the rest of the world became aware of the virus's existence, let alone its severity, AI systems run by Toronto-based startup BlueDot had already detected a mysterious strain of pneumonia in China at the end of 2019. The system immediately alerted experts at BlueDot who found alarming similarities to the deadly SARS virus in 2003. Natural Language Processing (NLP) and machine learning algorithms were employed by BlueDot to pore through data from commercial flights, health and medical organisations, climate information and news reports to formulate insights about global health trends. It was this groundbreaking partnership between AI and human experts consisting of data scientists, doctors, epidemiologists, and veterinarians that helped put a spotlight on the extreme nature of this virus and forecasted how it would spread.

As the pandemic rages on, AI technologies and tools have already been used widely to support efforts by governments, the healthcare community and society as a whole to predict and control every stage of the crisis. One of the main precautionary measures taken in addition to wearing masks and quarantining to prevent the spread of the virus was social distancing. Within the workplace, AI-powered tools have been deployed to ensure that employees maintain a safe distance between themselves and this protocol has greatly improved the situation for many companies. One clear example of this is India's Essar Group, a multinational conglomerate which has been adapting to the "new normal" by leveraging existing

infrastructure in the fight against the pandemic.

Jayantha Prabhu, Essar Group's CIO said, "We are using our existing security cameras to track employees' paths in the office. We also have an AI-based Covid-19 solution in place. With this solution, the company can track an employee's path in office and the people he meets within the office. In case, a person is detected with Covid-19, the company will have all the necessary details to take further steps." According to Prabhu, the use of this method will enable the company to track infections among employees as well as compile reports on the ins and outs of each person within the office space.

Not wanting to be left behind, Kellogg South Asia has been planning to implement precautionary measures like social distancing digitally using AI. According to its Director-IT, Asfar Khan, "It's a slightly complicated science because there is no correlation to you being positive and digitally being able to confirm that. But it is a platform we are looking at where we can alert someone that they are within a certain distance limit from someone. We will be looking at something like that. But it is an evolving science."

Within the hospitality sector, service robots and contactless technology have not only helped increase productivity and overcome a shortage in manpower but have forced the industry to revamp and digitize its current business models to deal with the pandemic. As countries across Southeast Asia ready themselves to reopen their borders for travel and tourism according to post-Covid recovery guidelines, hotels have begun to reorganise their operations by implementing new solutions to keep their guests happy while following strict safety measures. Brendan Daly, general manager of Yotel Singapore said, "As a general trend, we might expect to see more brands investing in automated services and robot implementation. particularly as we now see robots moving out of the warehouse and

factory into the larger world – helped along by falling hardware costs and the rise of 5G networks."

He added, "These [robotic] applications are highly useful in a hotel environment and increasingly, we can envision how they will change the way service is delivered alongside evolving guest expectations."

Evidently, AI has the power to bring about tremendous benefits and opportunities in the ongoing fight against Covid-19. While the world struggles to take control of its volatile economies, development and innovation of AI within multiple industries has shown us that these technologies can and should be included in global business operations to help fully stifle the spread of this virus once and for all.



Al technologies and tools have already been used widely to support efforts by governments, the healthcare community and society as a whole





Looking to Asia and Africa as future hubs for digital economic development

With both Africa and Asia on the cusp of a digital renaissance, Telecom Review Asia Pacific secured an exclusive interview with ZTE's SVP, President of International Sales Mr. Xiao Ming to discuss the evolution of 5G within these two very distinct regions as well as the significance of investing its global revenue into R&D in a post-pandemic world.



both these regions' diverse socioeconomic landscape?

The economic and social development varies in different regions around the world, and the development of 5G is unbalanced. According to GSMA statistics, by the end of Q2 2020, a total of 87 operators have released 5G commercial services in 39 markets, and another 84 operators have announced plans to deploy 5G in the future. Among them, 5G has developed rapidly in Asia, Europe, the Middle East and North America.



5G development of Asia is leading the world. According to GSMA's forecast, the number of 5G connections worldwide is expected to reach 1.7 billion in 2025, with the Asia-Pacific region accounting for the largest proportion. 5G development in Asia is diversified. On one hand, some leading Asian countries top the world in terms of 5G development and lead 5G network deployment and 2C/2B market, such as China, South Korea, Australia, Japan, Thailand and Singapore. On the other hand, a large number of Asian countries with emerging economies are also actively engaged in 5G networks planning and deploying.

In the wave of 5G construction in Asia. ZTE has accumulated rich experience. Up to now, we have deployed commercial 5G networks in more than 40 countries around the world and have mature 5G commercial capability and endto-end 5G network products. In the Asian market. we will share our experience in commercial 5G deployment, and provide leading 5G technologies and a full range of products, covering 32/64-channel Massive MIMO AAU, 2/4/8-channel RRU and digital indoor distribution QCell, to facilitate the rapid deployment of 5G networks with extremely cost-effective scenarios.

In Africa, 5G is still in its initial stage, 4G networks play a leading role in most of Africa, and network investment mainly focuses on 4G capacity expansion and construction. The government and operators are beginning to plan 5G spectrum and 5G network construction. Some leading operators have been actively involved in promoting the acquisition of 5G frequency bands and preparing for large-scale commercial deployment. We are delighted to see some leading operators have been actively involved in promoting the acquisition of 5G frequency bands and preparing for large-scale commercial deployment.

The South African government opened the temporary spectrum license of 3.5 G in April this year and is expected to complete the formal spectrum auction this year. In other countries, such as Nigeria, Uganda, and Kenya, 5G tests are also under way. Some countries in North Africa have also started trial commercial use. The development of the 5G industry will bring unlimited opportunities in the next 3 to 5 years. We believe that with the accelerated commercial use of 5G SA, the 5G ecosystem will gradually mature. More and more African countries will seize the window of rapid 5G development. We will focus on the

coordinated development of 4G and 5G, solve the network coverage and digital connection in Africa, and the layout of 5G market.

Clearly the pandemic has delayed much of ZTE's business operations globally, yet the company has been quick to bounce back. How has ZTE managed to pull off this incredible feat in just a few months?

The pandemic has brought unprecedented changes to the world and almost all aspects of African telecommunications. During the surge in communication demand, ZTE has been communicating with our operator partners to maintain network operation and security. Literally, ZTE was seriously affected at the beginning of the pandemic. However, ZTE recovered guickly. Through our in-depth digital transformation and continuous investment in R&D and market segments, we have achieved nearly 6% revenue growth and a significant growth of 26% in net profit. Our R&D investment amounted to 6637 million RMB, accounting for 14.06% of the first half of this year.

After the outbreak of the Covid-19, our top priority was the safety of our employees and customers. We require all employees to fully comply with the local government's requirements for preventing the spread of the virus, such as self-isolation, working from home, and online marketing activities. ZTE itself is also accelerating digital transformation to cope with various difficulties caused by the pandemic, as well as promote and implement digital office, digital operation, digital research and development, digital business, etc.

You mentioned previously that "Africa is the continent with the highest economic vitality in the world." Could the same be said for Asia or are there other factors that need to be considered?

According to United Nations projections, the world population will increase to 11 billion by the end of this century. Among the extra 4 billion people, 3 billion will be located in Africa and 1 billion in Asia. At that time, over 80% of the world population will live in these two regions. With the rise of consumption power and economic strength in these regions, Africa and Asia will become the most important commercial markets in the world.

Thanks to the demographic dividend and the rapid spread of smart phones in Africa, Africa's mobile Internet users are growing rapidly, and new services such as mobile payment, instant communications, online streaming media, and short video services are increasing. This is a critical period for digital transformation and digital economy development. In the next few years, Africa is expected to make use of digital technology to improve people's living standards and promote economic development.

Meanwhile, Asia's economy is also full of vitality and the economy is developing rapidly. There are many countries in Asia whose 5G network construction is in a leading position in the world, such as South Korea, China, Japan, etc. We will deploy the most advanced 5G SA network in Asia to meet the needs of the industrial Internet.

Covid-19 has inadvertently accelerated the digital transformation we have been talking about for years, what is ZTE doing for its customers that allows them to keep up with these unexpected circumstances? The pandemic reshaped people's production and life, making digital transformation in all walks of life imperative. Telecom has helped us to navigate the COVID-19 crisis. This unplanned and unexpected disruption has shown us that there are many things we can do, like working from home, video conference, which were unthinkable just a few months ago.

During the pandemic, we worked together with our customers to ensure the security and reliability of the network. We have formulated various measures to ensure that the network can cope with the rapid growth of traffic and connection requirements of individuals, medical institutions, enterprises, and education. The traffic surge has prompted operators and ZTE to launch short- and longterm solutions to meet these new demands.

What plans does ZTE have for future operations in terms of investing in R&D, seeing that this market helped pull the company out of an economic whirlpool during the pandemic?

R&D is an innovation booster for enterprises. Facing the challenges brought by COVID-19, we will continue to increase our R&D investment, deepen our own digital and intelligent transformation, improve R&D and operational efficiency, and make full use of the efficient and collaborative advantages brought by digital transformation.

ZTE upholds it as a core development strategy to insist on 5G invest. Now, we have the capability to give complete 5G end-to-end solutions.

By virtue of leading technologies, products, and solutions in wireless, core network, bearer, chip, terminal, and industrial applications, we are accelerating the large-scale commercial deployment of 5G worldwide. At the same time, we will continue to explore 5G industry applications, bring 5G technology to various industries, and maximize the value of 5G.

In China, the three major operators, China Mobile, China Telecom, and China Unicom, have started 5G network construction with the goal of realizing the commercialization of 5G SA networks. We have participated in the 5G SA network construction as a main partner. At the same time, in order to cope with the ever-changing scene needs in digital transformation, ZTE has launched a precision cloud network strategy, including distributed precision cloud on demand and deterministic precision network that the allows the network to move with the cloud, helping operators control the cloud and network ecology.

In Africa, we are committed to investing more value, credibility, and cost-effective ICT technologies in operators and vertical industries, including 4G, 5G, smart equipment, cloud, and end-to-end solutions, to solve Africa's network coverage and digital connectivity. We remain passionately committed to achieving an all-digital Africa.



The pandemic reshaped people's production and life, making digital transformation in all walks of life imperative





The necessity of 5G in the Asian ecosystem

The fourth industrial revolution has arrived, bringing with it a digital cache of untapped potential ranging from artificial intelligence (AI) to virtual reality (VR). Companies, enterprises and institutions across multiple sectors are now gunning to become the first within their industries to adopt, implement and fully utilize these emerging technologies that come with such rapid global digitisation. In addition to AI and VR, the proliferation of new technologies like the Internet of Things (IoT), big data, blockchain and biometrics are just some of the emerging game changers that have taken the world, particularly Asia Pacific, by storm.

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and 50 billion by 2030, all of which will require a connection with huge capacity. This is where the role of 5G comes into force.

As an evolutionary technology, 5G will be able to do all the things that 4G can do; and it will even do better. With that being said, there's no rush to say goodbye to 4G just yet. It will coexist with 5G well into the 2030s and together they will form the backbone of future mobile networks. As an example, when a connection is established, the device will connect to the both the 4G and 5G networks to provide control signalling and a faster data connection respectively. The eventual deployment of 5G worldwide would mean that users will very soon be able to experience 100 gigabits per second in terms of data speed, which is 1000 times faster than 4G.



5G is essentially the lifeline that connects all emerging technologies, allowing them to work and perform their specific functions seamlessly



ut of all the new technologies that will undoubtedly change our lives, the fifth-generation network or 5G is the most crucial.

5G is essentially the lifeline that connects all emerging technologies, allowing them to work and perform their specific functions seamlessly. Without 5G, we cannot even begin to visualise let alone build a societal ecosystem that allows for the creation of smart cities, the development of telehealth or robotic surgery, machinetype communications and a myriad of other sustainable solutions that can help improve the quality of life for communities around the world. As it stands, 5G will build upon the 4G/LTE networks and thus provide end-users with higher Internet speeds, higher reliability and a much guicker response to information dissemination. These features will inevitably become the bedrock of which future 5G services are able to carry out their individual operations in an efficient and timely manner. The current 4G/LTE networks, while still able to deliver high quality and advanced wireless network services, would not have the capacity to support instantaneous cloud services, communicate with drones and robots, or improve vehicleto-everything (V2X) services. It is expected that there will be more than 40 billion connected devices by 2025,

When we look at the Asia Pacific region, the 5G frontrunners have already made it clear to the rest of the world that not only do they have the infrastructure to support this new network, but the pace at which it is growing is unprecedented, something we have not seen before with the previous generations of networks. These frontrunners are poised to become leaders in 5G adoption and deployment. As of January 2020, South Korea has already successfully rolled out 5G to 85 cities, with many owing its rapid victory to the country's three carriers who worked closely to bring 5G into the public sphere; SK Telecom, LG Uplus, and KT Corp. The three operators were instrumental in launching the country's first 5G networks in April 2019, which led to a handful of users scrambling to access the new superfast wireless technology. In its efforts to further establish itself as the global leader in 5G, South Korea announced plans to invest \$26 billion to build its 5G ecosystem.

In Japan, NTT DOCOMO, the country's largest wireless carrier, has been trialling 5G since 2010 and did an initial pre-commercial launch for the technology in September last year. The operator officially launched 5G services in March 2020, with expectations for 4.1 Gbps in June as the current maximum data rate is at 3.4 Gbps. Rakuten plans to rollout 5G this year and KDDI launched its network on March 26 this year.

One of the key players in the 5G race is without question China, where its 5G technology was rolled out in more than 50 cities at the beginning of the year. Prior to this, the country's three major operators, China Mobile, China Telecom and China Unicom had launched 5G networks in late 2019. Based on an assessment conducted by the European Parliament, the Ministry of Internal Affairs and Communications (MIC) of China has promised a whopping \$300 million for the growth of 5G and other future technologies.

In spite of its early success, China was faced with an insurmountable public relations crisis when US President



Trump issued a trade ban barring US companies from partnering with Chinese tech companies, namely Huawei, as they had been accused of cyber espionage on behalf of the Chinese government. However, no solid proof has ever come to light since. Many industry experts criticised President Trump's decision, stating that the trade ban seems to be part of a much broader issue.

In reality, Huawei is currently one of the strongest players in the 5G ecosystem. It may be that the US is imposing all these restrictions on Huawei as a way to stifle its expansion. Strangely enough, American whistleblower Edward Snowden revealed that there was clear evidence that the US government had been engaged in hacking and spying activities in the cyberspace, as opposed to Huawei's "cyber espionage".

As for India, according to the minister of the Department of Telecommunications, it is set to launch 5G this year. "When the world will rollout 5G in 2020, I believe India will be at par with them,"



said the minister, Manoj Sinha. In fact, according to Vodafone Idea Limited, one of the country's largest operators, it already began testing 5G in 2017.

In Singapore, it completed its first outdoor pilot, involving Nokia and StarHub, in November 2018. The government has said that 5G will go live in the country this year. The Infocommunications Media Development Authority (IMDA) has said that they plan to allocate millimeter bands which will be "sufficient for at least two nationwide 5G networks." As we have witnessed, 5G has the power to bring about tremendous benefits and opportunities in ways we could only dream of until now. While the Asia Pacific region is recognised as a global player in the development and innovation of 5G technology, it is imperative that the region takes into consideration the plethora of challenges that come with the rapid deployment and commercialisation of 5G. Asian governments need to work together to ensure that a solid 5G ecosystem, complemented by shared collaborative principles, is established for the betterment of society in the future.

As an evolutionary technology, 5G will be able to do all the things that 4G can do; and it will even do better



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TELECOM Review

Huawei handpicked by Shenzhen airport to make new project a reality

Shenzhen airport, China's fifth largest airport and a world-class international aviation hub, has chosen Huawei to work together on the key project of its Future Airport Phase II implementation: the upgrade of its Uninterruptible Power Supply (UPS) system. Such an upgrade provides a solid energy foundation to build a smart future airport from, as well as reconstruct the Information and Communications Technology (ICT) infrastructure platform.

And this momentum is showing no signs of slowing: Indeed, Shenzhen Airport is the only airport in China participating in the International Air Transport Association's (IATA) "Future Airport" pilot program. To realize the program, many future-oriented upgrade and reconstruction projects are being implemented.

The airport's legacy UPS was aging badly, leading to increased fault rates. To compound the issue, there was a lack of spare parts because the original equipment had been discontinued. And maintenance work was heavily dependent on the original manufacturer, representing a serious potential risk. In sum, these challenges were impairing Shenzhen Airport's efforts to build a smart future airport.

With the goal of becoming the benchmark for future airports, Shenzhen Airport set

high standards for its UPS replacement and it felt that any new equipment should be leading the industry's future evolution. It also needed a supplier with extensive experience in cutover assurance, to secure operational processes.

With a modular and multi-redundancy design that eliminates single points of failure and ensures the smooth running of key services, Huawei's modular UPS has already been tested in the industry. The Artificial Intelligence (AI) proactive warning function of components -- such as capacitors and fans -- shifts Operations and Maintenance (O&M) from passive to proactive prevention. Furthermore, all modules are hot swappable and can be replaced within five minutes when a fault occurs, further simplifying O&M. Such benefits convinced Shenzhen Airport that Huawei's UPS solution met their requirements for future airport assurance and chose Huawei's UPS5000 series for the upgrade.

At 03:00 in the morning on July 18, the Shenzhen Airport and Huawei team completed the online cutover of the second UPS with zero errors, just 13 days after the first successful cutover, and five days earlier than the original plan. This means that there is momentum for the next 24 sets of UPSs to be cutover and put into use. In total, 30 medium and large-sized UPS systems will eventually be deployed in ten power distribution rooms located across the terminal and in the Information Technology Center (ITC).

Huang Biao, General Manager of the Shenzhen Airport Digital Management Center. said. "The successful cutover of the project means that our success is not accidental. With the support of Huawei, the maintenance level of the airport UPS system is raised to a new level. It also proves that if the process of replacing old UPS hosts is highly operable and the solution is correctly formulated, UPS online cutover is feasible and controllable. All team members of the airport are confident about the subsequent cutover and future O&M assurance. Looking into the future, I hope that Huawei will continue to use its best products and services to help Shenzhen Airport build an international aviation hub, continue to move towards the goal of 'Future Airport,' and realize the strategic vision of leading the airport group with excellent global management and innovation as soon as possible."

Customer recognition and trust are the driving force behind Huawei's ongoing innovation and efforts to push forward. Indeed, Huawei UPS is seeking to develop towards high frequency, modularization, and intelligence.

ZTE announces new Bug Bounty Programs



ZTE Corporation has launched new Bug Bounty Programs to encourage security researchers and organizations worldwide to identify vulnerabilities in ZTE's products and services.

ZTE Bug Bounty Programs cover four aspects, specifically, the web

application system including core applications and general applications, the wireline, the wireless, as well as the terminal such as mobile internet products.

The wireline refers to fixed network optical access products, fixed network multi-service access networks (MSAN), fixed network terminals, and multi-media products while the wireless includes cloud core networks and wireless networks.

In case that there is a potential security vulnerability with ZTE's product or service as listed above,

researchers or organizations can submit a report via email to ZTE PSIRT (Product Security Incident Response Team) at psirt@zte.com.cn.

If the submitted vulnerability report meets the awarding criteria specified in the bug bounty programs, the reporter may receive a bounty award in accordance with the program terms.

As an advocate for transparency and openness, ZTE has been committed to continuously improving the security of products and services, so as to provide users with a secure and reliable service experience.

Telecoms World Asia 2020 to address key topics relating to the future of intelligent connectivity

Indosat Ooredoo, Smart Axiata, PLDT Global, and over 50 mobile operators from across the region to gather to shape the future of intelligent connectivity in Asia's fastest growing telco event, Telecoms World Asia, will take place virtually on the 27th to the 29th of October with a focus on intelligent connectivity in Asia.

Look forward to 6 channels of targeted content covering 5G, Network Virtualisation, Telco 4.0, Intelligent Connectivity and Carriers World Asia, with presentations addressing the key topics disrupting and reshaping the telecoms industry in the region.

On Day 1 of the virtual conference, Rahul Atri, Managing Director, Rakuten Mobile Singapore and Head of Product and Engineering, Rakuten Mobile will open the morning plenary with his keynote on "The world's first end to end cloud native networks." Following that, leaders from EVOS Esports, Garena, ONE Esports, Singtel International Group, United States Esports Federations, and Thailand Esports Federation will debate "The growth of digital content: Esports case study." Donald Tan, CEO, China Telecom Global will also be delivering a presentation followed by a fireside chat.

On Day 2, the focus then shifts towards 5G and Intelligent Connectivity with Su Ann Lim, Industry Head Telco & Technology, Google addressing "New technologies, new opportunities of going digital". Vikram Sinha, COO, Director of Indosat Ooredoo, Katrina Luna-Abelarde, CEO of PLDT Global and Thomas Hundt, CEO of Smart Axiata will then take the LIVE stage to evaluate Asia's 5G future in the Boardroom session moderated by Aiav Sunder of SC-NEX. Tom Varahese. Head of Connectivity & Access Policy. APAC of Facebook and Dhanant Subhadrabandhu, PhD., Senior Executive Vice President, Marketing and Service of CAT Telecom will then continue the discussions on "Digital Platform Transformation: Bringing more people online to a faster internet" and "The Next Steps of Thailand's Digital Outlook."

Rounding up the Day 3 keynotes, Tanapong Ittisakulchai, Chief Enterprise Business Officer, Advanced Info Service Public Company Limited (AIS) will explore 5G & Digital Ecosystems for Businesses in Thailand while Richard Fung, CEO, China Broadband Communications shares his perspectives on "The telco transformation for everything cloud".

Telecoms World Asia will bring together over 50 senior decision-maker speakers and over 1500 leaders and professionals from mobile operators, government regulators, development banks, consultants, global suppliers, and solution providers, who are leading the future of intelligent connectivity in Asia.

Leading solution partners Advanced Info Services (AIS), CAT Telecom, Servicenow, Metaswitch, MSIG, EnableX, Atmail, CDNetworks, China Mobile International, China Telecom, CSG, IEEE, Netrounds, Marveltec, PCCW Global, R3, SQREAM, Turkcell, Zinier, Vertiv, FNT, Canopus Networks and more will be showcasing their latest solutions via TECH Demos on 26th of October and in the virtual exhibition hall.

Philippines mobile services revenue set to rise 6.2% in the next 5 years



The total mobile services revenue in the Philippines is set to increase at a compound annual growth rate (CAGR) of 6.2% from US\$3.7bn in 2020 to US\$5.0bn in 2025, mainly led by the considerable growth in mobile broadband service revenues, according to GlobalData, a leading data and analytics company.

The Philippines Telecom Operators Country Intelligence Report forecasts that mobile messaging revenue will continue to drop while mobile voice revenue will see a steady growth over the forecast period. Mobile data service revenue, on the other hand, will grow at a robust CAGR of 8.5% over the forecast period, driven by the rising adoption of higher average revenue per user (ARPU) 4G plans and the evolution of 5G services.

Aasif Iqbal, Telecom Analyst at GlobalData, says: "4G services will surpass 3G in total mobile subscription share in 2021 and will remain the leading technology through the forecast period, supported by continued LTE network expansions by operators such as Globe Telecom and PLDT. 5G services, on the other hand, will account for 17.5% share of the total mobile subscriptions by 2025-end.

Globe Telecom plans to launch 5G services for mobile users by this year end. Globe looks to expand 5G services in key urban areas and business districts of the country after its commercial launch, which will help the operator retain its leading position during the forecast period.

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PCCW Global, Neeco partnership enables greater IoT connectivity and solutions for APAC clients



PCCW Global and Neeco, a global provider of advanced ICT technologies, features and innovative solutions, have signed a collaboration agreement that will enable Neeco to make use of PCCW Global's Console Connect IoT solution to provide greater coverage and more reliable IoT mobile connectivity for clients in the Asia Pacific region.

Neeco's IoT solutions require consistent and reliable Internet connectivity that crosses multinational borders. PCCW Global will provide Neeco with international mobile 3G and 4G LTE SIM cards for use in conjunction with all of Neeco's ICT services in the Asia Pacific region. These mobile connections will also serve as a backup at sites in areas where fixed-line connectivity is unreliable.

The collaboration will have an immediate and positive impact on Neeco's popular out-ofband (OOB) management solutions, which are in high demand as site visits by field engineers become more difficult and expensive than ever before. The technology uses machine-to-machine (M2M) communication to allow support engineers to remotely diagnose and fix network issues, even if the affected network is effectively down.

Neeco's innovative IoT solutions also enable companies to track and monitor assets and increase the safety and efficiency of their delivery. The mobile backup connections made possible by the implementation of PCCW's Global SIM cards will represent a revolutionary network upgrade for clients who have previously had to rely exclusively on fixed-line Internet connectivity. In addition, Neeco's pay-as-you-go model allows clients to pay only when the mobile backup connections are required, without the threat of being disconnected from the network due to a lack of activity.

PCCW Global's Console Connect IoT solution enables Neeco to provide their clients with real-time activation and deactivation of devices, service configuration and traffic monitoring with end-to-end control and visibility across their global IoT assets. The Console Connect IoT solution will simplify the ordering of Neeco's services, as well as the deployment and change management of Neeco's entire global IoT network.

Mr. Craig Price, Senior Vice President of Mobility Product and Marketing, PCCW Global, said, "Collaborating with Neeco will open up a range of benefits for our clients in the Asia Pacific region. Their innovative and integrated ICT services will complement our widereaching mobile coverage, allowing both parties to offer even more effective solutions to our clients."

Mr. David Patek, CEO, Neeco, said, "The combination of PCCW Global's 3G and 4G LTE SIM cards and Neeco's IoT applications makes the perfect package for customers searching for robust solutions. Working with PCCW Global in the Asia Pacific region is ideal both for us and for our clients, and we will all benefit from this collaboration."

Mr. Petr Opravil, Senior Solutions Architect, Neeco, said, "By remotely managing network devices, our support teams can quickly address network issues and minimize downtimes. With PCCW Global's comprehensive mobile coverage, we will be able to further elevate our service level agreements far above the industry norms."

Tata Communications, Micron Technology prioritize global deployment of IoT devices

COMMUNICATIONS

Micron Technology, Inc. and Tata Communications announced they are joining forces to create a worldwide cellular-enabled connectivity solution that will simplify and accelerate largescale global deployment of internet of things (IoT) devices.

This solution will be powered by a new virtual SIM, the world's first cloud-based

embedded subscriber identity module (eSIM), which offers a flexible, scalable alternative to conventional physical SIM cards.

The cloud-based eSIM will be enabled by Micron's Authenta[™] Key Management Service (KMS), the industry's first siliconbased security-as-a-service platform for edge devices. With this technology, the Tata Communications MOVE[™] Global IoT Solution will offer a pervasive, end-to-end solution for zero-touch onboarding of connected IoT devices to cloud services across 200 countries and territories – backed by the company's relationships with more than 600 mobile network operators worldwide.

The solution will unleash innovation in the expanding IoT services ecosystem, which is predicted to nearly triple in revenue by 2026 to \$466 billion (ABI Research, IoT Market Tracker — Worldwide, 2Q 2020). The companies are demonstrating this solution, launching in 2021, at the online Micron and Tata Communications IoT Security Conference.

Smart set to deliver nationwide IoT services to support enterprise customers



Philippines-based telecommunications and digital services company, Smart, a subsidiary of PLDT, will be launching IoT services nationwide, utilizing the Worldwide IoT Network Grid (WING) managed service to deliver a fully virtualized and future-proofed end-to-end solution to meet the critical requirements of Smart's enterprise customers.

The WING managed service helps operators to capture IoT market share without having to make investments in infrastructure. Thanks to the flexible, invest-as-you-grow business model, operators can go-to-market quickly and scale IoT services cost-effectively. The service is owned by Nokia with whom Smart has entered a partnership.

The partnership sees WING provide Smart with its software-as-a-service (SaaS) platform, offering the necessary tools to eliminate the complexity associated with profitably connecting and managing new devices. Collaborating with Nokia WING enables Smart to offer advanced automation, real-time control features across IoT. This will enable enterprises running more automated, productive, sustainable, and safer businesses with harmonized service level agreements, whilst providing real-time insights. Beyond connectivity, WING Vertical-as-a-Service opens up opportunities for Smart to address their enterprise customers with end-to-end IoT solutions.

Jovy Hernandez, ePLDT President & CEO and SVP & Head for PLDT and Smart Enterprise Business Groups, said, "The Nokia WING IoT Platform solution bolsters our capability in solving our customers IoT-related requirements quickly and helping them get to market faster and with greater scale. Nokia's technology helps us to maintain PLDT's leadership position and assist our customers in maximizing the potential of IoT services."

Ankur Bhan, Head of WING Business at Nokia, said, "We are excited to work with Smart on this deal that will deliver superior experiences to their customers. IoT services are increasingly becoming a necessity as part of any operators' digital transformation strategy. Nokia's WING solution is at the forefront of enabling new IoT use cases through a range of connectivity options, including 5G."

Kacific commences preliminary stages of new satellite design



Kacific Broadband Satellites Group (Kacific) has started directing resources towards the planning and design of its next satellite, Kacific2.

Kacific2 will add capacity to its largest, high-demand markets of Indonesia, the

Philippines and Papua New Guinea, as well as expand its reach wider into South East Asia and further into Central and Western Asia, and potentially Eastern Africa. Like Kacific1, Kacific2 will use a spot beam system with dynamic bandwidth reallocation to respond to changes in market demand pre and post launch. This advanced technology allows Kacific to respond rapidly to new growth opportunities and provide a broader range of services for each market, by changing bandwidth configuration even when the satellite is already in orbit. Kacific2 will also take advantage of the latest beam forming technologies.

Christian Patouraux, Kacific CEO, says that Kacific1 has established a market presence and distribution channels for its high-speed broadband internet business in a number of key markets.

"The successful launch and deployment of Kacific1 last year and current strong demand for its services allowed us to prove both our capabilities and our business case despite the pandemic. We've shown how rapidly we can meet pent-up demand for internet access in Asia and the Pacific with satellite technology, not only as trunk and mobile backhaul links to telcos but also as direct broadband internet to governments and to ISPs serving enterprises and consumers."

"It's exciting to move forward with the active planning towards our next satellite Kacific2, which is an important part of our growth strategy" he adds.



The rise of pandemicdriven digital services

As the world continues to grapple with the uncertainty of COVID-19, the consequences of this pandemic, further exacerbated by global lackadaisicalness at the beginning of the outbreak, has driven many economies into recession and created a seismic shift in the job market. According to a report by the Asian Development Bank (ADB), the pandemic could potentially cost the world economy up to USD\$ 8.8 trillion in losses, with the Asia Pacific region (APAC) accounting for 30% of this. If these estimates are correct, this would mean the loss of over 200 million full-time jobs worldwide; 70% of which will come from APAC.

espite this rather bleak outlook, the risks involved for each industry differ greatly. In certain cases. some jobs are severely affected while others seem to be thriving and even evolving to meet new demands. As an example, global tech juggernauts like Amazon, Microsoft and Apple have all performed exceptionally well and even continued recruitment activities during the crisis. Several other industries have bounced back quickly from their own dire situations and learned to adapt to the "new normal".

Why is this so?

What has set these companies and organisations apart from the rest of the market, many of which endured devastating financial losses, bankruptcy, and job redundancies?

The answer lies within an organisation's operational blueprint. Less than a year ago, the term "digital transformation" was something rigorously analysed and discussed, but rarely implemented save for a few visionary industries. Old skills and traditional modes of company administration were still heavily utilised, with many entities at the cusp of transitioning into a new era of digitization. Fast forward to 2020 and these visionary industries are the ones that have now succeeded despite all odds and are pursuing new opportunities in the middle of one of the worst global economic downturns in history. Innovative

technologies in the form of e-commerce/online retail, video conferencing platforms, contactless food delivery and many others have showcased the importance of digital transformation in catalysing business models and adapting them to suit the needs of the current economic and technological climate.

One of the major and most immediate responses to COVID-19 was the stay-at-home policy put in place by governments worldwide to control the spread of the virus. The impact of this regulation meant that more people were spending larger amounts of time at home but still expecting a similar level of normalcy in their new lives. As such, e-commerce and online retail/grocery-buying was catapulted to the top of the list of business sectors finding its niche in the middle of a global pandemic. Panic buying and general alarm over the possibility of food items running out forced buyers to download online grocery apps, with many of these services seeing a staggering increase of about 300% in their average weekly order. In Southeast Asia (SEA). regional brands like South Korea's Lotte, Japan's Rakuten and even startups like Malaysia's HappyFresh and Indonesia's Gojek-owned GoMart have gained a high level of consumer confidence and trust since the onset of COVID-19.

HappyFresh's website states that "we have been doing everything we can to keep business running as usual. It is apparent that it is not the case as we see a significant and prolonged increase in demand across all our delivery areas. We've implemented a few changes for the time being and we believe we can continue to deliver your #FreshlyHandpicked groceries."

Additionally, many on-demand services like food-delivery platforms have been making a fortune during the last few months. Foodpanda in Singapore and GrabFood in Indonesia are just two of the many food delivery services that not only provide quick, high-quality meals for their customers, but they have also gone the extra mile during this pandemic to give customers the peace of mind of knowing that all meals are prepared fresh in a well sanitized kitchen following strict precautionary



In certain cases, some jobs are severely affected while others seem to be thriving and even evolving to meet new demands.





measures. For most of these platforms, customers are even given the option of choosing contactless delivery through their online apps, allowing them to collect their packages at the doorstep without interacting with the delivery driver as a way to limit social contact.

In terms of health and safety, healthtech powered by AI saw an increase in usage of 70% at the beginning of the year. The surge in visits to the Doctor Anywhere and Doctor World apps in Singapore highlighted the strong incentive to overcome these hurdles quickly by rising to the occasion and finding a solid solution to the problem, much like what is being done by tech startups and enterprises at this time.

As we have already seen, the stayat-home policy accelerated the digital transformation for many service companies. Another service that witnessed a meteoric rise in a short amount of time was streaming companies like Netflix, Amazon Prime Video, Hulu and Apple TV+. As lockdowns, curfews and working from home became a routine, more and more people turned to online streaming as a way of curbing their boredom and catching up with the latest shows/movies. Video gaming apps were also thrown into the mix as confining situations pushed many people to find alternative forms of entertainment once binge-watching TV serials became tiresome. COVID-19 consumer impact tracker Glimpse reported a +2056% surge in Nintendo Switch's Animal Crossing since its launch at the height of the pandemic back in March.

In a statement to its investors, Netflix said, "We're acutely aware that we are fortunate to have a service that is even more meaningful to people confined at home, and which we can operate remotely with minimal disruption in the short to medium term...Like other home entertainment services, we're seeing temporarily higher viewing and increased membership growth."



As we have already seen, the stay- at-home policy accelerated the digital transformation for many service companies





Arianespace's legacy continues to soar with upcoming launch missions

With 40 years of hard-earned experience and continued progress, Arianespace has been lauded as one of the leading commercial satellite launch services in the industry. Telecom Review Asia Pacific spoke to Vivian Quenet, Arianespace's Managing Director for Asia-Pacific to gain insight on the company's impressive portfolio within the region, COVID 19's impact on business operations and its future missions with Ariane 6 and Vega C.

hat do you believe has been the secret to the company's success all

these years?

Since 1980, Arianespace has launched a total of 740 satellites for more than 100 commercial and institutional customers from around the world, making a major contribution to humankind's knowledge of space, the protection of Earth, and improving life on the planet.

Asia-Pacific remains a key market for Arianespace, having launched 89 satellites to geostationary transfer orbit (GTO) for 17 Asia-Pacific operators from 10 countries – representing a 50% market share.

Arianespace offers launches into geostationary transfer orbit – its legacy core business; as well as new solutions, such as launch services for constellations and for small satellites into low Earth orbit (LEO), as well as rideshare-type launches into geostationary and lunar orbits.

This is the result of our three key assets: reliability, availability and competitiveness. However, we never take success for granted. This is why Ariane 6 and Vega C will enter service next year while we continue to innovate to answer all future needs — from low Earth orbit to the Moon and beyond.

Within Asia Pacific, Arianespace has made a significant regional mark with the relaunch of Ariane 5, as well as number of other successful launches this year. Could you tell us a little bit more about this and how these events have highlighted the importance of Arianespace's presence in the region?

Despite the COVID-19 situation, we managed to launch 124 satellites this year, with three Ariane 5, two Soyuz launches and one Vega. We launched two Asian customers on flight Ariane VA252, and since I am based in Singapore, I always favour those launches.



arianegroup

On the other hand, we also launched the first and second batch of Oneweb's LEO constellation, on Soyuz ST27 and ST28 flights, which are complex mission, with 34 satellites injection for each flight, but are also a very new business model, showing Arianespace is still at the forefront of innovation.

Last, we managed to inject three satellite in GTO, which is a first. One of those satellites, MEV-2 from Northrop Grumman is also a new business model, as its mission consist of extending life of healthy satellite, running out of fuel.

In addition to these performances, the Vega launch of 53 satellites in early September on a first 100% rideshare mission for European the benefit of 21 customers is a huge achievement for us.

What has been your observation/ lessons learned this year with regards to the specific challenges faced when conducting missions in the Asia Pacific region?

On the commercial side, COVID-19 has undeniably affected business in Asia. There has been no major launch contract signed so far in the region. Geostationary satellite projects have been delayed or put on hold, but none has been cancelled. On the contrary, COVID-19 has reinforced the need to provide more data, when most people replaced their business travels, by video conference call. The confinement has also increased the consumption of entertainment content at home, on both streaming services and traditional satellite TV. More than ever, the region needs satellite to fill the gap of new demand.

Regarding institutional demand (Government, Defence, Agencies), there was no impact of COVID-19 in the region. All programs are still running. Some may have slight delay due to satellite manufacturers or suppliers, but I do not see any major issue.

Covid-19 threw a spanner in the works for many industries this year and has forced them to confront some exceedingly difficult decisions regarding the operational integrity of their businesses. How did the pandemic affect Arianespace operations and what has been done to rectify this?

We did not take any risk with the health and security of our customers and employees. As such, we had to stop launching from French Guiana, when the French government declared the mandatory confinement. To tackle the travel ban, we innovated during the campaign of the VV16 SSMS (Small Satellite Mission Service) with connected Smart glasses. Arianespace engineers became the eyes and the hands of our customers, who remotely instructed them to work on their satellites in preparation of the launch.

Tell us more about your upcoming missions with Ariane 6 and Vega C. How will these launches respond to market needs and opportunities?

The new generation of European launch vehicles is designed to address changing trends in the evolving satellite marketplace. Ariane 6 and Vega C will enable Arianespace to cover all orbits for all sizes of satellites, including constellations and smallsats, thanks to special multiple launch systems (SSMS for Vega/Vega C, and MLS for Ariane 6). Ariane 6 and Vega C benefit from a long heritage of reliability and enhanced competitiveness - key factors when both institutional and commercial customers make their choice of launch services.

We are laser focused on introducing the Vega C and the Ariane 6. The beauty of these launch vehicles is that we can tailor them to the exact needs of our individual customers. No two missions are alike. We can offer bespoke services without Savile Row prices.

Furthermore, we are already in discussions with ESA and our partners about further technological improvements and innovations—the Ariane 6 and the Vega C are not the end, they are the beginning. Our ambition is to improve continuously the capabilities and the overall competitiveness of these vehicles.



UK's Huawei 5G ban: The dangers of politicizing innovation

Over the past few years, Huawei has been under fire due to several baseless allegations made by the US government which has caused a ripple effect across the rest of the world and has made the company collateral damage in a trade war between the US and China.



hile the move will appease the Trump administration, it will be a logistical nightmare which would also cause greater geopolitical tensions with China.

US tensions

Unfortunately for Huawei, the US government has been relentless in its efforts to diminish their stronghold

on the West's telecoms markets. It is safe to say that the vendor has been caught up in a trade war that is bigger than itself: the trade war between the world's two biggest economic powerhouses, the US and China. The US has cited that the core issue with Huawei, for them, has been the fact that the company may have been working closely with the Chinese government which led them to worry and accuse the tech giant of cyberespionage when, in reality, there is no solid evidence to back this claim.

Trump issued a trade ban on the company which essentially caused them to lose its access to the US market. Shortly after, the US placed Huawei on the entity list which would ban them from liaising or working with US-based companies. This posed a huge problem for the vendor as it would have a severe effect on their supply chain.

Despite all this, the company, like a Phoenix, rose from the ashes and persevered by doing what they do best: relentlessly innovating and diversifying their supply chain.

However, the US proceeded to try to influence a variety of European countries during the latter of 2019 and continued into 2020. At first, many countries were reluctant to follow Trump's advice but shortly after, some European countries gave into the propaganda and began their 5G infrastructure implementation journey without Huawei.

Despite this, several European countries are independently deciding to work with Huawei's 5G kit which is probably the right decision rather than coping with the US's hegemonic ideals.

UK tensions

The UK government has reconsidered their decision to work with Huawei and purchase their 5G equipment.

Previously, the UK decided to use Huawei's 5G equipment to a limited extent. Due to this decision, which, in my opinion, may have been taken to essentially ease political pressures between Britain and the US, UK Prime Minister Boris Johnson still faced a great deal of domestic political pressure.

Huawei's spokesperson in the UK, Ed Brewster, stated that the decision was disappointing adding that the company's future in the UK has "become politicized", stating that "this is about US trade policy, not security." Indeed, there should be no place for geopolitics in a 'freemarket' economy especially in this case because it encourages anticompetitive behavior.

Earlier this week, the UK approved the end of the country's relations with the tech giant which would essentially cost operators who have relied on their equipment a great deal for an average of around 20 years.

Oliver Dowden, Britain's digital minister, announced the move in parliament after Boris Johnson chaired meetings with his Cabinet and the National Security Council. Stating that: "Given the uncertainty this creates around Huawei's supply chain, the UK can no longer be confident it will be able to guarantee the security of future Huawei 5G equipment... From the end of this year, telecoms providers must not buy any 5G equipment from Huawei."

Why is the ban problematic for UK operators?

The revised decision by the UK government would not only be a logistical nightmare, but it will also delay its deployment by years and will incur extra costs (in billions) for network providers. It is safe to say that issuing the ban was the easy part because it is now that things are going to get messy for the UK.

Considering the amount of Huawei equipment that is already deployed in the UK, this poses a huge problem. In fact, BT has said that it would be "impossible" to remove all the vendor's kit within 10 years.

The general consensus is that no new 5G equipment from Huawei can be installed after 2021 and that all the existing 5G equipment from the tech giant be removed by 2027.

It has been speculated that Huawei may well be one of the UK's largest sources of investment from China. In addition to this, Huawei is most renowned for its relentless R&D efforts and investment. In fact, Huawei's R&D budget exceeds \$20 billion this year.

With regards to the UK's longawaited 5G rollout, the supply ban would mean that it will be delayed by a whole year. Mr. Dowden also noted that the actual cumulative cost of the moves, including earlier restrictions announced against the tech giant, could be up to £2bn which could essentially even delay the UK's 5G rollout by two or three years.

"Given the way there has been a decrease in the vendors supplying this technology, if you want 5G any time soon and you want good performance at a good price point then the equipment that Huawei offers is very attractive," said Richard Foggie, of The Knowledge Transfer Network.

To echo Foggie's sentiment, Huawei offers the most attractive product in the 5G space interms of cost and reliability. This alone would mean that the UK will have to spend a great deal more than initially anticipated when they decide to work with other vendors. These extra costs will be incurred by UK customers which might lead to even bigger domestic political and social issues.

Removing Huawei's 5G kits is not going to be easy. The UK has over 200 towns and cities that already, to a huge extent, rely on Huawei's 5G equipment. This means that, logistically speaking, removing it all will be such a messy process, especially because they will need to find new equipment to immediately replace them.

Commenting on the issue, director of telecom security at Positive Technologies, Michael Downs, stated, "Long-term, the decision to exclude Huawei cannot be solved with a solution as idealistically simple as just swapping it for an alternative vendor immediately. This whole process- including testingwill have to be started all over again."



Opportunities abound for vertical industries employing 5G network slicing

As we come closer to making 5G a reality, OTTs and service providers will soon be able to look forward to implementing 5G's network slicing capabilities within their business operations, in addition to being a new source of revenue to operators. Telecom Review Asia Pacific sat down with Mr Jason Tu Jiashun. Principal Scientist of NFV/ SDN Solutions at ZTE Corporation to find out more about this exciting new possibility.



ould you explain the benefits of 5G network slicing capabilities for OTTs and service providers?

5G end-to-end network slicing solution integrates SDN/NFV, network slicing and related technologies to help different kinds of enterprises have their own Service-Level Agreement (SLA) guaranteed Virtualized Private Network (VPN)/ slice at an affordable price. It will solve the pain-point and meet the demand for private networks while bringing more competitiveness to thousands of enterprises thanks to affordable costs and better end-user experience. In the past, the only way for enterprises to have a private mobile network was to build a physical network and create a professional network operation team.

Only large enterprises, governments could afford to build such a network. Additionally, this type of physical



private networks inefficiently occupies network frequency, transmission, and other resources. Hence, the traditional way of building a private mobile network is costly and takes time. Compared to the huge investment and long-term commitment to build a physical private network, 5G end-to-end network slicing is provided by the operator's public mobile network which shares all the expensive resources mentioned earlier.

The new B2B2C model enabled by SliceStore can stimulate a better enduser experience. For example, with the existing B2C model, an end-user who buys HD video service needs to buy HD video content from the video service provider and a data traffic packet from the operator respectively. If the quality of the video is bad, it is difficult for the end-user to find out who is responsible for it. In the B2B2C model, the video service provider can purchase a customized network slice, hence they are solely responsible for the end-to-end service experience and are able to charge the user only once. If the experience is not good, the end-user can simply switch to another video service provider.

The vertical industries are better at choosing the best quality and the most economical network connection/slice. Thus, the enduser no longer needs to worry about the network connection on business, but instead can focus on the end-to-end service experience alone. Just like online shopping with superior customer experiences today, customers can buy products and delivery service with just a single payment. These vertical industries should also include network connection services within their service content offerings and enable customers to purchase using a single payment.

In November 2019, China Mobile (Guangdong) partnered with ZTE to launch the SliceStore. Gamers enjoyed high-definition video games and smooth game control with just a single payment to Tencent Entertainment. They did not need to concern themselves with the network being used by Tencent nor the obscure technology (bandwidth, latency, etc.) behind it.

Essentially, network slicing is like VPN. Normally operators have a physical network for all the customers, not matter who you are. In the 4G stage, the operator must implement all kinds of terminals into one good network. This is the existing



uses a fully hardware model for end to end. Of course, these 3 levels of network slicing have different costs. Generally, NFV/SDN-based software slicing is more economical, while hardware-based independent hard slicing is more independent, more secure, and provide better KPI guarantee.

As can be seen from public reports, many large enterprises have joined the 5G private network plan, and it expects that network slicing will bring in revenue this year.

Several issues pertaining to network slicing have been called into question when it comes to the progress of 5G; RAN-redesigning, scheduling issues, service assurance, just to name a few. What are your thoughts on this?



situation of the network. However, network slicing can provide VPN for all kinds of applications. For example, we can identify that autonomous driving in cars can use low latency and high reliability. Normally these kinds of network slicing have a higher priority compared to others. If we lose the package on the network slicing pertaining to autonomous driving, this could cause safety issues that will result in serious accidents.

On the other hand, for IOT terminals, you can also provide low economy network slicing for water meters or streetlights. You need an economical connection for these machines. Network slicing can be tailor made to your requirements to guarantee an unparalleled level of service. Network slicing can provide a better private service guaranteed to OTT and help them build up a real end to end service to the consumers. This is a good thing for the OTT and service providers.

In terms of profit, how do you think these capabilities can contribute to a company's revenue?

If we look at China today, vertical industries are already willing to implement network slicing. China Mobile launched three 5G private networks plan in July.

The first one is a fully software model. Software based models are a good thing because through its application of cloud technology, different slices can have different functions. These kinds of software are independent but use the same hardware, so it can guarantee the proper usage of applications based on its slice.

The second model uses part software and part hardware. The third level

Network slicing can provide a better private service guaranteed to OTT and help them build up a real end to end service to the consumers



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At present, the only technical limitation is the sharing and conflict of RAN resources between slices, RAN can use different frequency and priorities for different network slicing according to the 3GPP recommendation. The core network and bearer can be logically and physically isolated by using software slicing and hardware slicing. Network slicing should be deployed on a standalone network.

How do you think edge computing can be used within 5G network slicing for more optimum resource utilisation?

In most scenarios, MEC and slicing will be deployed together. Lowlatency slicing is implemented through the edge computing capability. Edge computing is proposed by comparing cloud computing and is sometimes called fog computing. That is, the computing and storage capability is not located in a remote location like Alaska but will be deployed much closer to the user's geographical location. This in turn will provide a better response time (latency) and avoid the risk of long-distance data transmission.

5G itself also needs edge computing because some of the core network functions need to be running on the cloud and those functions should be distributed to the edge. In this way, when we introduce 5G, it is imperative that we introduce edge computing not only for other technologies but also for 5G itself. This is the strategy operators are employing now.

In this sense, why not take the extra step so you can sell edge computing to vertical industries? I genuinely believe this is also an opportunity for operators to introduce new revenue by selling edge computing resources.

What other technical challenges remain to be solved before we can make this a reality?

With the large-scale commercial deployment of 5G SA architecture in China, 5G network technologies including chips, terminals and systems have been successfully verified. However, the application of 5G capabilities in vertical industries still needs to be promoted. It is hard to imagine an industry that has not completed its digital transformation or is at least in the process of doing so.

In fact, ZTE has cooperated with more than 300 vertical industries and customized digital transformation solutions for many industries such as transportation, healthcare, mining, education, new media and so on. ZTE shares its digital capabilities that have been successfully applied in 5G technologies such as cloud, big data, AI and IoT to many vertical industries. Together with 5G, we believe that these digital technologies will be able to upgrade those traditional vertical industries.

Digital transformation will not only open new revenue sources for ZTE, but also promote the further popularization and development of 5G networks soon. 5G is going to connect everything, so you need to introduce 5G connection to vertical industries. However, this cannot be done to an industry which is not digitalized. That is why it is so important for digital transformation to happen now.



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Telecom Review's virtual panels' series continues in 2021

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

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