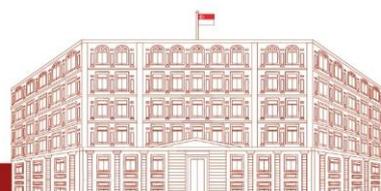
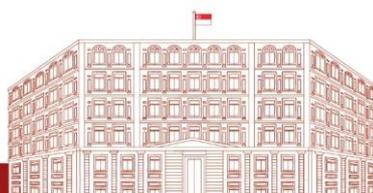


## Transcript of Speech by Minister for Communications and Information, Josephine Teo, at the Committee of Supply Debate on 1 March 2024

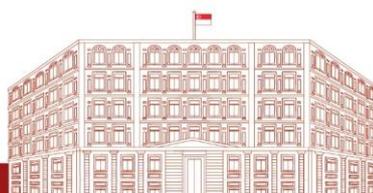
1. Mr Chairman, I thank all Members for their cuts.
2. A decade ago, we launched the Smart Nation initiative, with the vision for Singapore to be a nation where people live meaningful and fulfilled lives enabled by technology, offering exciting opportunities for all.
3. There is no doubt that technology has become a big part of Singaporeans' daily lives. Overall, 84% say that digital technologies have made their lives easier, and more than half are prepared to try new technologies.
4. In January, Parliament debated extensively a motion on Digital Inclusion and Safety. For COS therefore, MCI will cover three other important aspects of Smart Nation development:
  - a. First, leveraging technology to uplift our collective potential.
  - b. Second, upholding trust in the digital domain.
  - c. Third, safeguarding our infrastructure of fact.
5. During the Budget and COS debates thus far, no fewer than 15 MPs have mentioned AI developments in their speeches. Overall, they supported the more than S\$1 billion committed over the next five years to catalyse AI activities in Singapore.
6. As DPM Lawrence Wong pointed out, AI is a general-purpose technology that will find many applications, some of which we cannot yet imagine. But it is not the only type of technology that Singapore has invested in. For example, we have also built capabilities in quantum technology.
7. Nonetheless, given the current strong interest in AI, I will expand on the government's plans to strengthen the AI ecosystem in Singapore, and guard against its risks.
8. Last December, we launched our *refreshed* National AI Strategy, or NAIS2.0, as one of the key planks of our Smart Nation effort. It builds on investments made under our first National AI Strategy that was launched in 2019.
9. MCI agrees with Ms Mariam Jaafar that our AI ambitions should not be driven by hype. While we have invested to build Sea-Lion as a means to grow our capabilities and test the hypothesis that there is value in training LLMs on Southeast Asian languages, we have avoided headlong competition with builders of big frontier models which cost much more.
10. Like Ms Jaafar, we believe that Singapore's interests are better served through the deployment of use cases, based on the most suitable foundation model that can be developed anywhere in the world.



11. Among other goals, NAIS 2.0 aims to create new peaks of excellence in leading economic sectors and areas aligned with our Smart Nation priorities.
12. Earlier today, Minister Gan Kim Yong announced plans to partner 100 companies to set up AI Centres of Excellence and spur AI development in key sectors like manufacturing.
13. Later, SMS Janil will also update Members on plans to boost the infrastructure that powers AI activities.
14. I will focus on talent development and governance.
15. In the world of AI, we can think broadly of three communities:
  - a. AI **Creators** who generate cutting-edge AI research, design frontier systems and drive novel use cases.
  - b. AI **Practitioners** who have the skillsets to implement and deploy AI systems, models and algorithms in organisations and
  - c. AI **Users** who are equipped to use AI-powered solutions and services to increase productivity and take up better jobs.
16. Every city with some AI ambition wants these Creators, Practitioners and Users – as many as they can get. The competition is extremely intense, as alluded to by Ms Tin Pei Ling and Mr Sharael Taha.
17. Take Dr Koh Pang Wei, for example, an award-winning AI researcher who is currently based in the University of Washington.
18. Dr Koh is highly sought after because he focuses on building AI models that can work with imperfect data, which is a common problem in real-world applications. During the COVID-19 pandemic, Dr Koh developed novel methods to estimate the movements of people from raw data. This led to models that helped governments understand the spread of the COVID-19 virus and inform reopening policies around the world.
19. Dr Koh is a born and bred Singaporean. As much as we would like him to come home, we also recognise the value of the networks that he's plugged into because of his current appointment.
20. In fact, there are other AI researchers like him from diverse nationalities who would like to work more with us.
21. **[Announcement]** We welcome them and will soon launch a new **AI Visiting Professorship** for world-class AI researchers to collaborate with Singapore.



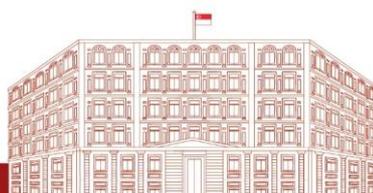
22. **[Announcement]** We will also partner AI Singapore and our universities to launch a new **AI Accelerated Masters Programme** to grow our pipeline of Singaporean AI researchers.
23. At the same time, we will triple the pool of **AI Practitioners** here to 15,000 over the next five years. Practitioners include data scientists and machine learning engineers, who develop and translate the use of AI in organisations and across the economy.
24. Take the example of SG Digital Scholar Mr Joshua Wong. The SG Digital scholarship gave Mr Wong the opportunity to study computer science in Cambridge University, gain exposure to AI research, and build networks with some of the best global talent in AI. This helped to fulfil his dream to be an entrepreneur.
25. In 2020, he co-founded Hypotenuse.AI, a start-up which provides an AI-powered platform for businesses to create marketing content within seconds. Today, Mr Wong continues to enjoy networking opportunities with fellow scholars and mentors younger talent.
26. We will support more young Singaporeans with similar aspirations as Mr Wong.
27. **[Announcement]** As an initial step, we will **invest over S\$20 million** in the next three years to enhance AI practitioner training for students. This will cover AI-related SG Digital scholarships and overseas internships in AI roles.
28. Beyond students, we will also support recent graduates and mid-career workers who wish to become AI Practitioners. IMDA plans to scale up TeSA or TechSkills Accelerator programme. It will provide funding support to employers with relevant career openings to induct and equip locals through upskilling opportunities and industry-relevant training.
29. In parallel to efforts to grow the Creator and Practitioner communities in Singapore, we will equip the broader workforce to be confident **AI Users**. This may be the best way to forestall AI-induced job displacement which many Members, including Mr Yip Hon Weng have expressed concerns about.
30. As with previous waves of technology proliferation, workers worry about being replaced. With AI, it is not just rank and file workers, but PMETs who feel at risk, that AI tools and agents can take over the tasks they now perform. These include knowledge-based tasks like research, coding, and writing.
31. Many thoughtful observers have, however, pointed out that it is not so much AI displacing workers, but AI-proficient workers displacing AI-deficient workers.
32. As Members know, the PAP Government has a consistent record of investing in upskilling and reskilling workers often ahead of demand and in partnership with the NTUC. We will continue to do so.



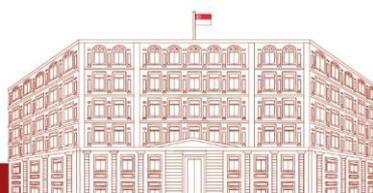
33. Let me provide an update on the Jobs Transformation Maps (JTM) and how they support workers impacted by AI, which Mr Sharael Taha asked about.

There are now 16 JTMs that identify job roles affected by various technologies, of which 13 specifically outline the impact of AI. These JTMs cover about 1.4 million in hundreds of job roles. While we cannot fully predict the scope and scale of AI disruptions, these JTMs provide useful signposts for employers, unions, and workers, so they can plan for job redesign or training.

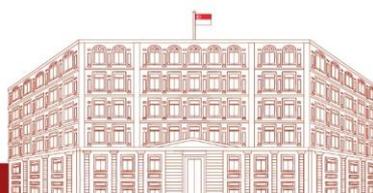
34. Consequently, many of the NTUC's Company Training Committees refer to them. Agencies responsible for sector development can also identify suitable training interventions. For example, IMDA appointed five training partners under the Information and Communications (I&C) JTM in September last year. They now offer over 180 AI-related courses. As of December, they have trained about 1,000 people to be confident AI Users. There will be thousands more in the next three years.
35. This year's Budget has also provided a generous top-up to SkillsFuture Credits and the Level-Up Programme for mid-career Singaporeans looking to re-skill through full-time diploma programmes. IMDA will work with SSG to ensure that there are suitable offerings to help more of our people gain AI-proficiency and stay relevant in the workforce.
36. And, as suggested by Mr Gerald Giam, we already go beyond training programmes to promote hands-on learning. A very good example is the NLB's MakeIT programme, which allows participants to try their hand at 3D modelling and printing, robotics and coding. I spoke about it at COS previously.
37. The Public Sector itself provides both formal and informal learning experiences to build AI capabilities. For example, we have introduced tools like Pair, our secure version of ChatGPT, to help public officers in tasks such as writing, brainstorming, research, and coding. Today, around 35,000 public officers use Pair in their work to improve their productivity.
38. Sir, I should add that the most important strategy for sustaining high employment and minimising unemployment is continued job creation. This means ensuring that businesses continue to grow, including through the use of technologies like AI. By doing so, we need not react passively to job displacement by AI, but proactively use AI to reinstate better jobs for our people. This is why we will also invest in promoting AI adoption among enterprises, a topic which SMS Tan will deal with later.
39. Let me now turn to the topic of AI Governance.
40. While we welcome opportunities that come with AI advancements, we must also guard against the risks of misuse. For example, AI can intensify existing threats such as cyberattacks, scams, or misinformation and disinformation.
41. Guardrails are therefore necessary.



42. Mr Christopher de Souza, Mr Xie Yao Quan and Mr Mark Lee asked what we are doing to promote safe and responsible uses of AI and how we will protect personal data that may be used to train AI models. MCI recognises their concerns. At COS last year, I outlined our plan to clarify how the Personal Data Protection Act (PDPA) applies to AI systems.
43. **[Announcement]** Following extensive consultations with stakeholders, PDPC has finalised its **Advisory Guidelines on the use of Personal Data in AI Recommendation and Decision Systems** and will publish this today. PDPC will next consider giving guidance on the use of personal data to train generative AI systems.
44. Mr De Souza asked how MCI will continue to place Singapore at the forefront of AI governance.
45. Indeed, Singapore has been recognised as an active and credible contributor to AI Governance.
46. Last year, we launched the AI Verify Foundation to harness the expertise of the global open-source community to promote responsible use of AI. This builds on the roll out of AI Verify, a testing framework and software toolkit, in 2022. Today, the Foundation counts organisations such as IBM, Google, Deloitte, DBS, and SIA as members.
47. At the World Economic Forum in January this year, we announced a Proposed **Model AI Governance Framework for Generative AI**, and sought views from our partners. This framework builds on the earlier Model AI Governance Framework and reflects emerging principles, concerns, and technological developments in generative AI.
48. More recently, Singapore led the development of the ASEAN Guide on AI Governance and Ethics, which was endorsed at the fourth ASEAN Digital Ministers' Meeting held here last month.
49. I will now move on to the second theme of my speech: upholding trust in the digital domain.
50. Both Ms Hany Soh and Mr Eric Chua asked how we maintain the human touch, amidst increasing digitalisation.
51. Sir, Coincidentally, I spoke about it yesterday at MHA's COS debate. The reality is that there is no silver bullet. Digitalisation is taking place across multiple settings and changes our interactions with each other in so many ways. We will therefore have to feel our way forward and be willing to adjust our approaches.
52. Where the government is concerned, we are mindful that the delivery of public services through digital means should be carefully designed to cater to different population segments, including seniors.

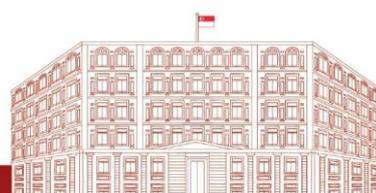


53. Two days ago, Minister Chan Chun Sing also reiterated the Government's commitment to ensure our services remain accessible to all. For example, citizens who require support for Government services can head to any ServiceSG Centre, which can help with close to 600 services and schemes from over 25 agencies. IMDA's Digital Ambassadors also stand ready at multiple community touchpoints to provide guidance to seniors.
54. As the digital landscape evolves, our libraries will also continue efforts to promote reading and lifelong learning. This includes NLB's mobile library service, or MOLLY, which Ms Hany Soh touched on. I thank you for your support and appreciation of NLB's MOLLY's outreach.
55. Since its launch in 2008, MOLLY has served over 500 institutions, received around 1.4 million visits, and facilitated about 2.7m loans. Other than MOLLY, there are other ways libraries make their presence felt, such as through pop-up stations in malls with high footfall.
56. I will now address two other dimensions of digital trust that Ms Tin, Ms Jessica Tan, Mr De Souza and Mr Xie asked about: security and resilience. These largely concern the digital infrastructure and services that power our digital economy and enable citizens to meet their day-to-day needs.
57. In 2023, Singapore faced disruptions in online Government services, banking and payment services, and when accessing the websites of public healthcare institutions.
58. But we were not alone. Many countries are grappling with similar issues as they become more digitalised. For example, a data centre outage in France caused widespread disruption to government and other services. A cloud service outage in the US caused many websites to be inaccessible, including those of news outlets and airlines.
59. To manage the impact of such disruptions, the EU, Germany, and Australia have already introduced regulations to enhance the security and resilience of digital infrastructure such as cloud services and data centres.
60. While we cannot fully eliminate disruptions, we will do more to minimise their occurrence. An inter-agency taskforce led by MCI has been reviewing the evolving landscape and developing mitigating measures. We are looking at two key moves.
61. First, we will enhance our regulatory levers. The upcoming amendments to the **Cybersecurity Act** will raise the cybersecurity of foundational digital infrastructure and other systems as well as entities, beyond the Critical Information Infrastructure it covers today.
62. The expanded coverage will include data centres, cloud services, and key entities that may hold sensitive data or perform important public functions. I am pleased to update Members that public consultations on the amendments were



completed in January. We plan to introduce the amendment Bill in Parliament next month and will share more details then.

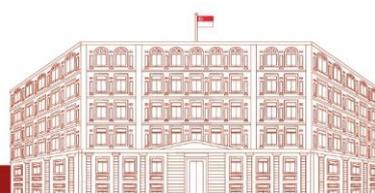
63. While enhancing our cybersecurity posture is important, it is not enough. Past outages in Singapore and elsewhere have shown that disruptions can occur due to non-cyber causes. These include misconfigurations in cloud architecture, or the outage of data centres due to fires, water leakages, and cooling system failures.
64. **[Announcement]** The Taskforce is therefore also studying the introduction of a new **Digital Infrastructure Act (DIA)**, to address broader security and resilience concerns of key digital infrastructure and services, beyond cybersecurity.
65. The DIA will focus on digital infrastructure that can cause significant impact on the economy and society if disrupted. For example, large cloud service providers and data centres are crucial to the functioning of a wide array of digital services that enterprises and consumers use daily. These operators may therefore need to meet higher security and resilience standards, to reduce the likelihood of systemic disruptions.
66. The Taskforce is conducting further studies to properly scope the DIA and develop its proposals.
67. The challenges are complex, and include the cross-border nature of digital infrastructure operators like cloud service providers. We will also need to balance trade-offs between mitigating risks and increasing compliance costs. We will continue to consult industry players and relevant stakeholders and ensure coherence in requirements between the DIA and the Cybersecurity Act.
68. Second, the Taskforce is exploring non-regulatory measures that will complement our laws and regulations. These could include providing guidance to digital infrastructure and service providers on best practices for security and resilience.
69. While the Government does our best to ensure that digital infrastructure and services are secure and resilient, enterprises and consumers also need to play their part. For example, enterprises must have robust business continuity and incident recovery plans. Smaller enterprises can refer to resources like CSA's Cyber Essentials programme; larger enterprises should adopt CSA's Cyber Trust mark.
70. Consumers should also be prepared to use alternatives if a digital service disruption occurs. This creates a strong incentive to service providers to buck up.
71. Mr Xie asked about the risks associated with quantum computing, especially in our data and communications networks.



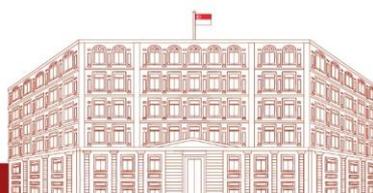
72. Last June, DPM Heng announced the launch of the National Quantum Safe Network Plus (NQSN+). Singtel and SPTel, together with another local company SpeQtral, have since been appointed to build Singapore's first quantum-safe network –the first of its kind in Southeast Asia as well. The network is expected to be ready by end-2024.

We are also building capabilities to develop solutions that enable safe and trusted data sharing, something that Ms Mariam Jaafar talked about.

73. In July 2022, we launched the Privacy Enhancing Technology (PET) sandbox initiative, to support businesses in piloting technological solutions that allow them to safely extract value from data while protecting personal data and commercially sensitive data.
74. Mastercard was one of the participating businesses, which piloted a solution to share information on financial crime across international borders while complying with prevailing regulations. Mastercard is now studying the implementation of this in a commercial setting.
75. I now turn to the third and final theme in my speech: safeguarding our infrastructure of fact to uphold social cohesion. This infrastructure has several pillars.
76. Internationally, we have witnessed how deepfake technology has been misused to spread falsehoods or manipulate public opinion on gun violence in the US, the Israel-Hamas conflict, and even undermine election integrity.
77. Their realism make them a particularly dangerous weapon, as pointed out by Mr De Souza, Ms Tin and Mr Chua.
78. We take a strong stance against malicious AI-generated content. Targeted legislation to deal with them swiftly is thus one pillar in this infrastructure. This includes the Protection from Online Falsehoods and Manipulation Act (POFMA), which enables us to issue corrections and label AI-generated misinformation with the correct facts. We can also consider disabling directions if the content poses serious harm to public interest.
79. Another pillar is public education initiatives to equip Singaporeans to be discerning consumers and producers of information. Our libraries play a key role in this effort.
80. Last year, NLB introduced resources and workshops on Generative AI as part of its S.U.R.E programme, to educate Singaporeans about the benefits and perils of AI, as well as impart skills to verify and fact-check online content that may be AI-generated. These efforts have reached over 66,000 people.
81. Later this year, NLB will roll out new programmes and learning packages to educate Singaporeans about the risks that AI-generated misinformation can pose to society.

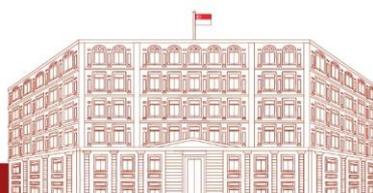


82. We also recognise the need to grow new capabilities. We previously announced that MCI and the Agency for Science, Technology and Research (A\*STAR) will launch the Centre for Advanced Technologies in Online Safety (CATOS). Among other things, CATOS will develop tools and measures to detect harmful content, including deepfakes.
83. In a fragmented media landscape awash with AI-generated content, audiences are finding it very difficult to separate truths from falsehoods. We therefore also need trusted news media to inform and engage our people, to “keep us all on the same page”. This is a critical pillar.
84. Mr Pritam Singh asked about government funding to SPH Media.
85. As a Public Service Media (PSM) entity, SPH Media plays a crucial role in:
- Informing Singaporeans of issues of national importance;
  - Reflecting Singapore’s values and way of life;
  - Reporting international events with a Singapore eye; and
  - Projecting Singapore’s perspectives to the rest of the world.
86. SPH Media is also an institution and repository of our shared memories. Last year, *Lianhe Zaobao* celebrated its 100<sup>th</sup> Anniversary while *The Straits Times* is approaching 180 years of publication. Both *Berita Harian* and *Tamil Murasu* are also well-established, catering to the needs of our Malay- and Tamil-language communities.
87. However, SPH Media is facing its biggest challenge yet. The entire media industry has been severely disrupted by digitalisation and social media. Readership is declining, as audiences have a multitude of choices. Traditional sources of revenue continue falling dramatically with advertising shifting to social media and other online platforms.
88. These problems are not unique to SPH Media. Even an established media company like the *Washington Post* lost US\$100 million last year and had to cut 10% of its headcount, despite extensive efforts to transform.
89. Digital-only platforms are not spared either – the Pulitzer Prize-winning *Buzzfeed News* shut down last April, despite hiring top journalists and opening bureaus around the world. According to the *New York Times*, “one out of four newspapers that existed in 2005 no longer does”.
90. Prior to restructuring into a Company Limited by Guarantee, SPH posted its first-ever loss. Left to market forces and commercial stresses, it would likely have gone the way of the *Washington Post* and *Buzzfeed*. This is particularly so with its vernacular titles, which have naturally smaller audiences, and which members like Mr Sharael Taha, Ms Tin, and Mr Alex Yam are rightly concerned

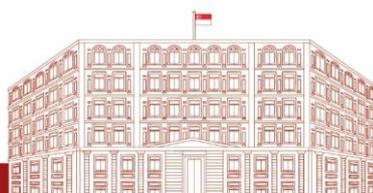


about. The Government decided to step in to give SPH Media, especially its vernacular titles, a fighting chance in the new media landscape.

91. Thus far, around S\$320 million has been disbursed to SPH Media, across Financial Years 2022 and 2023. Anticipating a more challenging environment as outlined earlier, We have also budgeted around S\$260 million in funding for SPH Media in FY2024. This is reflected in MCI's Budget Book as part of MCI's overall grant disbursement provided to other organisations.
92. As I shared previously in the House, funding for SPH Media is targeted at three main areas: talent, technology, and vernacular capabilities. They reflect the importance the Government has placed on quality journalism, digital transformation and upholding multiculturalism.
93. To ensure public accountability and fiscal prudence, SPH Media Trust is structured to comprise members representing different segments of society, from commercial entities like DBS, UOB and OCBC, to local Institutes of Higher Learning like NUS, NTU, SMU and SUTD.
94. But ultimately, SPH Media is accountable to Singaporeans. The news industry is a people-centric business, and SPH Media has a crucial public service media role. Therefore, KPIs are set to track reach and engagement across all communities, including specific targets for the vernacular outlets, youth and digital reach.
95. MCI also requires SPH Media to report regularly on their performance in these areas, and comply with relevant audits to ensure oversight of how funds are spent, as well as ownership and accountability of public service media outcomes.
96. So far, the funding disbursed has been put to good use. SPH Media has been strengthening its digital systems to improve its outreach, in line with what other global publications have done. *The New York Times* and *The Wall Street Journal* for example, have pivoted from print to digital-first models, adopting multimedia formats to increase their readership.
97. Likewise, SPH Media recently adopted a new digital content management system to support its online coverage and launched mobile apps across its English and vernacular news titles. It has also made extensive efforts to improve retention and quality of its newsrooms, through training, scholarships and fellowships with overseas institutions, such as the Reuters Institute for the Study of Journalism.
98. However, there is still considerable catch-up for SPH Media. While it has maintained its overall reach and achieved a modest increase in its digital subscriptions, it did not meet all its KPIs on digital reach, youth reach, vernacular reach, and average time spent on its websites and apps. Accordingly, it did not receive the full funding that was committed.



99. More importantly, these results shows that the efforts made thus far are just the beginning. SPH Media will need to do more to maintain its relevance in this challenging media environment and will need continued support as it strives to get onto firmer footing.
100. Mr Chairman, I hope members agree that in an information landscape where truths have to compete with falsehoods, public service media is a critical pillar in our society's infrastructure of fact.
101. On matters deserving public attention, such as critical global events, community news in the vernacular, or indeed Parliamentary proceedings, profit-driven platforms may have no interest except to sensationalise or add their own "spin".
102. We also need public service media to tell Singapore's stories and project Singapore's voice. We cannot expect media organisations elsewhere to do so for us.
103. At stake is our ability as a people to have a shared understanding of issues of the day, to know where our national interests lie and what we must do to ensure our continued success. Sustained investment in our PSM entities is therefore not a "nice-to-do". Rather, it is a "have-to-do" if we are to uphold quality journalism that supports the public good.
104. I therefore seek Members' support to sustain public investment in PSM entities to preserve our infrastructure of fact and maintain the high trust that our public has in public service media today.
105. Mr Chairman, with your permission, please allow me to conclude my remarks in Mandarin, returning to the topic of AI which I started with.
106. 人工智能 AI 将继续渗透世界各地及各个领域，包括新加坡的社会和经济。我们必须把握机遇，帮助国人和企业做好准备。为此，我今天宣布了多项举措。
107. 首先，我们将推出新计划，吸引全球最顶尖的人工智能创作者来到狮城，与本地专家和学者合作，让尖端技术在我国扎根。
108. 为了壮大我国的人工智能队伍，在未来 5 年把这方面的专才增加到 1 万 5000 人，政府也将投入 2000 万元，栽培本地的莘莘学子，为他们提供奖学金和海外实习机会。
109. 然而，数码科技带来机遇的同时，也带来一些风险。为此，我们将推出新的指导原则，规范人工智能系统在使用个人资料时，应遵守的规则。



110. 政府也在探讨一项新法令，以加强我国的数码基础设施和服务的安全性，让人们在使用数码科技时更加安心。
111. 一直以来，我都提倡“数码为先，而不是数码唯一”。政府将继续为那些还未准备好上网的国民提供非数码选项。
112. 然而，人工智能的发展势头不会放缓。新加坡政府将秉持具有前瞻性的治国理念，并采取“以人为本”的方式，落实各项计划。

