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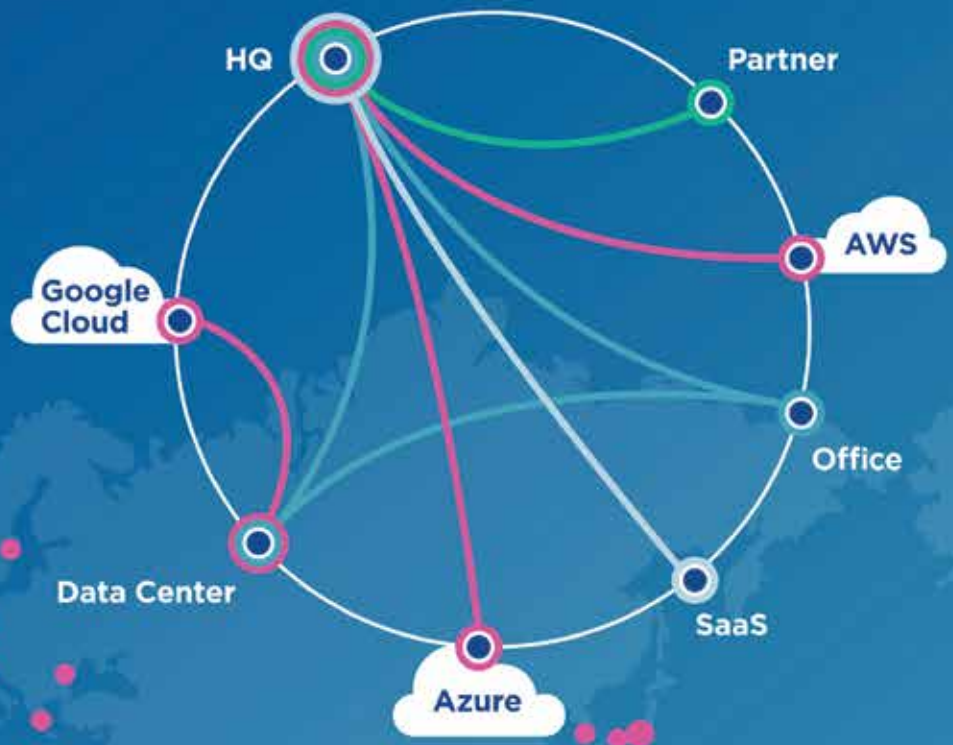

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Access to technology is a human right: Keep politics away!

For many years, the ITU and GSMA were calling for access to the internet and connectivity to be considered a human right. However, it is access to technology that has to be a human right. All populations around the world should have an equal opportunity to use technology.

We all know that technology adoption has changed societies for the better and has saved lives. Today, political interference with the technology industry does not affect companies, but rather affects consumers – the end users mostly.

The US ban on Chinese technology companies, the ban of VoIP apps in many countries and of social media in others, have made access to technology unequal and unfair.

Of course, many governments have said that the ban is for security reasons, given that many social media platforms can be used for nefarious purposes; no need for examples as they are numerous.

But, why won't this issue be regulated on a global level? Many countries use alternative platforms. Consumers in China use WeChat instead of WhatsApp and they have their own google platform. In Russia, consumers use their own platform of Facebook. The UAE has its own legal VoIP app, etc.

Why does the deployment of 5G networks in the USA or Australia cost so much more than other countries? Because the market is not open, and this means consumers pay extra. Why can Canadians buy the Huawei P30, but their US neighbors cannot? Why is it that if we're only looking at security issues (if there are any), we can't keep politics away?

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5G is here and Asia is more than ready

5G is no longer a farfetched technology. It's here. Vendors around the world have been in a fierce competition to offer operators 5G equipment and lead the way in the digital era. The capabilities of the fifth generation technology are tremendous and so far, Asia has proven itself as a pioneer in this field. Consumers in South Korea - where nationwide 5G mobile network has been launched in a world first - have already subscribed to 5G. Hong Kong has released its 5G spectrum road map. And, China has just issued 5G licenses for commercial use.

Asia appears to be leading the race to 5G with the first adopters being most likely China and South Korea. Countries in Asia have increased their spending on wireless communications infrastructure to build new sites. Investment in 5G will have an unprecedented economic impact. Smart cities will rise where self-driving cars and connected devices will pave the way for a new lifestyle.

A report commissioned by Deloitte showed that China has 10 times as many sites as the US. According to the report, the US needs to spend almost three times the amount that China spends to generate an equivalent amount of wireless network capacity.

The level of 5G readiness varies between countries, but one thing is sure, Asia is ready. Almost every country in the continent has drafted pertinent strategies and road maps, and operators have initiated trials to test the technology.

South Korea secures world first by launching 5G networks

South Korea, renowned for its technological prowess and progressive approach to emerging technologies, has secured a world first in April following the launch of its nationwide 5G mobile network.

South Korea's three major telecommunication operators collaborated on the project after they were asked by the government to work together in an effort to accelerate the deployment of their 5G networks.

SK Telecom, KT and LG Uplus all announced the launch which led to a late-night scramble that enabled a handful of users to access the new super-fast wireless technology. The commencement of the 5G services was launched at 11pm local time and was two days early - ahead of the scheduled launch which was April 5th, catching many off guard.

Seoul has prioritized 5G as sees it as its best opportunity to stimulate its stuttering economy which has seen its GDP stagnate in recent years. South Korea, along with the US, China and Japan, had all been in a race to claim the title as the world's first provider of the ultra-fast network. The victory is being seen as a huge coup by many ICT leaders in South Korea.

The reason it launched two days ahead of schedule was due to mounting speculation that US telecommunications behemoth Verizon was set to launch its 5G services, which prompted a frenzied response from South Korean operators desperate to be the first.

In its efforts to establish itself as the global leader in 5G, South Korea announced plans to invest $26bn in its 5G ecosystem. Investments will span a variety of segments, such as autonomous driving, digital healthcare, smart cities and smart factories.

President Moon-Jae outlined the South Korean government plans and proposal at the launch of 5G services for consumers at Olympic Park in Seoul. It will make the investment over a period of four years.

South Korea's progressive leader vowed that the country will create the world's best 5G ecosystem and will attain 15% of the 5G market share by 2026, which it believes will make it the market incumbent.

Moon-Jae revealed that the government will reduce taxes on network construction by up to 3% in an effort to facilitate and support the nationwide rollout of 5G infrastructure.

Specific initiatives targeted by the government as part of its push include introducing self-driving shuttles in major cities by 2020; 1,000 5G-powered buses in provincial municipalities in five years; and developing emergency medical treatment services by 2021.

All told, the president predicted the global 5G market would be worth KRW1.16 trillion by 2026, around double the size of the world's semiconductor industry.

End of May, the number of 5G subscribers reached 260,000 in South Korea, according the government. The Ministry of Science and ICT issued the statement weeks after operators launched 5G mobile commercial services.

Consumers have, however, filed some complaints related to the coverage and speed of 5G. The main problem was that mobile devices were displaying a 5G symbol when users on LTE were near basestations compatible

with 5G. The Ministry confirmed that facing such issues is very normal given that operators are still building basestations and upgrading software.

A total of 54,202 5G basestations have been deployed so far, an increase of 7% from 22 April; however, coverage in the country was still restricted to urban and more populous areas.

Korea has been pioneering the journey to 5G deployment, being one of the first in the world to offer 5G to mobile consumers. Operators in the country had also launched commercial 5G services to businesses using mobile routers.

Out of the 260,000 subscribers, KT, the country's second largest operator, has announced it secured 100,000 subscribers so far; whereas, SKT and LG Uplus are yet to reveal their figures.

Hong Kong releases spectrum roadmap for 5G

Hong Kong's Office of the Communications Authority (OFCA) has finally released a spectrum roadmap for 2019-2021.

Hong Kong is recognized as being one of the most 'connected' and 'smartest' regions in the world and it wants to become a global leader in relation to the development and subsequent deployment of 5G networks.

Hong Kong's OFCA also disclosed that it plans to allocate additional 5G airwaves in two lower bands in 2021.

In addition to previously announced plans to assign nearly 4,500MHz of 5G spectrum across five frequency ranges this year, OFCA said it will allocate 160MHz of spectrum in the 600MHz and 700MHz bands from July 2021.

The agency has stated that it aims to hold a consultation this year, but conceded that the target date and timing of the earliest release and assignment are ultimately subject to progress in switching off analogue television broadcasting services.

The outcome of frequency coordination with China on the use of the two bands to avoid radio interference across the border is another factor.

In March, OFCA announced HKT, China Mobile Hong Kong and SmarTone were each assigned 400MHz of spectrum in the 26GHz and 28GHz bands, opening the door for the operators to launch 5G services.

China is 5G-ready

The Chinese government issued nationwide 5G licenses for commercial use - a measure that will be highly welcomed by telecom vendors. The Industry and Information Technology Ministry said state-owned telecom providers China Telecom, China Mobile, China Unicom and China Broadcasting Network Corporation received business licenses to operate fifth generation digital cellular mobile communication services.

"After the issuance of 5G licenses, we will continue to welcome foreign companies to actively participate in China's 5G market, seek common development of China's 5G, and share the achievements of China's 5G development," said Miao Wei, the minister of industry and information technology, according to the ministry's Twitter-like Weibo account.

Chinese telecom giant Huawei is a global leader in 5G development but its ambitions have faced challenges from the United States, which has urged other countries to shun the company over concerns that its equipment could be used by Beijing's intelligence services.

Commenting on the ministry's announcement, Huawei said it will "fully support" the Chinese operators to build 5G. "(We) believe that in the near future, China's 5G will lead the world," Huawei said on Weibo.

Days before this announcement, Chinese colossus Huawei had tested the 5G download on its foldable phone, the Mate X. Download rate exceeded 1Gbps.

In the race to 5G, ZTE Corporation announced the ZTE Axon 10 Pro which is the first 5G smartphone. ZTE demonstrated at the launching event in China the 5G flagship smartphone on live with the 5G network, providing an exponentially improved mobile connected experience and showcasing the advantages of low latency, high transmission speeds and fast data exchange. The ZTE Axon 10 Pro 5G will also be available soon in Finland and Austria.

ZTE is a 5G pioneer and one of the leading tech companies in the 5G segment. By the end of March, ZTE had become the first telecommunications manufacturer

to complete the 5G end-to-end connection with the carriers in China.

Xu Feng, CEO of ZTE Mobile Devices, stated, "ZTE is always active in promoting and accelerating the 5G end-to-end commercialization process. We have submitted over 3,500 5G patent applications, among which including thousands of terminal-related 5G patents. ZTE is keeping open in 5G ecosystem development by cooperation with leading carriers worldwide and industry-chain partners to let 5G happen in the near future."

Singapore takes initial steps towards nationwide 5G rollout

A public consultation has been launched by Singapore's Infocomm Media Development Authority (IMDA) to determine the suitable regulatory framework needed for 5G technology in order to start deploying the technology by 2020.

The IMDA is yet to receive feedback from both the public and the telecoms industry regarding the best approach to 5G spectrum allocations and deployment. The baseline requirements for spectrum need to be determined in order to deploy the technology as soon as possible and enable a broader 5G ecosystem within the country.

During the first wave of spectrum allocations for 5G, the regulatory body plans to implement the 3.5G-Hz and 26-GHz onto the 28-GHz frequency bands. They have also stated that this amount will be enough for more than two 5G networks.

For the first phase of the allocation plan, mobile operators are expected to submit detailed proposals of their plans for 5G deployment. Following this, the proposals will be assessed with regards to their financial capacity and how they could meet baseline requirements like meeting performance targets.

IMDA chief executive, Tan Kiat How, stated, "This public consultation is an important step in IMDA's plans to launch 5G mobile networks and develop a vibrant 5G ecosystem in Singapore."

"I encourage interested parties to share your views with us. These insights will guide our regulatory approach and industry development efforts in ensuring Singapore's connectivity infrastructure remains globally competitive in support of our Digital Economy ambitions."

Thailand's 5G stance

Just like all Asian countries, Thailand is getting ready for 5G rollout. The first 5G test center was established earlier this year in Bangkok and the National Broadcasting and Telecommunications Commission (NBTC) is establishing additional testing centers at Khon Kaen University, Chiang Mai University and Prince of Songkla University. It will most likely also sign MoUs with three engineering faculties by August.

> Asia appears to be leading the race to 5G with the first adopters being most likely China and South Korea

Secretary-General of the National Broadcasting and Telecommunications Commission (NBTC) Takorn Tantasith said that the country plans to attract both China's Huawei technology and US-based vendors to help develop infrastructure and testing centers required for 5G.

Thailand has shown a neutral stance towards the Huawei/US case and chose to avoid taking sides in the technology and trade war.

The NBTC has called upon all major vendors to take part in 5G test framework including Huawei, Intel, Cisco, Qualcomm and IBM. Huawei was the only one so far to agree on working on a test site.

The 5G centers established in Thailand will allow the country to be among the world's leaders in adopting 5G and will put it on the right track towards achieving the government's national agenda which includes a 20-year digital transformation roadmap. Such centers will facilitate operators' deployment of the fifth generation technology and will allow them, alongside vendors, to showcase the potential the technology has to offer to people. TR

Trump's Huawei trade ban: Do the means justify the ends?

After Trump's numerous attempts to restrict Huawei's business in the West, he finally built his 'wall', the one that has made the Chinese tech behemoth lose its access to the US market.

Many have been talking about how this will essentially impact Huawei's sales and manufacturing and not to mention the biggest impact of them all: China's relationship with the US and its position in the current trade war between the two nations.

TF International Securities Analyst Ming-Chi Kuo believes that "the most important impact would be losing brand trust if Huawei couldn't offer stable shipments due to the US export ban," and that Samsung will be the first to benefit from Huawei's trade ban while Apple is forecasted to be the second beneficiary.

The US has accused Huawei of cyber espionage on behalf of the Chinese government. However, there has been no solid proof of this being the case.

Many industry experts have criticized President Trump's decision-making, especially with regards to trade with China. The US's standard of determining which equipment poses a security risk is not ideal. The Trump administration seems to be following the "do we like you or not?" system.

The trade ban seems to be part of a much broader issue: the US's trade war with China. This has been happening for quite some time and it is beginning to reach its peak. In the past, China and the US partnered up for a scientific collaboration back in 2011 when China was later on banned from the International Space Station (ISS) due to its surveillance of NASA. As a result, China became more self-sufficient and

created its own space station (Heavenly Palace) and the Chang-e space program which has become a global leader in space technology.

More recently, however, prior to the trade ban, the US was trying to discourage its European allies from using Huawei's equipment to deploy 5G technology. Trump has repeatedly argued that Huawei's 5G equipment, once deployed in a western country, would be used to spy on others on behalf of the Chinese government. Huawei has denied these allegations. This, however, led to Australia, Japan and New Zealand's ban on Huawei 5G equipment, and many EU member states as well as the UK are still unsure about where they stand in this situation. And again, Trump's accusations against the tech behemoth are not based on any actual facts or evidence.

In fact, Huawei is one of the strongest players in the 5G ecosystem at the moment. It may be that the US is imposing all these restrictions on Huawei in an attempt to block its growth or they may actually be concerned for national security reasons. However, there is no solid proof that Huawei has spied on the US or any other company. It is a private-owned enterprise that does not have links to the Chinese government. In fact, Edward Snowden found more proof of the US government's hacking and spying activities in the cyberspace than there is of Huawei's alleged 'cyber espionage'.

With regards to the Edward Snowden Leaks, it was found that Huawei has in fact been spied on by the US government. The leaks revealed Operation Shotgiant, a plan on behalf of the US to hack Huawei servers and spy on them. The hacks are said to have been successful. As a response to the leak, Huawei took it lightly and asked the US government to make their findings of the hack public. Huawei has been defending its position for a long time.

"The Snowden leaks shone a light on how the NSA's leaders were seeking to collect it all - every electronic communication sent or phone call made, by everyone in the world, every day." The documents revealed that the US's NSA (National Security Agency) used to maintain "corporate partnerships" with several tech and telecom companies in the US which allowed them to access the international fiber optic cables, switches and routers all over the world.

However, due to the trade ban which will come into effect in less than three months from now, it would mean that the Chinese telecoms giant will not be able to use any of Google's products. Huawei's phones use Android OS which will have to be excluded from their devices once the trade ban goes into effect. The Chinese tech firm is currently working on its own operating system which will bring about a new set of challenges such as gaining international users and app developers despite widespread security concerns.

"A company like Huawei that made it a high priority could probably have something reasonably usable - but not nearly as featured as Android and iOS - in a year or 18 months, especially given the state of open source code today," said Philip Levis, associate professor of Computer Science and Electrical Engineering at Stanford University.

Looking back at tech companies that used their very own OS such as Microsoft and BlackBerry, it is clear that they did not have a big enough ecosystem within which their OS could be used and not enough apps were able to operate with them. This is a test which many have failed.

On the other hand, building it based on the current Android system will "make it easier for existing developers to run their apps on it," said Levis. He added, "A totally new structure, however, could let them improve a lot of things."

Many are of the belief that Huawei's new OS will be a success in China, but are unsure about its potential position abroad as it would need to gain the trust of international customers, especially because it will not be subject to security screening by Google (which is what Android-based phones have).

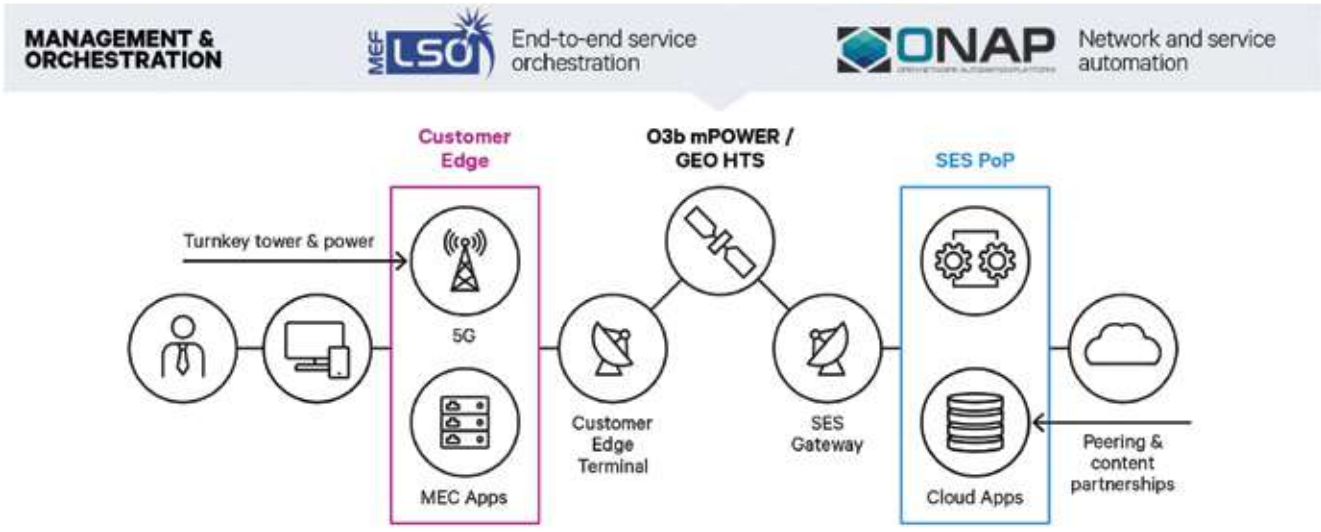
However, there is still the looming issue of chipsets in light of recently losing its chipmakers from the US.

"The chipset issue is a more difficult problem to solve than the operating system. But it won't affect Huawei's operating system in the short to medium term," said Tian Weishu, veteran Android system developer.

The trade ban has forced a sort of self-sufficiency on the tech firm, but China could do well to follow suit and become a full-spectrum economy, one which satisfies its own needs. China already has a plan for 2025 to achieve full technology self-sufficiency and this ban could potentially steer them in their intended direction. TR

Huawei is one of the strongest players in the 5G ecosystem at the moment

SATELLITE INFRASTRUCTURE FOR 5G: SEAMLESS INTEGRATION



Narrowing the digital divide: How satellite will deliver ubiquitous 5G

Ultrafast data rates. High availability. Extreme flexibility. Support for an exponentially larger number of connected devices as compared to 4G. 5G promises all of these features, paving the way for a dizzying array of use cases ranging from smart transport to advanced critical communications to autonomous factories to immersive consumer experiences. Analyst firm IHS Markit predicts that 5G will drive $12.3 trillion of global economic output in 2035, enabling enterprises and industries to improve productivity, reduce costs and open the door to new opportunities.

And while 5G has the potential to fundamentally change lives and businesses without ubiquitous, high quality connectivity, it also has the potential to further widen an already gaping digital divide if market segments and populations are bypassed by the 5G revolution. Specifically, this could affect industries and regions unserved or underserved by terrestrial networks. 5G-enabled digital technologies have the potential to dramatically reshape the commercial maritime industry by introducing new efficiencies and improving safety; however, connection between onshore facilities and vessels at sea cannot be delivered by terrestrial networks alone. A 5G connection can support advanced healthcare applications such as telemedicine, real-time remote monitoring and image file transfers, but the cost and complexity associated with 5G infrastructure buildouts mean that

medical centers in remote regions are unlikely to receive those types of services for many years to come.

Building the 5G ecosystem

For 5G to fully capitalize on its potential, it must be built on a global ecosystem of interconnected networks, utilizing multiple different and complementary technologies that comprise both terrestrial and satellite infrastructure. With satellite technology, 5G networks can be rolled out more quickly, more cost-effectively and on a more ubiquitous basis than over terrestrial networks alone, thus ensuring that 5G use cases can be deployed in any location, at any time. Satellite enables a truly seamless 5G network via a number of unique attributes, including the following:

- **Ubiquity:** Ability to deliver service to unserved and underserved areas.
- **On the move:** Enabling network availability to "moving platforms" such as aircraft, passenger vehicles, high-speed trains.
- **Security:** Support for future critical communications use cases such as public safety.
- **Simultaneity:** Support for multicast/broadcast services for data delivery toward the network edges and even to user devices.

SES Networks and 5G

SES Networks is actively engaged in supporting the deployment of seamless and ubiquitous 5G by investing in multi-orbit capabilities in GEO (Geostationary Earth Orbit) and MEO (Medium Earth Orbit) to address the massive bandwidth requirements of 5G networks. Our revolutionary O3b mPOWER next generation terabit-scale satellite system, which will augment our existing MEO assets starting in 2021, will take our capabilities even further, delivering even more flexibility and scalability required to support 5G use cases.

In addition, we are working with institutions and industry players across the value chain to develop standards and protocols to integrate satellite seamlessly into the 5G networks. Our successful initiatives in this area include the SaT5G consortium demo at the EuCNC2018 conference, where we showcased satellite backhauling features and efficient edge delivery of multimedia content as a proof-of-concept for their integration into the 5G network.

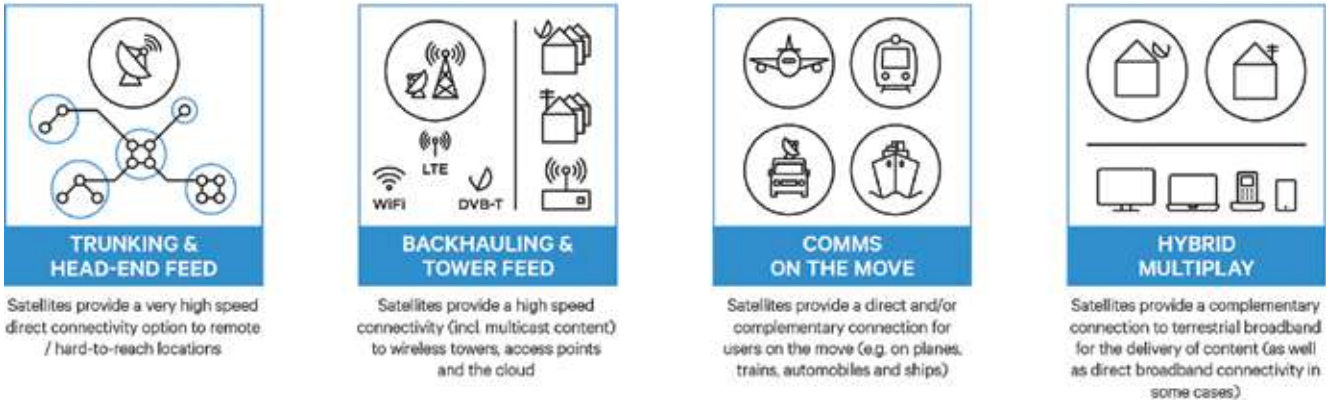
Last year saw another important milestone at the 9th FOKUS FUSECO Forum event, where SATis5 demonstrated 5G capabilities over satellite, including SDN, NFV and network slicing of enhanced mobile broadband and internet of things networks. We are also teaming up with the leading MNOs and mobile industry vendors to accelerate the uptake of 5G under the 5G-VINNI (5G Verticals Innovation Infrastructure) project, funded under the European Commission. Our end-to-end facility enables trials for advanced vertical sector services such as public safety, eHealth, shipping, transportation, media and entertainment and automotive.

Learn more about SES Networks' Participations in 5G Projects: www.ses.com/participations-5g-initiatives.

SES Networks is exhibiting at this year's ConnecTechAsia. Drop by our hospitality suite at Level 4, Lotus 4D/4E of Marina Bay Sands to meet our experts and know more about our 5G efforts. You may also scan the QR code below to schedule a meeting with the team and visit our website for more details on our presence at CTA: https://www.ses.com/event/communicasia-2019. TR

ROLE OF THE SATELLITE IN THE 5G ECOSYSTEM

Satellite's ubiquitous availability helps accelerate global 5G deployment on the ground, at sea and in the air



Telcos' metamorphosis starts with the network

Telcos are increasingly adopting a customer-centric approach as the world prepares for the 4th industrial revolution. A seamless customer service is now their ultimate goal, and in order to achieve that, improved network quality is, of course, their first recourse. For the network to enable such a great experience, a complete makeover is required.

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The network is considered the telcos' largest asset and the greatest source of data. That is why it should be reinvented in order to fully leverage it to serve customers' needs. Companies often link the network with cost cutting while the real change is led by commercial units or the IT team. However, the approach to networks has now changed given that it can be more digital and customizable.

Artificial intelligence and data analytics will allow the network to become the key enabler of any telcos' digital journey. According to McKinsey, telcos can fully realize the potential of the network of the future by ensuring that it is defined by five key characteristics: modular, agile, automated, personalized and insight-generating.

The network of the future will be software-based and modular, or network as a service (NaaS). It will be able to adapt to customers' needs quickly and more efficiently. Modularity, however, requires end-to-end process changes and simplification, notably with the deployment of new technologies such as NFV and software defined networking (SDN).

The network and business teams should collaborate to establish the use cases and roadmap that will facilitate the deployment of technology solutions. Furthermore, adopting the NaaS model requires focusing more on service management development and software development rather than on engineering and operations.

The way a network team is organized is essential for telcos to leverage the new network model. Nowadays, the major functions include planning, engineering and operations; however, in the digital era, a team's organization should be overhauled. The new structure should be agile to be able to respond to customer demands immediately.

An article by McKinsey highlights two potential models presented to telcos to choose the scope of agile transformation within the network team. The first model is based on the nature of activities. Functions that have shorter lead times and are closer to the customer, such as provisioning and configuration changes, move to an agile model, while infrastructure changes that require longer lead times remain traditionally managed. In the second model, all functions are moved into agile tribes.

Several choices exist for the agile organizational design such as flow to work, self-managing teams, end-to-end cross-functional teams and agile overlay.

Automation is also one of the key characteristics of the network of the future. The adoption of analytics and automation is increasing which is why network teams have to embark on their automation journey. In order to succeed, ensuring end-to-end digitization across the network lifecycle, as opposed to tactical automation of a single process, is essential. In addition, great attention should be given to the digital architecture that supports network deployment.

Network teams should consider how they can build a modern, future-proof digital architecture that allows them to reduce their technical debt, adapt rapidly to new technologies, and capture and build on a wealth of data about the network, according to McKinsey.

NaaS will be accompanied by high demand on customized bandwidth for different types of services. This is where network slicing plays a key role. In fact, it gives operators the ability to offer personalization at different levels. At the B2B level, they can provide different services such as IoT; whereas, at the B2C level, operators can differentiate among the bandwidths being offered to various customer segments. Therefore, operators will be able to adopt new business models based on hyper-personalization that requires close coordination with business teams.

Valuable information on customers is stored in the network which includes mobility patterns, call-usage records and credit information, among others. Advanced analytics solutions are providing operators with insights on consumers' behaviors. In order to benefit from these insights, a cross-team collaboration is needed between the network teams and other teams such as the marketing and finance teams.

When it comes to data architecture and strategy, and in an environment dominated by budget constraints, network teams should optimize value from existing investments which can be only achieved through the evaluation of data strategies.

Network transformation should happen in parallel with the enhancement of the CTO's role which should revolve around driving digital transformation. Concrete actions should be undertaken by network teams right now to achieve this long-term vision; otherwise, network teams might face an increasingly uphill task, and offering the best network to subscribers might come at a heavy price.

According to McKinsey, "Network teams should define a holistic end-state idea for networks based on the five elements of the network of the future, their own guiding principles and the operating models required to achieve them. Network teams should also consider conducting proofs of concept in selected areas (for example, agile B2B provisioning or analytics-driven field dispatch) to start making the vision a reality."

Changing mindsets is the first step towards this long-term transformation. A company's futures relies on the reinvention of the network which can only be done with the commitment and dedication of CTOs and network teams. The whole future of a company depends on customer satisfaction and the network is a key. TR

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MEF: The industry's first SD-WAN service standard

MEF recently announced the public availability of its final draft standard that, for the first time in the industry, defines an SD-WAN service and its various attributes. Telecom Review secured an interview with Pascal Menezes, CTO, MEF, to shed light on this groundbreaking initiative and discuss next steps for SD-WAN market development.

Why is MEF introducing an SD-WAN standard now?
MEF embarked on our effort to define an SD-WAN service to address one of the biggest obstacles impacting SD-WAN service market growth – the lack of common language and terminology among ecosystem stakeholders. We expect standardization will help accelerate SD-WAN sales, like MEF accomplished in driving creation of today's $80+ billion global carrier ethernet services and technology market.

Today's SD-WAN market shares some of key characteristics of the early days of the CE market. There's a ton of excitement and energy, but there is also a great need for education and alignment on terms to help increase market efficiencies.

Standardization will enable all industry stakeholders to use the same terminology when buying, selling and delivering SD-WAN services. The service definition also is a foundational step for accelerating market adoption and certification of MEF 3.0 SD-WAN services orchestrated across service provider networks.

What is in the SD-WAN service standard?
Our final draft SD-WAN Service Attributes and Services standard – known as MEF 70 – describes requirements for an application-aware, over-the-top WAN connectivity service that uses policies to determine how application flows are directed over multiple underlay networks irrespective of the underlay technologies or service providers who deliver them.

We cover key concepts and definitions like an SD-WAN UNI, the SD-WAN Edge, SD-WAN Tunnel Virtual Connections and Underlay Connectivity Services. We also define service attributes that describe the externally visible behavior of an SD-WAN service as experienced by the subscriber as well as the rules and policies associated with how traffic is handled. There's a lot of ground covered in the document, which is available on our website for everyone to read.

When do you plan to release the official SD-WAN service standard?
We are now moving the MEF 70 draft through the last phase of membership and board approval. We are on track to officially publish the SD-WAN service standard by mid-July 2019.

Is the MEF standard dealing with interoperability among SD-WAN technology vendors?
That's a great question. We want to be clear that MEF is not creating SD-WAN protocols for vendor equipment interoperability standards.

We are focused on defining a SD-WAN service with its attributes and policies that describe aspects of the SD-WAN service behavior or capability. This is regardless of how the provider or their SD-WAN vendor implements the service.

What is next for SD-WAN standardization?
We already have begun work on the next phase of SD-WAN standardization: MEF 70.1. This will cover things like complex service attributes related to application business importance and prioritization, underlay network characteristics and connectivity to private/public cloud services.

In addition, MEF is progressing other standards work focused on LSO APIs, application security and intent-based networking for SD-WAN services. Among other things, we are incubating how to apply artificial intelligence and machine learning to ensure automated assurance of application performance, security defense postures, and root-cause analysis through multiple connected underlay networks and multi-autonomous networks.

What kind of industry support have you received for the standardization work?
We are thrilled by the industry's reception of our work. More than 30 service and technology providers have contributed to or publicly supported the MEF SD-WAN service standardization and certification effort. And we've had a great time sharing our story with leading industry press and analysts.

Any closing thoughts?
I would say stay tuned for news on the certification front. We are on track to launch our MEF 3.0 SD-WAN Service Certification program in 2019.

Also, join us at MEF19 in Los Angeles. SD-WAN will be a huge topic in the MEF 3.0 Proof of Concept Showcase and in conference sessions. I'm personally looking forward to connecting with leaders from across the industry. TR

> We are on track to launch our MEF 3.0 SD-WAN Service Certification program in 2019

Huawei Intelligent Computing ranks top 3 in Q4 2018 by revenue

A press release by IT research company Gartner revealed that Huawei servers were ranked third globally by revenue in the fourth quarter of 2018 with a 45.9% year on year growth rate, the highest for servers in the world.

Gartner, a company known for being a global leader in IT research and advisory, issued a press release with the title Gartner Says Worldwide Server Revenue Grew 17.8 % in the Fourth Quarter of 2018, While Shipments Increased 8.5 %.

In Q4 2018, the global server revenue was $21.862 billion with a 17.8% rate of year on year increase.

According to the press release, 3,472,886 severs were shipped globally which amounted to a year on year increase of 8.5%. Server shipments grew by 13.1% in 2018 and contributed to a 30.1% increase in revenue compared to the previous year.

Different industries are trying to achieve digital transformation through the use of new, disruptive technologies to maximize their full potential. As the digital transformation unfolds globally, it is expected that the IT infrastructure scale of enterprises will increase over the next few years. Traditional datacenters are currently facing many challenges such as operating expenditure stress from power consumption, equipment footprint and O&M manpower and costs. The digital transformation is expected to solve, if not ease such issues.

Huawei has invested a great deal in this trend so it has great insight into how datacenters can confront such challenges and achieve digital transformation. Huawei Intelligent Computing has developed several research and development initiatives to look into three general areas: intelligent acceleration engine, innovative datacenter solution and intelligent management engine.

The tech giant has upgraded its traditional servers and is now using intelligent servers. They also provide tiered solutions which cover the single-node, large-scale and ultra-large-scale deployment scenarios to address the requirements of the digital transformation in datacenters.

Huawei recently launched its Ascend 310/910 AI chipsets earlier this year and the Kunpeng 920 ARM-based CPU last year. The chipsets have improved the company's intelligent computing offerings such as the Atlas AI computing platform and TaiShan series servers. The products also cover the Cloud-Edge-Device scenarios.

Huawei is in a favorable position regarding their efforts to transform datacenters for customers, facilitate great success and enable industry transformation.

Gartner's report found that Huawei has been No.1 for several consecutive quarters in the Chinese market due to shipments of blade servers and four-socket servers.

ZTE partners with China Unicom on 5G networking equipment

ZTE, a major international provider of telecommunications, enterprise and consumer technology solutions for the mobile internet, announced that it has showcased a carrier-grade 5G high-precision positioning network equipment in partnership with China Unicom Network Technology Research Institute at Xiong'an 5G Innovation Development Cooperation Conference.

ZTE's high-precision positioning network equipment includes high-precision synchronization equipment and high-precision positioning equipment.

The high-precision synchronization equipment can construct a nanosecond-level synchronous network. The high-precision positioning equipment can realize the meter-level positioning accuracy in complex scenarios.

Based on the wide-area high-precision positioning solution of 5G in-band high-precision ground positioning network, ZTE can realize the kilometer coverage of indoor and outdoor seamless high-precision positioning at the meter level, and improve the positioning accuracy of traditional base stations by about two magnitudes.

The high-precision synchronization network and positioning network provided by ZTE and China Unicom Network Technology Research Institute offer a carrier-grade solution, effectively addressing the service challenges in urban and indoor scenarios.

At Xiong'an 5G Innovation Development Cooperation Conference, China Unicom also inaugurated China Unicom Smart City Research Institute and announced 5G+ Beidou High-precision Positioning Open Laboratory. ZTE is one of the first members of the laboratory.

As long-term strategic partners, ZTE and China Unicom will have in-depth cooperation in the fields of smart city and smart transportation, and carry out emerging intelligent services based on the high-precision positioning technology.

Huawei launches AI-Native database

Following the announcement of its AI strategy and full stack, all-scenario AI solutions in 2018, Huawei launched the AI-Native database GaussDB and the highest-performance distributed storage FusionStorage 8.0 today in Beijing.

The aim of this launch is to redefine data infrastructure through a Data + Intelligence strategy.

GaussDB represents two major breakthroughs:

First, GaussDB pioneers the embedding of AI capabilities into the full lifecycle of distributed databases, making their self-O&M, self-tuning, self-diagnosis and self-healing possible. In online analytical processing (OLAP), online transaction processing (OLTP) and hybrid transaction/analytical processing (HTAP) scenarios, GaussDB uses the optimality theory to create the industry's first reinforcement learning self-tuning algorithm, improving tuning performance by over 60%.

Secondly, thanks to its innovative heterogeneous computing framework, GaussDB harnesses the power of diversified computing, including x86, ARM, GPU and NPU computing. In the TPC-DS benchmark test, GaussDB ranked No.1 in terms of performance, 50% higher than the industry average.

GaussDB supports multiple deployment scenarios, including local deployment and deployment on private or public clouds. On HUAWEI CLOUD, GaussDB provides a full spectrum of high-performance data warehouse services for customers in financial, Internet, logistics, education and automotive industries.

The intelligent world will raise standards even higher for the performance, scale and manageability of storage systems. In response, FusionStorage 8.0 offers three innovative features:

First, FusionStorage 8.0 boasts the industry's highest distributed storage performance. In the SPC-1 test, FusionStorage 8.0's read-write performance per node reached 168,000 IOPS in 1ms, powering distributed storage for the first time to support critical enterprise applications.

Secondly, FusionStorage 8.0 simultaneously supports block, file, object and Hadoop Distributed File System (HDFS) protocols, allowing a single storage system to manage an entire datacenter.

Thirdly, FusionStorage 8.0 integrates AI into full lifecycle storage management, from resource planning and service provisioning, to system optimization, risk prediction and fault location.

So far, Huawei's GaussDB and FusionInsight big data solutions have been deployed in 60 countries and regions, serving over 1,500 customers. These two solutions have been adopted by over 500 business partners, and are widely used in industries such as finance, telecoms, government, energy, healthcare, manufacturing, and transportation. HUAWEI CLOUD has launched 13 database services, including data warehouse services on the cloud for industry customers. Huawei FusionStorage was the market leader according to the IDC's software-defined storage market share report in 2018.

Telenor and Axiata to merge Asian telecom operations

Norweigian telco Telenor said it may potentially merge its Asian operations with Malaysian telco Axiata. This deal would mean that both telecom companies would combine their assets and infrastructure into a new unified company. However, the details of this are not certain yet, and Telenor stated that these figures are subject to change.

Telenor operates in Europe's Nordic and Eastern nations as well as Asia. The merger would become one of the Asian continent's largest mobile infrastructure companies and as would see the closing of 300 million customers in nine countries.

The Norwegian company stated that it intends for the new company to take on a more "active role in accelerating technology transformation and digitalization" across the continent.

Chair of Telenor Group, Gunn Waersted, stated, "Together, we aim to create a leading and well-diversified pan-Asian telecom and infrastructure company with substantial synergy potential and strong regional operations."

Axiata operates in Malaysia, Cambodia, Sri Lanka, Bangladesh, Nepal and Indonesia whilst Telenor operates in Thailand, Bangladesh, Malaysia, Mynamar and Pakistan.

The deal is yet to receive regulatory and shareholder approval before it can be finalized within the third quarter of 2019. The new company would keep Axiata's mobile business Robi which operates in Bangladesh excluded from the deal.

The operational headquarters of the new telco company would be based in Kuala Lumpur and is expected to be listed on the international stock exchange and on Bursa Malaysia.

China officially enters the 5G era

China granted 5G commercial licenses to four domestic companies, taking a big step in its bid to be a global leader in next generation wireless networks amid fierce rivalry from the United States. The Industry and Information Technology Ministry said state-owned telecom providers China Telecom, China Mobile, China Unicom and China Broadcasting Network Corporation received business licenses to operate fifth generation digital cellular mobile communication services.

"After the issuance of 5G licenses, we will continue to welcome foreign companies to actively participate in China's 5G market, seek common development of China's 5G, and share the achievements of China's 5G development," said Miao Wei, the minister of industry and information technology, according to the ministry's Twitter-like Weibo account.

Chinese telecom giant Huawei is a global leader in 5G development but its ambitions have faced challenges from the United States, which has urged other countries to shun the company over concerns that its equipment could be used by Beijing's intelligence services.

Commenting on the ministry's announcement, Huawei said it will "fully support" the Chinese operators to build 5G. "(We) believe that in the near future, China's 5G will lead the world," Huawei said on Weibo.

Another Chinese cellphone maker, Vivo, stated its 5G mobile phones are ready for network testing and will be on sale once trials are complete.

The administration of President Donald Trump banned US companies in May from selling high-tech components to Huawei on national security grounds, though a 90-day reprieve was issued. China has since announced it will create its own blacklist of "unreliable" foreign companies.

Several firms have already distanced themselves from Huawei, including Google, whose Android system equips the vast majority of smartphones in the world.

SoftBank turns to Nokia for commercial 5G offering

SoftBank Corp., a leading telecoms company in Japan, has selected Nokia as a strategic partner to drive its commercial 5G offering with the Nokia AirScale solution. The rollout of Nokia's 5G AirScale will allow the telco to meet growing consumer and industrial demands for 5G.

As an existing supplier of multiple technologies to SoftBank, Nokia's selection for 5G Radio re-enforces the strong relationship between the two companies, as SoftBank turn to Nokia's end-to-end portfolio for 5G. Nokia's 5G AirScale supports multiple frequencies, in both distributed and centralized architectures, giving SoftBank tremendous flexibility in its network evolution.

Nokia's 5G AirScale will be deployed across Japan, bringing 5G RAN to businesses and consumers alike. The 5G investment will benefit consumers by bringing them a 5G enhanced Mobile BroadBand (eMBB) service, with 5G Ultra Reliable Low Latency Connectivity (URLLC) and enhanced Machine Type Communication (eMTC) enabling multiple new applications and services for industries in the 5G era.

John Harrington, head of Nokia Japan, said, "We are delighted to continue our long-term relationship with SoftBank and to be working with them as a trusted end to end partner at such an important milestone in the transformation to 5G. We are committed to help SoftBank launch their commercial 5G network."

Nokia now has 38 5G commercial contracts, including 20 with named customers. These contracts well illustrate the vendor's strong thought leadership in 5G. Nokia will continue to be one of the best partners for customers by providing end-to-end solutions and contributes to transforming both networks and businesses.

ZTE launches first 5G smartphone in China

ZTE Corporation, major global provider of telecommunications, enterprise and consumer technology solutions for the mobile internet, held the first 5G smartphone launch event in China, announcing the ZTE Axon 10 Pro 5G.

ZTE also demonstrated the 5G flagship smartphone on live with the 5G network, providing an exponentially improved mobile connected experience and showcasing the advantages of low latency, high transmission speeds and fast data exchange. The ZTE Axon 10 Pro 5G will also be available soon in Finland and Austria.

The ZTE Axon 10 Pro 5G is selected by the carriers for their 5G friendly user experience program. Along with the 5G licenses granted in China, consumers will be able to enjoy the ultimate 5G experience.

Based on the new standard of 5G network, the ZTE Axon 10 Pro 5G has been upgraded in terms of network speeding, operating efficiency and game experience.

The ZTE Axon 10 Pro 5G can provide consumers with extremely fast uploading/downloading speed. The 5G flagship smartphone reached the downloading speed of 2Gbps under the 5G experimental network based on the EN-DC technology in April. Moreover, it reached the downloading speed of 100MB per second under the 5G network at the launch event.

ZTE engineers addressed a wide variety of technical difficulties inherent to 5G innovations, such as the electromagnetic compatibility, antenna design, power consumption and heat dissipation. The ZTE Axon 10 Pro 5G applies a revolutionary slot antenna and the Smart SAR solution.

To solve the problem of high temperature of CPU caused by long-term high-load operation, which will obstruct the performance and hamper the consumers' using experience, ZTE applies a liquid cooling technology and composite phase-change thermal materials, which allows the CPU to operate at high frequency points for a long time, thus effectively guaranteeing the strong performance of the ZTE Axon 10 Pro 5G.

The ZTE 5G flagship smartphone adopts a large number of small components under an extremely accurate and integrated "sandwich" layout, which leaves additional space big enough to allocate a 4000 mAh battery supported by USB 3.1 high speed transmission and Qualcomm® Quick Charge™ 4+.

In the operating efficiency, the ZTE Axon 10 Pro 5G is the world's first Qualcomm® Snapdragon™ 855 Smartphone with the Snapdragon™ X50 5G modem and the F2FS File System, which efficiently improves storage and memory capabilities including file reading speed, random 4k reading/ writing speed, storage performance and operating speed.

The Axon 10 Pro 5G adopts the intelligent anti-fragmentation mechanism to effectively solve the freezing problem of Android smartphones.

Furthermore, the ZTE Axon 10 Pro Series introduces AI intelligent optimization and other technologies to bring users faster and faster human-machine experience. The new-generation AI acceleration engine ensures faster launch speed (reduced by 30%) and a smooth experience without lagging within 20 months by user behaviour learning and APP preload. The ZTE Axon 10 Pro Series also permit quicker and more concise in-display fingerprint unlock with only 0.272s.

Indian operators propose year-long 5G trials

Two of India's major operators have submitted proposals to carry out 5G field trials for a year before introducing it to the market.

Vodafone Idea, Reliance Jio Infocomm, Bharti Airtell, Samsung, Cisco, Ericsson and Nokia have all submitted proposals to India's Department of Telecom outlining details of how they plan to test this technology.

The operators are yet to receive approvals to move forward with the trials. Preparations and clearances are expected to take three months prior to the testing, according to the Cellular Operators' Association of India (COAI).

Previously, the Department of Telecom in India was reluctant about allocating airwaves for 5G trials for more than 90 days. The industry believed that 90 days would have not given them enough time to carry out the trials that were required.

With regards to the proposed allocations, according to COAI, the final agreement between the telecom industry and the Department of Telecommunications is expected to be ready soon.

It has been recommended by the Telecoms regulator of India that a frequency of 3.5-GHz for 5G would be the most ideal and the regulatory body has also expressed that it aims to complete the initial 5G spectrum auction by the beginning of 2020.

Cybersecurity: What are the gaps in our current infrastructure?

A survey shows that over the past two years, nine in 10 critical infrastructure providers have been hit by two or more cyber attacks.

A majority of the cyber attack victims have had their environments damaged, leaving their systems out of action, after at least one attack.

The new research report titled 'Cybersecurity in Operational Technology: 7 insights You Need to Know' which was carried out by Ponemon Institute and led by Tenable, found that more than 62 percent of the survey respondents had experienced two or more cyber attacks in the same period.

710 security professionals from the US, Japan, Mexico, the UK, Germany and Australia were surveyed and the results were used for a report. Fifty percent of the respondents said they experienced an attack against operation technology (OT). Additionally, around 23 percent stated they were attacked indirectly and had previously become victims of a nation-state attack.

Findings from the report suggested a variety of factors which may have left the providers vulnerable to a cyber attack. The most prominent factors included: the skills-gap in the industry for cybersecurity and poor visibility into the attack surface of the organization.

Senior Director of Strategic Initiatives at Tenable, Eitan Goldstein, stated, "OT professionals have spoken; the people who manage critical systems such as manufacturing plants and transportation almost unanimously state that they are fighting off cyber attacks on a regular basis."

"Organizations need visibility into their converged IT/OT environments to not only identify where vulnerabilities exist but also prioritize which to remediate first. The converged IT/OT cyber problem is one that cybersecurity and critical infrastructure teams must face together," he added.

In addition to this report, Telecom Review produced a special supplement magazine that was specifically designed to examine and explore the complex challenges 5G will bring from a cybersecurity perspective.

Telecom Review, which is the leading B2B telecommunications publication globally, sought the expertise and knowledge of CTOs from global operators such as TELUS, Orange, KT and Vodafone.

5G is an up and coming technology which has been under a great deal of speculation within the industry. New technology often brings new challenges, cybersecurity being one of them. Cyber criminals will be prepared to exploit the weaknesses of this new technology if they industry does not catch up with the latest security trends and information.

In the special edition magazine compiled by Telecom Review, Telus and Vodafone highlighted globalization along with political and trade alliances as key issues related to cybersecurity that are not the most pronounced issues as of yet in terms of 5G technology. They stated that other important issues may need to be raised to ensure optimum security. Some of the issues they outlined for consideration were adversarial scenarios and supply chain integrity outcomes.

"Security is a journey and not a one-time event. 5G introduces new challenges across a wide range of areas that will require new security measures and continued diligence," said Telus CTO, Dr. Ibrahim Gedeon.

"There are several concerns raised about security and 5G, and they reflect the expectations and the hope that we have in 5G. As 5G can be vital for the entire society, the security aspects of 5G are of the utmost importance," said Orange CTO and SVP, Emmanuel Lugagne Delpon.

Many members in the industry have been raising concerns about how secure 5G will actually be once it is rolled out. While it may be daunting and challenging, organizations must ensure complete protection from all types of attacks as hackers are consistently developing ways to keep up with new technology and recognize its weaknesses. Organizations have been working towards developing a competitive edge against these hackers.

KT's CTO and SEVP, Hongboem Jeon, described this as "an ever-evolving battle between spears and shields."

"There is no bulletproof combination of processes, tools and technology; no "silver bullet" when it comes to cybersecurity," said AT&T CTO, Andre Fuetsch. TR

Police alerts: Do not send bank details or verification codes via WhatsApp!

The police on Wednesday, May 29 warned members of the public in Singapore of a new variant of scams involving the takeover of WhatsApp accounts.

The scam, which has been reported overseas, involves scammers luring WhatsApp users into sharing screenshots of their verification codes.

This is being done following a few steps:

First, the scammers would hack into a WhatsApp account using a screenshot of a verification code.

"In these cases, after taking over a victim's WhatsApp account, scammers would post a fake screenshot of a WhatsApp account verification code in chat groups using the account, under the guise of alerting chat group members to WhatsApp account takeover scams," the police said.

After taking over a victim's WhatsApp account, the scammers post a fake screenshot of a WhatsApp verification code in chat groups using the account. They do so under the guise of alerting chat group members to WhatsApp account takeover scams.

At the same time, using another device, the scammers would attempt to log into the WhatsApp accounts of the other members in the chat group. The members would then each receive WhatsApp verification codes on their own device. The scammers would try to lure the members to post screenshots of their verification codes in the chat group to share that they are experiencing the same situation. The scammers would then use the verification codes to take over the WhatsApp accounts.

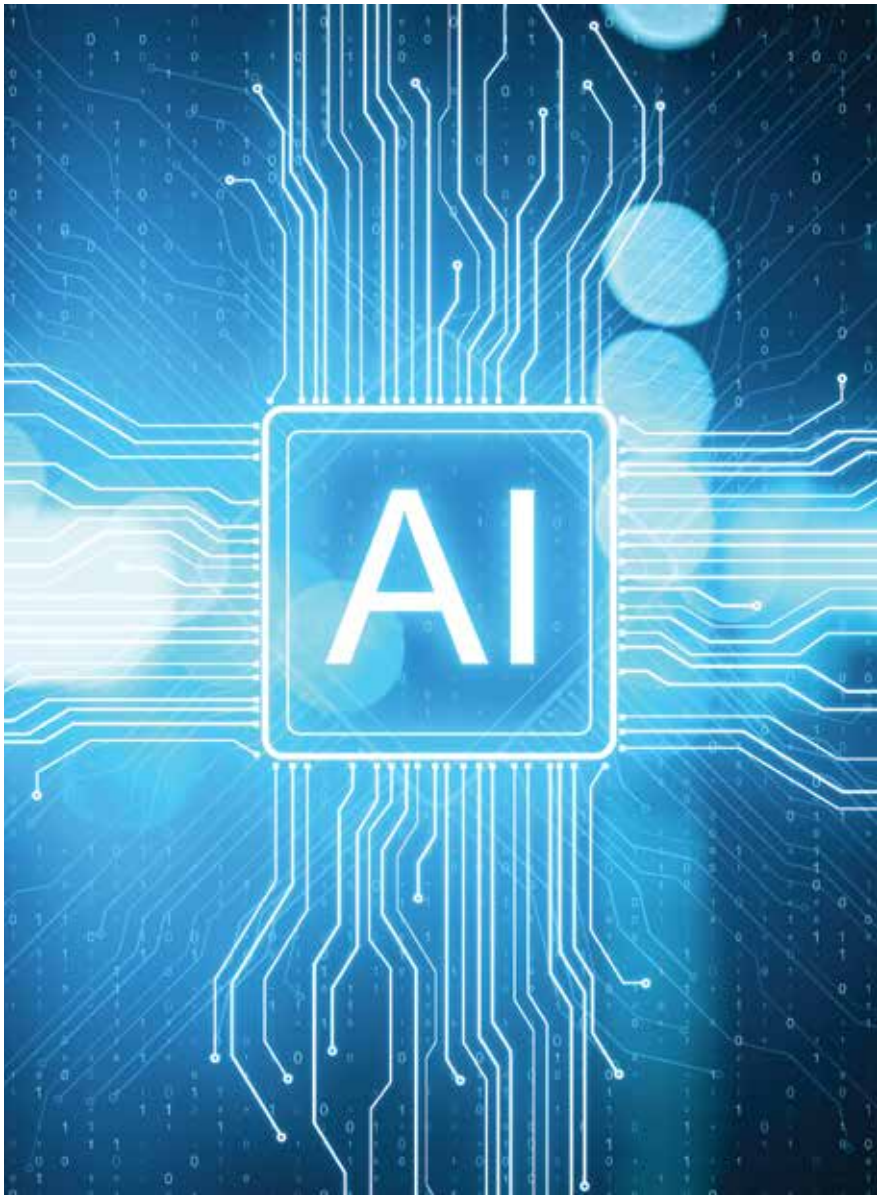
WhatsApp users should also enable the application's two-step verification feature to prevent others from compromising their account.

In the event that an account has been taken over by a scammer, the user can recover the account by signing into their WhatsApp application using their phone number. They can authenticate their login attempt by entering the verification PIN that they will receive on their phone.

The scammer who was using their account will be automatically logged out after that.

Besides not sharing their WhatsApp account verification codes with others, the police has also advised the public to:

- Beware of unusual requests received over WhatsApp from both contacts and strangers.
- Make sure not to send bank details or such sensitive data over Whatsapp.
- Individuals should call their friends to verify the authenticity of the request. They should not do so through the social media platform as the account may have been taken over by scammers.
- The public should also protect their WhatsApp accounts by enabling the two-step verification function, under "Account" in the "Settings" tab of WhatsApp. This feature means that any attempt to verify their phone number on WhatsApp must be accompanied by the six-digit PIN that users created.
- Users whose WhatsApp account has been taken over may recover it by signing into WhatsApp using their phone number. To authenticate, they should enter the verification PIN sent to their phone by SMS. After that, the scammer using their account will be automatically logged out. TR



AI technology: Freedom for the proletariat, or a dystopian nightmare?

AI is a technology that is promising to unchain millions of workers globally from mundane and unfulfilling jobs. Those advocating for AI claim that the integration of automation into major industries will create a raft of new opportunities and better jobs for the proletariat, which in turn will lead to a better society for all citizens.

However, many remain skeptical and believe that this vision is a utopian fantasy, arguing that AI will be detrimental to society because it will inevitably make millions of workers redundant and unemployed. The prospect of a world of robots and self-driving cars, whilst exciting and revolutionary for many, is utterly terrifying for some.

There is no doubting that AI has the capabilities to forge great change in our society, and pave the way for incredible new developments which fundamentally transform how many major industries as we know them function and operate.

The Fourth Industrial Revolution is being tipped to have a seismic impact similar or even greater to that of the Great Industrial Revolution in the 18th century, but will it have a devastating impact on our society?

The view from many AI thought-leaders is that we don't need to look any further than history to see that technological advancement has always caused disruption, which has led to job displacement, but that new and better jobs have always been created in their place and that there's no need to worry.

However, that has been countered by many who acknowledge that whilst AI has the capabilities to enforce great change for the betterment of humankind, like many other technologies, it can be abused, and are calling for regulations to be established before the technology is adopted aggressively and sweepingly through multiple industries on a global scale.

At the AI Everything conference, which was held in Dubai, the world's leaders in AI technology descended on the Dubai World Trade Center for two days of robust discussion on the future of the technology, and examined in detail how it will reshape the way we live, work and play.

One panel discussion at AI Everything, which was moderated by CNN's John Defterios, was particularly compelling, and US politician, Attorney General of Utah, Sean Reyes, made some very interesting points.

Reyes said it was critical that the ICT sector begins educating regulators in an effort to remove their fears and distrust over progressive technologies.

Reyes said, "I come from the private sector and I was involved in managing, developing and investing in technology companies. To be quite frank, since moving into a government role, it's become very evident to me that many of our officials simply don't understand the technology. When you mention blockchain, they automatically think of the Silk Road and become skeptical. They simply don't understand the technology, and naturally as a result become fearful. We need to help regulators and educate them on the benefits of technology so we can get the regulation we need to drive these technologies such as AI forward."

When pressed on the issue of global job displacement through the implementation of AI, all the panelists were resolute in their view that it's going to be a case of more augmentation, rather than substitution.

IBM's David Cox swiftly dismissed fears that the implementation of AI into multiple industries would lead to catastrophic job losses. He said, "AI won't lead to job replacement, or job catastrophe, it will create a job revolution. It will unchain millions of workers from mundane and unfulfilling jobs, by creating new roles that are much more challenging and will ultimately provide them with a greater satisfaction in their work."

The United Arab Emirates is recognized as being one of the most progressive countries in the world when it comes to championing and adopting pioneering new technologies in order to foster change that benefits all of its citizens – and that viewpoint has been reinforced by the appointment of a dedicated Minister for AI.

The UAE has been open in its desire to lead the way on AI development, and wants to position itself as a global leader in terms of implementing the transformative technology into its society. During a one-to-one panel discussion at AI Everything, the UAE Minister for AI, H.E. AI Omar Sultan Al Olam, a offered his two cents on the debate around job dislocation because of AI.

The Minister said, "Traditionally there have been always job losses as new technologies emerge and societies evolve. We're entering a period which has been labelled The Fourth Industrial Revolution, but we shouldn't be afraid of the future. AI and other technologies are going to replace mundane jobs through automation. A series of new and exciting jobs will be created through AI, some we haven't even heard about. Can you imagine in the 90s telling people that they could become social media influencers? They wouldn't be able to comprehend what you were telling them, and that will be the same with AI."

He conceded that in relation to job displacement, a process had to take place which measures the impact the integration of AI is going to have on industries.

He added, "We need to map out what the job loss is versus the impact. If we improve efficiency by 1%, is it worth the disappearance of 100,000 jobs? It may have a major economic boost for a particular organization, but we have to leverage it against what is good for society. Technology has to be used to improve people's lives, and that is what I believe AI has the capabilities to do. And if it's delivered, implemented and managed properly, then it can achieve this."

Chris Pope, VP Innovation at ServiceNow, has said that AI is fundamentally all about humans, and said we need to recognize how machines can make our lives better.

"We as humans now need to engineer the existence of AI into our own mindsets and consider how it can help us work differently. This includes

> AI won't lead to job replacement, or job catastrophe, it will create a job revolution

knowing what things we don't need to worry about anymore. For example, we don't take a map out with us these days, because we use a smartphone—so what else can we stop doing? As we move down the more humanized road to AI, we will find that AI itself gets smarter as it learns our behavioral patterns, penchants and preferences."

Pope stressed the importance of being able to apply an element of human judgement where and when we want to, but pointed out that this is already part of the current development process as we learn to apply AI in balance when and where it makes sense.

He concluded, "The future of AI is smarter, and it is also more human. The end result is more digital at the core, but much more human on the surface. If that still sounds like a paradox, then it shouldn't. We're at a crucial point of fusion between people and machines and it's going to be a great experience." TR

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PCCW Global chosen for CRV aviation network deployment

Following a successful pilot testing conducted by member states of the International Civil Aviation Organization (ICAO) and PCCW Global, the representative officers of the Asia/Pacific office of the ICAO and its member states in the Asia Pacific Region (APAC) announced in Bangkok, Thailand, commencing use of a new, secure, and robust Common aeRonautical Virtual (CRV) private network commissioned at the beginning of 2019. This gave PCCW Global, the international operating division of HKT, Hong Kong's premier telecommunications service provider, the green light to begin connecting about 40 ICAO member states/administrations in the APAC to the new service.

Regional Aeronautical Network Service Providers (ANSPs) have historically not shared a common networking infrastructure, which has led to network management and security challenges, technology upgrade difficulties, and inefficient operations. The aviation industry has over the past few decades experienced dramatic growth in the volume of air traffic, resulting in the need for a more robust and secure aviation network.

The ICAO member states in the APAC took the decision to engage with a single telecommunications operator to provide private network services for the exchange of aeronautical information between the various ANSPs, and PCCW Global was successful in the APAC tender for this region's CRV.

The APAC CRV has been built leveraging PCCW Global's high-speed international IP network, with mission-critical connections running across a diversified infrastructure supporting multiple aviation-specific applications.

The CRV overcomes historical aeronautical communication challenges, while modernizing the network and improving standardization and escalation processes. Air Traffic Management (ATM) stakeholders in the various regions will utilize the CRV to transfer aviation-critical data and other information across the new network environment provided and supported by PCCW Global. Other benefits delivered by the CRV include support for the ICAO's Aviation System Block Upgrades (ASBUs), improved voice quality and enabling of new aeronautical applications initiatives such as SWIM (System Wide Information System).

Frederick Chui, chief commercial officer, PCCW Global, said, "High quality for a network such as the CRV is paramount, and therefore resilience, security and other features must be engineered at the heart of the CRV. Our proven global network infrastructure, extensive industry experience and agile human capital placed PCCW Global in an ideal position to deliver this high quality application together with its demanding aviation-specific services. The CRV even provides for various contingency routing scenarios across our extensive network, ensuring that the service will always be up and running securely. CRV is the network for civil aviation operation that will optimize cost, enhance efficiency and provide new services to the users."

APAC to invest up to 30bn in cybersecurity spending by 2022

IDC experts have forecasted that security investment in the region could potentially reach to $28.2 billion by 2022.

Cybersecurity has become a serious challenge for many large business, namely over the past year.

Organizations have been trying to tackle this problem by investing in security and technology. Many hacks have taken place over the past couple of years such as Cathay Pacific and Boeing, which have caused some serious challenges for businesses. Companies are trying to do everything in their power to tackle this problem and prevent more cyber attacks from happening.

According to the latest IDC spending guide, the Asia Pacific region is expected to invest a total of $16 billion in security which comprises of hardware, software and other services. This is a 20 percent increase from last year's spending.

IDC expects investment on security related products and services to grow at a five year CAGR of 20.1 percent over the forecast period (2017-2022) and reach $28.2 billion by 2022.

"The Asia/Pacific region recognizes that its no longer "under-the-radar" as far as breaches, hacks and legislation are concerned. For too long, business leaders were under investing in this category. We see this changing lately but a bit late to be able to find the needed skills in the market, hence the incremental growth expected in the services segment," said Simon Piff, vice president for Security and Blockchain research at IDC Asia Pacific.

He added, "Government prioritizing this as part of their agenda is good, but it could also be backed by better legislation in many markets."

Security-related services are expected to be the largest ($6.5 billion in 2019) and the fastest growing (at 23.8% CAGR) category of APEJ security spending. The largest segment within security spending will be managed security services, followed by security hardware and network security hardware respectively.

Asia Pacific healthcare sector IT spending to reach USD 12.2 Billion in 2019

With the aim of drawing a clear picture of healthcare IT spend in Asia Pacific region (excluding Japan), IDC released a new report entitled "The new Asia/Pacific (excluding Japan) Healthcare IT Sector Spending Forecast and Trends, 2017-2022". The report shows that Asia/Pacific healthcare IT sector spending is forecast to increase from USD 12.2 billion in 2019 to USD 14.9 billion by 2022, at a CAGR of 7%. This IDC analysis report scans the regional trends and draws a picture, detailing the emerging trends in various countries aligning with their respective spending forecasts.

The report details the overall healthcare IT spend data, where China and Australia lead the game with 71% of the total IT spending. It also covers an overview of potential countries in the region by carrying out per capita analysis and provides clarity on the type of approach to be adopted by organizations to effectively tap country potential.

Governments in 'Leaders' and 'Promoters' segments aim to boost both new hospitals and software adoption aiming to improve care quality, with strong, immediate funding. In countries belonging to the 'Challengers' and 'Explorers', in the absence of strong government funding, there would be more dependence to technology supported by software and IT services, mainly driven by private investments, through 2022. Efficient public-private partnership will thrive in these segments scaling care-delivery services to wider reach.

The report highlights that software and IT services are the core of healthcare digitalization and act as major drivers fueling the healthcare IT spending growth in the region. The healthcare payer segment is projected to adopt increased growth rate compared to that of providers as it gets ready to tap the potential of technology.

While China tops in the overall healthcare IT spend, Singapore tops in the per capita healthcare IT spending, followed by Australia.

"One of the major driving factors in the Asia/Pacific region for investment in healthcare IT is to take the care delivery to the most remote patient, particularly in the populous and vast countries like China, India and Indonesia. This could be through a remote care solution via primary care centers and cutting-edge technological tools like 5G, IoT, AI and AR/VR," says Manoj Vallikkat, research manager at IDC Asia/Pacific Healthcare Insights.

Singapore reshapes retail business with new self-service store

Singtel launched Unboxed, a 45 square meter shop without staff that aims to make customers' retail experience faster and more convenient. The newly opened outlet showcases how Singtel's digital transformation takes customer experience to a whole new level.

"The future of retail is here and now. Our digital transformation integrates online and offline customer touch-points to deliver fresh and fuss-free buying experiences," said Yuen Kuan Moon, CEO of Singtel's Consumer Singapore group. The outlet, named Unboxed, "fulfills the needs of today's consumer and provides a peek into the next generation of retail: fast, instant, convenient an experimental," he added.

Unboxed has a modular design that allows it to fit different spaces. Singtel has placed the shop in Singapore's central business district for now but plans to move it to different new locations every few months.

This new self-serve concept allows customers to sign up for mobile plans; pay bills; top up prepaid cards; and collect replacement SIMs. They can also try out new phones, and pick up devices and accessories they purchase.

Vingroup to increase smartphone production

Vingroup, Vietnam's largest company, has planned to open its second factory in Hanoi in order to account for the potential increase in overseas demand for smartphones.

The company said in a statement that the new factory will open in August which will initially have the capacity to produce around 23 million handsets per year. By early next year, they expect to reach their peak potential output of 125 million units.

This number accounts for over 25 times the number Vingroup has been able to produce in its current factor. The Vietnamese Conglomerate's CEO, Nguyen Viet Quang, stated that the company's decision to expand has been due to numerous order requests from "major partners from Europe and America".

Also, aside from producing handsets, the company plans to invest in factories that produce connected products such as smart TVs and IoT devices. Vingroup has also approached a number of chipmakers in order to gain control of the supply chain.

Many international vendors of handsets have moved their production to Vietnam due to the tensions that are currently rising between China and the US following the Huawei trade ban and suspicion of cyber-espionage from both countries.

It has been speculated that LG plans to stop manufacturing its mobile phones in its home market and plans move to Vietnam instead.

Samsung and LG have already recently limited their reliance on China's facilities for manufacturing.

SKT joins forces with Cisco and Samsung for smart office solutions

South Korean operator SK Telecom, Samsung and Cisco have signed a MoU which aims to promote 5G-powered smart office services.

The three companies plan to work together on planning and developing new 5G smart office solutions and services in order to create a package which combines their products to jointly promote integrated marketing initiatives.

In a statement by SKT, they stated that smart office is "considered a key 5G-based services for businesses, which will significantly improve work efficiency and productivity."

One of the services they plan to develop involves the use of just a smartphone to meet all office tasks.

"In 5G smart offices, smartphones are all you need for work. As leaders in our respective fields of telecommunications, smartphone and collaboration solutions, we will put all our efforts in creating the best possible and innovative work environment," said Choi LLgyu, Executive Vice President and Head of B2B Business Division at SKT.

They hope to achieve this through replacing PCs with mobile virtual desktop infrastructure which will mainly be developed by Samsung's DeX technology. In terms of Cisco's role in the matter, SKT is looking to offer mobile-based video conferences and virtual co-working spaces.

SKT will provide 5G infrastructure, cloud computing, enterprise mobile services and smart office solutions.

The first package is expected to be launched by the second half of 2019.

SK Telecom already revealed its 5G smart office last February in Seoul where cutting-edge information and communication technologies were implemented such as artificial intelligence (AI), A 5G 'walking through' system, and AI-powered facial recognition which allows for employees to enter without a pass or ID card.

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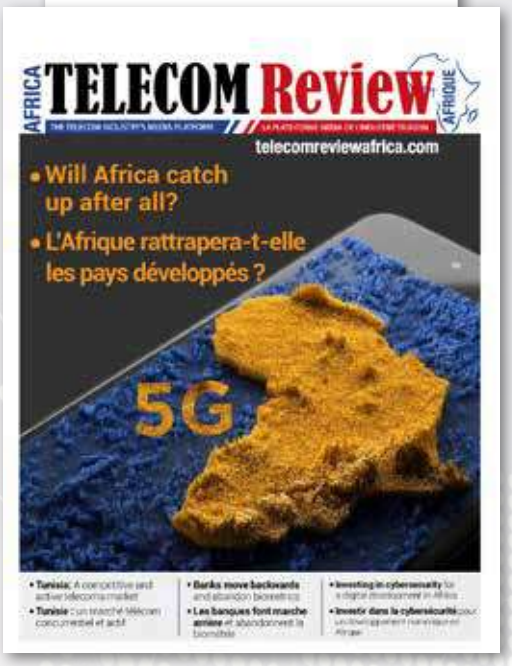

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