

Technology, Media and Telecommunications

# 5G in Southeast Asia: Legal and Regulatory Implications

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## Introduction

On 3 April 2019, South Korea became the first country in the world to commercially launch nationwide 5G mobile services, with the country’s three mobile operators going live in offering data speeds that allow users to download entire movies in less than one second. On the same day, US operator Verizon began commercial services 5G services in two US cities, Chicago and Minneapolis. Two days later, Samsung Electronics released the Galaxy S10 5G, the world’s first available smartphone with built-in 5G technology.

While the industry has been abuzz with 5G for several years now, this is a pivotal point with the evolution of 5G from trial phase to commercial reality. In the last year, massive progress has been made towards the new network technology – the standards have been finalised and operators around the world are in the process of testing, trialling and rollout in some early stage markets, as we have seen above.

This Client Update provides a brief overview of 5G and related developments in the region, and highlights some of the legal and regulatory issues for discussion.



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### What is 5G?

5G refers to the next - fifth-generation of mobile Internet connectivity which promises much faster data download and upload speeds, wider coverage and more stable connections.

5G is a brand new radio technology compared to previous generations of mobile technology, and uses new radio millimetre bands in the 30 GHz to 300 GHz range. Current 4G networks operate on frequencies below 6 GHz.

In terms of peak speed, 5G is approximately 20 times faster than 4G. 5G promises to accelerate cellular data transfer speeds from 100 Mbps to 10 Gbps and beyond, a massive boost that will make next-generation wireless competitive with even the fastest fiber-optic wired networks.

Undoubtedly, such tremendous download speeds will be welcomed in this digital economy. However, what is touted to make 5G a revolutionary force is its massive reduction in latency. Latency refers to the time gap between the sending of information and the receiving of a response from the sending of such information. The aim of 5G is to bring latency down to 1 millisecond (a thousandth of a second) from the average of about 30 – 70 milliseconds that 4G offers.

The massive reduction in latency makes the 5G technology highly suitable for critical applications that require rapid responsiveness, and promises to unlock and enable a host of new applications and services that are not possible today.

For example, the 5G network could avail autonomous vehicles with seemingly instantaneous response time, thus reducing accidents resulting from a delayed response due to latency. It has been posited that the ultra-low latency will greatly enhance vehicle-to-vehicle communication, allowing cars to learn from others ahead on the road about potholes or braking.

Other favourite examples of low-latency advantages include greater factory automation, remote healthcare services, augmented reality applications, enhanced multi-player gaming experiences and a larger Internet of Things (“IoT”) ecosystem.

Another revolutionary concept that ultra-low latency will enable is that of edge computing. Edge computing allows data produced by IoT devices to be processed closer to where it is created instead of sending it across long routes to data centres or clouds. Doing this computing closer to the edge of the network (hence the terminology “edge computing”) allows organisations to analyse important data in near real-time – a need of organisations across many industries, including manufacturing, health care, telecommunications and finance. In the case of autonomous vehicles, edge computing means a faster response time for processing tasks like determining which cars nearby need to know about a problem and which are not affected.

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## **5G Developments in Southeast Asia**

### **Cambodia**

On 29 April 2019, the Ministry of Posts and Telecommunications (“**MPTC**”) signed a memorandum of understanding (“**MoU**”) with Huawei to bring in the 5G network. Notwithstanding the MoU with Huawei, the MPTC has clarified that the country is open to other 5G suppliers. Subsequently, on 6 May 2019, the MPTC signed another MoU with Royal Group, to promote and support the launch of the digitalisation and 5G technology in Cambodia.

The Telecommunications Regulator of Cambodia has shared that three major mobile network operators (Smart Axiata, Cellcard and Metfone) intend to carry out 5G trials during the second half of this year.

On the regulatory front, Cambodia has yet to develop detailed regulations on 5G technology. Spectrum allocation must also be tackled before 5G technology can be rolled out. The development of posts, telecommunications, technology, communications and information as well as digitalisation has been identified as a priority sector for the country’s development as stipulated in Rectangular Strategy Phase IV.

### **Indonesia**

Industry players in Indonesia are bullish yet cautious regarding the implementation of 5G. While the potential applications of 5G generated from IoT and content development will be substantial, it is acknowledged that issues such as availability of device, network, and applications ecosystem will need to be overcome before the potential of 5G can be realised.

Based on media reports, Indonesia mobile network operators, such as Smartfren and Telkomsel, have carried out trials to provide 5G services to Indonesian end-consumers by cooperating with telecommunication device manufacturers like ZTE and Cisco. In the meantime, other mobile network operators are conducting research on the business models and most appropriate use cases for the new technology.

On the regulatory front, a regulatory framework concerning 5G mobile services is currently being developed to, among others, overcome the abovementioned issues and prepare for the implementation of 5G in Indonesia. The Ministry of Communications and Information Technology is now in the process of identifying the spectrum frequency that can be allocated for 5G mobile services in Indonesia, alongside the remaining broadband cellular network technologies of 2G, 3G and 4G. The Ministry is also planning to conduct trials of 5G services for business-to-business (B2B) use in the year 2020, and to issue a new regulation on the implementation of 5G, including the requirements for its frequency allocation, business model, and usage right fees in the same year or by 2021 at the latest. Based on media reports, 5G mobile services is predicted to be commercially available for Indonesian consumers by the year 2025.

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#### Lao People's Democratic Republic

To date, there has been no development in relation to 5G services in Laos. The current infrastructure can only support 4G mobile technology.

The Government, represented by Ministry of Post and Telecommunication, announced in February this year that it would not restrict the development of 5G service and leave it to the market to decide whether the country would launch 5G.

#### Malaysia

In line with various initiatives to usher in the Fourth Industrial Revolution, Malaysia is quickly becoming a hotspot for the development and eventual adoption of 5G technologies. The telecommunication regulator, the Malaysian Communications and Multimedia Commission ("**MCMC**") has, in recent months, made public statements to promote the growth and adoption of 5G technologies in the country, ranging from giving assurances to the public regarding the health and safety of 5G networks, to giving assurances that the auctioning of the 700MHz spectrum for 5G would not be for profit (as was the case for 4G and 3G spectrum). It is predicted that Malaysia will see large-scale commercial adoption of 5G technologies by 2021 or 2022.

Thus far, the MCMC's largest initiative to push for 5G adoption is the call for collaboration on the 5G Test Bed ("**Test Bed**"), which was made to the industry at large. As part of the Test Bed, a showcase was conducted in mid-April where telecommunication operators were given a platform to flex the potential muscle of 5G networks. 5G field trials have also been conducted in the Malaysian administrative capital of Putrajaya, and more are planned for the state of Perak.

At the end of the Test Bed in 2019, a report will be released regarding the results of 5G test bedding, including suggestions on what the Government should do to prepare the country for 5G. The MCMC has shared that the Test Bed report will also indicate Malaysia's position *vis-a-vis* the use of Huawei's technology and infrastructure in rolling out 5G technologies. For now, major industry players such as Celcom Axiata, Telekom Malaysia, Maxis, and Digi are partnering-up with Huawei to roll out their own respective 5G networks.

On the regulatory front, the MCMC has not issued any proposed guidelines or any public consultations regarding the roll-out of 5G networks. It is likely that in time MCMC will issue technical standards for a range of 5G enabled devices and infrastructure, as well as potentially issue guidelines / regulations regarding installing of the voluminous small cell network tower infrastructure required to support the 5G network. In the meantime, it would be timely for telcos and stakeholders alike to consider the strategies and other issues arising from the acquisition of requisite spectrum for the use of 5G networks, to be prepared when the MCMC launches the spectrum allocation.

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#### Myanmar

The groundwork for 5G technology is being laid under the Myanmar National Broadband White Paper 2019 and Spectrum Roadmap 2019, which is drafted by the Ministry of Transport and Communications, and subject to further consultation and consideration. While the Myanmar government's previous spectrum plan in 2016 has indicated that the government would make more spectrum (coverage and/or capacity) available, it made no mention of 5G services. There is no certainty as to when 5G would be formally rolled out in Myanmar, but the Permanent Secretary of the Ministry of Transport and Communications U Chit Wai explained at the Myanmar 5G Forum 2018 held in December 2018 that the objective was to have 50% 5G coverage by 2020. That being said, the Posts and Telecommunications Department did also highlight some of the challenges with a comprehensive 5G roll out, such as the infrastructure and facilities required for 5G, identifying what alternative 5G bands may be available, site policies and whether usage of certain spectrums could be licence-exempt or appropriately regulated.

#### Philippines

The Philippines' two mobile operators, Globe Telecom Inc. ("**Globe**") and PLDT Inc. ("**PLDT**") through Smart Communications, Inc., are both on track to commercially launch their respective 5G services. Globe is set to roll out its 5G network for home broadband subscribers by the second quarter of 2019, and is currently testing the technology outside Metro Manila. Meanwhile, after activating the country's first 5G cell sites last year, PLDT plans to launch its 5G services by November 2019. In preparation for the rollout, PLDT signed an agreement with Cisco in April 2019 to transform its infrastructure into a 5G-ready IP transport network.

Acting Department of Information and Communications Technology ("**DICT**") Secretary Eliseo Rio, Jr. noted, however, that the Philippines does not have enough cell sites to quickly deliver 5G. He estimates that the Philippines would need two to three more years to fully support 5G services. To address the infrastructural demands of 5G services, the DICT raised the possibility of bidding out 5G frequencies for commercial rollout. Recently, the DICT also announced its intention to convene an inter-agency task force to make common tower regulations compliant with Republic Act No. 11032, otherwise known as the "Ease of Doing Business and Efficient Government Service Delivery Act of 2018". With the enactment of this law, the DICT plans to cut down the timeline to secure the necessary permits to build cell towers from eight months to seven working days.

#### Singapore

In Singapore, the three major mobile network operators - Singtel, StarHub and M1 - have all started 5G trials with industry partners, including a 5G pilot network in the one-north district, by Singtel and Ericsson. To encourage 5G trials, the sectoral regulator, the Infocomm Media Development Authority ("**IMDA**") has been waiving the frequency fees associated with 5G trials since 2017.

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More recently in early May 2019, the IMDA issued a public consultation on its proposed 5G policy and regulatory framework. The IMDA is seeking to facilitate early deployment of 5G from 2020 based on standalone network specifications and architecture. Amongst the key proposals for public consultation is the IMDA's plan to allocate the 3.5 GHz, and the 26 GHz and 28 GHz millimetre wave ("mmWave") bands for 5G in the initial tranche of spectrum allocation to existing mobile network operators who are interested to deploy 5G technology. Notably, such spectrum allocation will not be by way of an auction. Instead, the assignment of spectrum will be via a "beauty contest", or a call for proposal approach, where the interested mobile network operators will compete based on the merits of their proposals that can best deliver future-ready 5G networks to meet the IMDA's policy objectives. Some of the IMDA's baseline regulatory requirements for the proposal include the provision of 5G with more than 50% coverage within the 24 months from the commencement of the 3.5 GHz spectrum right and putting the mmWave spectrum to use within 12 months from the commencement of the spectrum right.

#### Thailand

According to the Secretary-General of Thailand's Office of the National Broadcasting and Telecommunications Commission ("NBTC"), commercial 5G services will be launched in Thailand next year.

The NBTC is currently designing the 5G spectrum auction, which would be different from the preceding auctions for 3G/4G service spectrum. In this regard, the value of the spectrum, starting bid, payment instalment plan, and related regulations, as well as the holding of a multiband spectrum auction and a change of licensing format to have both nationwide and specific area licenses, will be taken into account.

It was announced that the 700 MHz spectrum auction for 5G will take place this year, followed by the auction of the 2600 MHz spectrum in late 2019 or early 2020, which will be a multiband auction with 26 and 28 GHz. The Office of the NBTC has recently announced the timeframe for the 700 MHz frequency assignment and that it will notify the application criteria for allocation of 700 MHz spectrum licences on 8 June 2019. The 3500 MHz spectrum auction would probably take more time as the 3500 MHz spectrum will be used by satellite business provider Thaicom until the Thaicom concession expires in 2021.

#### Vietnam

To date, the development of 5G networks in Vietnam is still in its infancy. Earlier this year, Viettel was the first operator which was granted license for trial deployment and operation of 5G networks in Hanoi and Ho Chi Minh City, and it was announced in May 2019 that Viettel had completed the nation's first 5G call in collaboration with Ericsson. Recently, Mobifone was also granted license for trial deployment and operation of 5G networks in Hanoi, Haiphong, Danang and Ho Chi Minh City. It is anticipated that Vietnam will bring 5G into commercial deployment in 2020.

Vietnam has not issued any specific regulations governing 5G networks. The current general set of rules is applicable to 5G technology as well as all prior technologies. However, it is predicted that several legal issues, which are beyond the scope of current laws, will need to be addressed to cater for 5G

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developments, such as the applications of 5G in IoT, Artificial Intelligence, Smart Factory, Smart City, etc.

In particular, to facilitate the deployment of 5G, the capacity of each base transceiver station must be considered. The telecommunication system of each operator in Vietnam contains at least three different technologies, from 2G to 4G. For 5G development, the base transceiver station capacity will be a challenge to all operators.

### Legal and regulatory issues

The deployment of 5G raises interesting legal and regulatory issues due to the unique features of the technology. We discuss some of these below.

#### Spectrum Allocation

5G can be deployed across a range of frequencies, with different frequencies appropriate for different 5G use cases - the low bands of less than 1 GHz are suitable for longer range deployments (e.g. mobile broadband and massive IoT), mid bands between 1-6 GHz provide wider bandwidths for enhanced mobile broadband (eMBB) and mission-critical applications whereas the bands above 6GHz are suitable for addressing specific use cases requiring extremely high data rates.

Some industry players have advocated for 5G spectrum to be licensed on an exclusive basis nationwide in order to provide investment certainty and quality of spectrum, given the large-scale investment in new nationwide networks that is required for 5G.

Regulators and policymakers will need to carefully balance their priorities and objectives in their allocation of 5G spectrum. Commentators have highlighted that high bid prices for spectrum allocation are likely to translate into higher prices for consumers downstream as operators seek to recover their costs of spectrum acquisition, and/or underinvestment in the networks as operators lack the requisite capital for investments after paying a hefty price to acquire the spectrum.

To satisfy their policy objectives, regulatory and policymakers may also opt to attach conditions to their allocation of spectrum, in order to ensure that operators utilise their spectrum and there is network build-out and service provisioning to the less commercially viable rural areas. As an example, the Japanese regulator had on 10 April 2019 announced that it has approved the allocation of 5G spectrum to four operators, including to new operator Rakuten Mobile. The approvals include the stipulation that all four operators will need to launch 5G services using the new spectrum in every Japanese prefecture within two years, and effectively sub-divided Japan into 4,500 'blocks' (zones), requiring all four spectrum holders to set up base transceiver stations in at least half of these within five years.



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#### Facilitating Network Deployment

Successful 5G implementation will depend on network densification, which is increasing available network capacity through adding more cell sites including radio access networks, macro sites, in-building wireless and small cell deployments. Operators would need to construct small cells in a 5G network because services will operate in higher spectrum bands than in today's 3G and 4G networks, where signals do not travel as far or penetrate buildings as effectively. These small cells are deployed in higher density as compared to a macro cell which is traditionally deployed for the 4G network, which allows the increasing of network coverage, capacity, and quality of service, without the need for additional spectrum.

The optimal locations for network densification will be near urban areas and large venues where there are higher numbers of digital users. Some of the primary ways to achieve network densification include increasing the number of antennas and small cell sites as well as upgrading to sector-splitting and massive multiple input/multiple output (MIMO) technologies.

Regulators can play a role by putting in regulations that facilitate small cell deployment. As an example, 21 state legislatures in the United States have enacted small cell legislation that streamlines regulations to facilitate the deployment of 5G small cells. These laws all take into consideration the unique circumstances of their state and local environment, but establish baseline principles such as streamlining applications to access public rights-of-way, imposing a cap on costs and fees and streamlining timelines for the consideration and processing of cell siting applications.

#### Infrastructure Sharing

Closely related to the high costs of spectrum allocation and infrastructure investments is the concept of infrastructure sharing, which has come to the fore with 5G. It is expected that network sharing will intensify in the 5G era, particularly given the level of investment required for network densification.

Infrastructure sharing can either be done by legislation as mandated by the country, or by way of contractual agreement between network providers. As an example of the latter, Vodafone UK and Telefonica UK (O2) have entered into a new infrastructure-sharing relationship ahead of the much-anticipated 5G rollout. The two players have an existing relationship for shared infrastructure activities, managed through the Cornerstone Telecommunications Infrastructure Limited joint venture, with this extension to include 5G at joint radio network sites. In April 2018, it was announced that the three mobile operators in South Korea would be deploying a nationwide 5G network in the country on a shared infrastructure basis, with the main aim of avoiding redundant investments in 5G deployments.

It is also possible that 5G infrastructure sharing will be led by Government action, either by legislation or through any Government funding or incentives granted for the deployment of 5G infrastructure. It was recently announced in February 2019 that Brunei will consolidate the network infrastructure of all existing telecommunication operators in the country under a newly formed company to spur the



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development of Brunei's ICT sector – such infrastructure sharing could extend to 5G infrastructure when it is deployed in Brunei.

#### **Net Neutrality**

Another unique feature of 5G surrounding network slicing also raises regulatory issues in relation to net neutrality.

Network slicing is a form of network virtualisation in which different services with different needs can be provided with different performance characteristics (such as latency, priority, or throughput) on a single physical network. These services might include voice, augmented reality, massive IoT, vehicle-to-vehicle, and emergency service communications. Network slicing is expected to play a critical role in 5G networks because of the multitude of use cases and new services 5G will support. These new use cases and services will place different requirements on the network in terms of functionality, and their performance requirements will vary enormously.

Therefore, by nature, network slicing goes against the regulatory principle of net neutrality which is the concept that Internet service providers (ISPs) should treat all Internet communications equally and not discriminate or charge differently based on user, content, website, platform, application, type of equipment, or method of communication.

Several countries have issued or considered implementing regulations in relation to net neutrality, which prohibit or limit the extent to which ISPs can discriminate between different types of traffic. For example, the European Union has introduced a Regulation that allows operators providing Internet access services to offer *“services other than internet access services which are optimised for specific content, applications or services, or a combination thereof, where the optimisation is necessary in order to meet requirements of the content, applications or services for a specific level of quality”*. Under the Regulation, national regulatory authorities (NRAs) must verify that the optimisation within the specialised service is *“objectively necessary”*.

Given the above, it remains to be debated whether the concept of network slicing will be compatible with that of net neutrality, and whether differentiated access to the network should be allowed by virtue of the net economic benefits that it would bring in terms of increasing the flexibility of 5G networks and increasing their ability to offer multiple services. In particular, several operators have urged European regulators to relax their rules on net neutrality with respect to 5G services, arguing that legislation could hinder the rollout of mission-critical applications.

#### **Service Diversification and Bundling by Operators**

It has been posited that due to high costs of implementing 5G network infrastructure, network providers will seek towards diversifying their provision of services from one of pure connectivity to that of utility. For example, network providers will move beyond offering just mobile connectivity and data towards offering content that ride on these networks as well as value-added services (such as cybersecurity) that the customer could purchase in a bundle. In this regard, customers may face a change in the

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contractual structure in relation to the service provided by the operator to them. At the same time, operators will need to consider the additional authorisations and regulations obligations that they require to provision the additional services (for example, they may need to get a media licence to provide content in addition to their existing telecommunication licences or to obtain a licence to provide cybersecurity services). Operators will also need to be sensitive to potential competition regulatory concerns surrounding service bundling, cross-subsidisation and margin squeeze as they start playing across more layers of the value chain.

#### Privacy and Security Challenges

Last but not least, as compared to previous wireless generations, such as 3G and 4G, it is anticipated that 5G will be based on new technologies such as software defined networks, virtualization, and cloud infrastructure. Besides physical security of network equipment, security would also depend on methods such as secure logical separation between virtual servers on the cloud. Software and cloud security risks, in addition to communication network security risks, would increasingly need to be addressed by 5G service providers.

Further, a wide range of devices will be connected to 5G networks, which could include mobile phones, smart home devices, industrial devices, medical devices, and autonomous vehicles. As such, the number and variety of both threat vectors and targets would be increased significantly. Service providers designated as critical information infrastructure owners would need to bear such risks in mind when complying with applicable obligations under the cybersecurity legislation of the respective countries, such as the Singapore Cybersecurity Act 2018.

With high-speed and ubiquitous 5G connectivity, together with the rise in IoT devices, information about almost every aspect of a person's life could be recorded and transmitted to the cloud, in real time. When adopting 5G, organisations would therefore need to ensure that they remain compliant with applicable data protection laws. From the perspective of individual consumers, there is increasing awareness and concern about the risks and consequences regarding compromise of their personal data. In the face of such security and privacy challenges, policy makers would no doubt continue to monitor whether the frameworks for cybersecurity and personal data protection remain relevant during the 5G era.

#### Closing comments

In this update, we have provided a brief update on recent developments in 5G in the Southeast Asian region. The 5G era offers huge promise, but presents challenges as well.

Besides overcoming technical challenges, service providers will need to ensure that they comply with applicable legal and regulatory requirements. For instance, with the expected exponential growth of M2M devices and communications, service providers will need to ensure they have processes in place for compliance with any applicable licensing and/or registration requirements.

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Given that the regulations surrounding 5G are in many countries still subject to further deliberation and consultations, it is important that all interested parties in the 5G space (including network providers and technology companies) engage the relevant regulators at an early stage to shape the framework and ensure that it is conducive to 5G deployment.

For further enquiries or discussion, please feel free to contact our team below.

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