

**Speech by Dr Janil Puthucheary, Senior Minister of State of Communications
and Information, at the Ministry of Communications and Information
Committee of Supply Debate on 28 February 2023**

Introduction

1. Chairman, MCI wants to empower every Singaporean to thrive in our digital future. In my speech I will explain two ways in which we are laying the foundations to do so.
 - a. One, by investing in the underlying digital infrastructure to connect all of us and power the digital services and products we use; and
 - b. Two, by building up strong research and innovation capabilities to create new value from emerging technologies.
2. These are long-standing priorities for MCI.
 - a. Infrastructure and innovation form the basis for our continued access to quality digital services and content. For businesses, these allow them to connect to more customers, raise productivity, and generate new business value.
 - b. Our work in these areas is therefore never quite done. We need to build on our progress, adapt, and invest in the future as technology, the world around us, and our people's needs change.

Future-ready digital infrastructure

3. With this in mind, we continue to enhance Singapore's digital infrastructure to not only meet current demands for speed, capacity, and reliability, but to cater for anticipated needs and reap future benefits as technology and the use cases evolve.
4. Understanding future demand will help us make calculated bets as we invest in Singapore's digital infrastructure.
 - a. It is not always straightforward, as technology advances in disruptive and non-linear ways.

- b. We have had to carefully assess technological developments, actively consult industry, and boldly imagine the use cases that consumers and industry would participate in and want to experience here.

5. The development of our nationwide fibre broadband network, or NBN, is a good example of such a calculated, future-oriented bet to build digital infrastructure.
 - a. When we made the decision to develop the NBN back in the mid-2000s, most people were comfortable with the 30 megabits per second speed that our copper-based infrastructure already provided. It was more than sufficient for browsing the web and checking your e-mail. Holding virtual conferences and lessons over platforms like Zoom, or streaming media content through services like Netflix, were not as common as they are today, almost twenty years since we began our NBN journey.
 - b. But without knowing the specific details of what would happen over the next twenty years, we envisaged that services like online collaboration, e-learning, and High-Definition entertainment would transform the way we live, work, and play. The Government therefore invested in the NBN to provide the high-speed connectivity required to support these services, for the betterment of Singaporeans' lives.
 - c. We began rolling out the NBN in 2008, and provided nationwide fibre coverage to homes by 2013. Today, one gigabit per second plans are the standard among households and 98% are on broadband.
 - d. The NBN's value was all the more apparent during COVID-19. Its buffer capacity enabled us to cater for increased network traffic from the surge in digital interactions, with the vast majority of us working or learning virtually from home at one point or another. This allowed us to maintain continuity in economic and social activity. It took nearly twenty years for us to realise the full potential of the NBN.

6. That same forward-looking perspective we adopted for the NBN underscored our more recent decision to build 5G standalone mobile networks.

- a. We foresee many possibilities in 5G for businesses, workers, and consumers, as a result of faster speed, lower latency, and higher device connection density compared to 4G.
 - b. We facilitated the early rollout of 5G standalone networks by allocating spectrum for our telcos to build them, while setting clear performance, coverage, security, and resilience requirements.
7. To Ms Tin Pei Ling's question on the progress of the 5G rollout and development of use cases, the Infocomm Media Development Authority (IMDA)'s had recently measured to confirm that we have reached 95% nationwide outdoor coverage on Singapore's first two 5G standalone networks. With the rollout progressing well ahead of schedule, our focus is currently on supporting the industry to tap on 5G's capabilities to enhance their operations and service offerings.
- a. For example, IMDA has awarded new and innovative projects under its 5G Innovation Programme. One such project is the Hyundai Motor Group Innovation Centre in Singapore.
 - i. Unlike the fixed production lines in traditional manufacturing, Hyundai Motor Group's upcoming facility will have over 100 mobile robots deployed across the factory floor to simultaneously transport material required for vehicle manufacturing. 5G is what enables seamless real-time data transmission between the backend automated control system and the robots.
 - ii. 5G makes possible new manufacturing processes that will both enhance productivity and quality control. For workers, it reduces labour-intensive activity and minimises the safety risks they bear in manually transporting heavy material. It also creates opportunities for them to take on higher value roles – Hyundai Motor Group intends to hire robotics engineers, data analysts, and process engineers for the 'intelligent' manufacturing facility.
 - iii. For consumers, the more agile manufacturing process allows for hyper-customisation, 'built-to-order' vehicles to cater to different needs and preferences.

- e. 'physical-digital' infrastructure such as Internet-of-Things or IoT devices that enable the exchange of data between physical objects and digital networks.
10. It is important that we continue planning for all these components in a holistic way.
- a. For example, for IoT deployment to grow, there must be security and sufficient capacity in our broadband and mobile networks. For users to experience seamless connectivity at home or on-the-go, the Wi-Fi and mobile speeds must be comparable.
 - b. When it comes to digital infrastructure, the whole can be greater than the sum of the parts, provided we plan well and coordinate properly. We need to make the different layers and different components of the infrastructure stack work well together, to "sing together as a chorus" to maximise our investments in each component.
11. The Digital Connectivity Blueprint that Minister Josephine Teo briefly mentioned is being developed with this idea, as well as future needs, in mind.
- a. The blueprint will outline what is next for Singapore's connectivity infrastructure, including the broadband, mobile, and Wi-Fi networks that power our domestic connectivity, and subsea cables that provide international connectivity.
 - b. The blueprint will also identify interconnections with other digital infrastructure components that complement this connectivity layer, such as data centres and digital utilities. These interconnections are vital to maximising the value of the infrastructure stack.
12. As Ms Tin Pei Ling noted, it is important that we partner with industry to chart this path. Shaping the Digital Connectivity Blueprint alongside the Government is a newly set up Advisory Panel on Digital Infrastructure that I co-chair with Mr Irving Tan, who has rich experience in the tech sector.
- a. The panel brings together industry and business leaders who will help us to understand and account for the wide range of perspectives in the evolving digital arena. Collectively, the members bring to the table insights on technical and

business viability, international competitiveness, as well as potential business and consumer demand. Both Ms Jessica Tan and Ms Tin Pei Ling spoke about the importance of considering security and environmental sustainability as we plan for our future digital infrastructure. This is in line with the approach that the Government will, and has been, taking. The panel's deliberations will be guided not just by economic imperatives, but security, resilience, inclusion, and sustainability too.

13. Our partnership with industry goes beyond the panel. Also informing the blueprint are MCI's engagements with the wider industry, including on the NBN. Ms Jessica Tan asked about our next steps to enhance the NBN. As announced last year, we will be embarking on a full-scale upgrade to deliver speeds of up to 10 gigabits per second, which is ten times faster than today.
 - a. The decision to upgrade the NBN was prompted by trends toward more content generation by end-users and immersive interactions between users in the digital space. These have the potential to transform sectors such as education and entertainment. We want to ensure that our infrastructure can support such bandwidth-intensive activities.
 - b. This is a significant endeavour on a nationwide scale. It is important that we undertake it efficiently, and in close partnership with the industry. Industry players generally recognise these trends, the bandwidth requirements they bring, and the importance of planning ahead for our NBN infrastructure. MCI and the advisory panel will continue to engage the wider industry on the upgrade approach, and consider their feedback as we chart our way forward.

Research and innovation capabilities

14. In keeping with our forward-looking approach, the Government has been making investments to build a vibrant research and innovation ecosystem to explore how emerging technologies can position our people, businesses, and nation well for the future.
 - a. While we roll out our 5G networks, we are already embarking on research into the next generation of communications technologies like 6G. We want to understand

in the coming months. These Investigatorships are targeted at top-tier AI researchers who, in the course of their research, can also mentor and groom other promising talent.

- b. Two, enhancing the links between our research institutions and businesses, so that we can translate the fruits of our research into competitive advantages for businesses.

Our grant calls under the Future Communications R&D Programme support translational research. The aim is for these demand-led projects to generate products for the industry.

- c. And lastly, we are boosting cooperation with international partners to help sharpen our research and innovation efforts. In December last year, Singapore and South Korea signed an MOU on AI, facilitating bilateral AI research and information exchange.
16. As Minister Josephine Teo has emphasised, there must be safety and trust in the digital space for our businesses and people to feel confident tapping on new technologies. We are therefore also supporting the industry to pursue research and innovation in cybersecurity.
 - a. An avenue through which the Cybersecurity Agency of Singapore does this is the Cybersecurity Industry Call for Innovation, or CyberCall. One company that benefitted from CyberCall is MicroSec, which found a new way to secure low-powered IoT devices. Their solution has been deployed to improve the cybersecurity of 16,000 home devices such as smart sockets in the HDB Punggol Northshore Project.
 17. Building the trust and safety necessary for innovation to thrive goes beyond cybersecurity. Users must be assured that businesses are employing technologies such as AI responsibly. Minister has outlined in her speech how MCI is supporting businesses in providing such assurance to consumers.

18. In addition to research into emerging technologies, there is research that contributes to knowledge and appreciation of our history and heritage, to inform who we are as a nation and a society. Government records are a key part of such research.
19. Mr Pritam Singh asked if the Government is prepared to release classified information that has already been extended for research purposes, to all sitting Members of Parliament.
- a. This is with reference to his request to an agency where the information sought had yet to be transferred to the National Archives of Singapore (NAS) for preservation.
 - b. To be clear, the file is not available for public access and remains classified. This is distinct from public archives that are public records that have been transferred to NAS and can be requested for inspection by any person for the purpose of reference or research as set out in Section 18(2) of the National Library Board Act.
 - c. For records that remain classified and are not part of the public archives, agencies may grant access to specific information, for specific purposes, such as to write a book, and subject to conditions such as complying with the Official Secrets Act and submitting the information to be quoted for vetting prior to release. In this particular instance, the agency had allowed the researcher access to relevant information from the records with the understanding that the researcher would only publish and cite specific information with the agency's permission. As a matter of policy, the Government does provide researchers access to information for legitimate research purposes. But doing so does not mean that the entire record has been declassified, nor that it is generally available to the public. If someone has a specific reason to access closed records, a request can be made and the request will be assessed by the Government on its merits.
20. If Mr Singh would like more information on the background, thinking, or rationale behind a Government policy, there are several routes he can take. One way is to approach the relevant ministry to provide further details and a clarification. In addition, Mr Singh and Members of this House also have the option to file a parliamentary question and receive a formal reply from the Government.

21. There is a separate process where ministries and agencies transfer their classified records to the NAS for long-term preservation and declassification, when it is in the public interest to do so. This is pertinent to the question Ms He Ting Ru asked about making archival material more accessible. The NAS has been working with Government agencies to declassify and make available more Government records.
 - a. The metadata of around 780,000 records are publicly accessible on Archives Online; and this has been increasing over the years.
22. In addition, since 2016, Government agencies have reviewed more than 7,000 Government records that were not yet declassified. This was in response to 2,130 requests by members of the public. 83% of these records have been approved for access. In total, some 68,000 file records have been declassified and made accessible to the public.
23. In one example, the Government had agreed to declassify and release documents in Dr Goh Keng Swee's famous "Albatross File". This is a file that Dr Goh Keng Swee kept in the run-up to Singapore's separation from Malaysia. The process of declassification began some time ago, and took some time given the complexity of the material, and a subset of the material was part of a public exhibition. A larger set of declassified Albatross documents will be released in a book on Separation to be published later this year. They will include cabinet papers and Dr Goh's notes of his conversations with Malaysian leaders.
24. We are committed to ensuring greater access to Government records, so that they can be a reference for the public to research and obtain information on Singapore.

Conclusion

25. Let me sum up. Building our digital infrastructure and research and innovation capabilities are foundational to a vibrant digital future for Singapore.
 - a. With these strong foundations, our businesses and people have the ingredients to generate new opportunities and enhance their competitive edge, which SMS Tan Kiat How will speak more about.

26. I want to end by reiterating that our efforts to shape a bright digital future are premised on a very human objective – to improve the lives of all Singaporeans.
27. And with an eye to the future and close collaboration amongst all of us, I have every confidence that we can and will create a bright digital future for generations of Singaporeans to come.
28. Thank you, Sir.

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