POSITION PAPER

Embracing 5G transformation

Why Japan's mobile network operators must stay ahead of the curve

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5G

With 5G heralded as the next generation of mobile network technology, it is no surprise that it has become the tech sector to look out for. In May, 95 mobile network operators (MNOs) in 50 countries announced the deployment of 5G technology within their live network and as many as 385 operators across 125 countries are now investing in their 5G transformation through field trials and testing.¹

Japan has established itself as a key player in the global 5G sector

As a nation that has one of the world's most developed telecommunication infrastructures, Japan has established itself as a key player in the global 5G sector. The country's communications service providers (CSPs) are financially healthy and its network infrastructure ranks among the world's highest for availability, with **93 percent of the population having access to LTE networks.**

While much of Japan's innovation focus today is to stimulate its domestic industries and bring its society to a new level of development, the country has a greater opportunity to reinforce its global technological leadership position and build a new foundation on which industries can create next-generation technologies. To do so, **Japan and its telecom operators should keep a close eye on the benefits that 5G brings.**

¹ https://gsacom.com/technology/5g/

Seamless, instantaneous communication

According to McKinsey's survey of Japanese telecommunication companies, over half of the respondents believe that the main pain points of the current network are related to low speed, whether that be during peak periods or in general.

The landmark feature of 5G is its **substantially improved connection speed.** In optimal conditions, 5G can reach speeds of up to 10 gigabits per second – 100 times faster than its 4G predecessor which is capped at 100 megabits per second. It is also projected to be capable of reducing latency to just 4 milliseconds versus the current 20 milliseconds, translating into nearly real-time download and upload speeds.

Ultra-low latency and high throughput allow more data to move faster. Simultaneously, they enable operators to go beyond basic mobile-to-mobile communication and allow every connected device or system to join the conversation.

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Boosted connectivity experiences

5G is not just about speed. MNOs will be able to provide enhanced network coverage with devices that use 5G SIM cards, which allow **simultaneous connections to both the 5G mobile network and the MNO's Wi-Fi hotspot.** Not only will this dual connectivity aggregate the capacity of the two networks – creating unrivalled throughput – but the connection itself will become more secure and streamlined.

As connectivity becomes ever more ingrained in society, mobile networks will become the infrastructure on which industries will base new products and services. Industries such as automotive and robotics are expected to be among the main beneficiaries of 5G. Japan's reliance on exports from these high-tech industries means that success from such sectors will positively impact the nation's overall economy.

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Enhanced privacy and security

While unprecedented amounts of data are projected to stream at remarkable speeds 5G across networks, new questions have emerged over user privacy and subscribers' security. The International Mobile Subscriber Identity (IMSI) number, meant to identify a user on the network, can be used to capture very sensitive information, such as the location of use and network usage habits, which must be protected. Thankfully, 5G SIM cards contain an embedded key that 5G networks can use to encrypt the IMSI numbers of mobile users before they reach the network.

This new privacy feature comes at the perfect time, as consumers are demanding greater protection from industries against the malicious use of IMSI catchers. Indeed, security must be a top priority for MNOs. Without mobile networks encrypting the IMSI, unauthorised parties or organisations can use IMSI catchers to capture subscribers' IMSI numbers, which they may then use to track the location of mobile users, a clear breach of privacy. By encrypting the IMSI numbers, mobile network operators can ensure that would-be cybercriminals would have a very difficult time finding their victims, thereby enhancing both personal and overall network security.

Bracing for the future

According to a recent estimate, the global impact from 5G will be US\$12.3 trillion by 2035 (or 4.6 percent of estimated global real output). The planned capabilities of 5G will provide the foundational infrastructure necessary for new technologies – such as augmented reality and human-to-machine communication - to break through and become mainstream. The 5G network evolution will help Japan connect at unprecedented speeds, heralding incredible opportunities for innovation, not only in its tech-centric industries, but also across а variety of sectors throughout the national economy.

The 5G revolution promises much for the future and Japan's MNOs are set to play a leading role. Moving forward, the MNOs can leverage their robust infrastructure to catalyse greater technological transformation and ensure a secure internet connectivity by providing the IMSI-encryption that 5G needs for large-scale adoption.

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