

**SPEECH BY MR TAN KIAT HOW, SENIOR MINISTER OF STATE FOR
COMMUNICATIONS AND INFORMATION, AT THE ASIA PACIFIC ASSISTIVE
ROBOTICS ASSOCIATION (APARA) AIBOTICS 2022
ON 23 AUGUST 2022, 9.00AM**

“Digitalising Humans, Humanising Digital”

Ms Shanlynn Lee, President of APARA
Mr Oliver Tian, Honorary Advisor Mentor, APARA
Distinguished Guests, Ladies and Gentlemen,

- 1) Good morning. Thank you for the invitation to speak at this event.
- 2) Even as Singapore emerges from the COVID-19 pandemic, like other economies around the world, we can expect to face stronger headwinds in the coming years such as a less benign geopolitical situation, a more volatile macroeconomic environment and more uncertainties resulting from adjustments to supply chains as businesses prioritise resilience over efficiency.
- 3) As a small and open economy, Singapore is acutely aware of these challenges and would have to agilely navigate this difficult environment.
- 4) Another critical challenge that we must tackle is the manpower crunch. In the first quarter of this year, more than 128,000 job vacancies remain unfilled. Even within the tech sector, hiring demand remains strong, with vacancies climbing 28% to hit more than 10,000 open jobs¹ in March this year².
- 5) As global competition for manpower heats up – filling vacancies will only become more difficult. Coupled with an ageing population and lower birth rates in Singapore – we must be ready to confront an even tighter labour supply³ in the coming years.

Key Message #1: The future of work will see an even tighter nexus between technology and humans, such as AI and robotics.

- 6) But in each adversity lies opportunity. It is also a chance for us to architect a new future of work – one where technology plays a larger role in augmenting humans, enabling us to achieve more.
- 7) For instance, during COVID-19, technology was deployed to support food delivery within hospitals – so nurses could dedicate more time to patient care, where the human touch makes a critical difference.

¹ Written Answer by Dr. Tan See Leng, Parliamentary Query, NP 1202 / 2022, 4 July 2022. Question No. 3059

² June 2022, Ministry of Manpower Report, The Straits Times

³ Singapore's labour supply will shrink by 1.7 percentage points in the 10 years through 2026, and by 2.5 percentage points in the following decade, Oxford Economics



- 8) Across our industries, a tech-enabled workforce will improve productivity and reduce workplace hazards. For instance, robotic production lines powered by AI allow workers to transition to higher value-added tasks, while sensors and wearables can help detect and prevent workplace accidents. These are particularly relevant as many job vacancies tend to be for the more gruelling roles in manufacturing and construction.
- 9) We have seen how companies have benefitted from this. For example, SATS implemented automated cargo handling and robotic kitchens at airports, optimising their manpower and reducing the intensity of manual work.
- 10) JTC also partnered a local start up, H3 Zoom, using AI-enabled drones to inspect building facades and rooftops. This solution is more efficient and safer, and has been deployed at over 900 buildings in Singapore.
- 11) Beyond industrial applications, advances in AI and human-machine interfaces will unlock new possibilities in our lives. Robotics in the home is one such example. Robots can help perform daily chores and support assisted living, allowing the aged or disabled to live and be cared for within the comfort of their own homes.
- 12) The future will see an even tighter nexus between technology and humans.
- 13) To catalyse this future, we must maximise the strengths of both humans and machines, while supporting our workforce to thrive in an emerging digital environment. I would like to share two thoughts on how we can succeed.

Key Message #2: Humans must adapt to technology with continuous learning and an openness to change.

- 14) First, we need to help humans adapt to technology. And to do this effectively, we must overcome the mindset that technology is here to replace workers and take their jobs.
- 15) Such anxieties are understandable. However, studies have shown that very few occupations – less than 5 percent – can be fully automated⁴. But jobs will continue to evolve with digitalisation, and workers need to adjust by adapting to changing roles and learning new skills. The speed at which technology and economic opportunities evolve means our workforce must do so quickly.
- 16) This brings me to the point that having the right mindset is necessary, but insufficient. Our workers need the right skillsets too. The government understands the anxieties and fears of our workforce and will continue to support every worker in their learning journey through initiatives such as Skills Future and the Tech Skills Accelerator (TeSA).

⁴ McKinsey, <https://www.mckinsey.com/featured-insights/future-of-work/jobs-lost-jobs-gained-what-the-future-of-work-will-mean-for-jobs-skills-and-wages>

- 17) Employers and industry associations must also play your part. You must be willing to invest in your employees and members, creating the right incentives to encourage continual learning and self-improvement.
- 18) This is an important part of the “Equip” pillar under the national Forward Singapore exercise that was launched by DPM Lawrence Wong. The “Equip” pillar is led by Minister for Education, Chan Chun Sing and supported by SMS for Manpower Zaqy Mohammad and me. We look forward to engaging with stakeholders across the public, private and people sectors on how we can partner each other to equip Singaporeans with the right mindset and skillsets to seize new opportunities.

Key Message #3: Technology must adapt to humans though seamless human-machine interactivity.

- 19) Secondly, while humans adapt to technology, technology must also be designed for humans.
- 20) While we focus on upskilling, system developers must also consider how we can lower the skills barrier needed to operate technology. Rather than just training users to use complex systems, we must adopt human-centric design that puts people at the core.
- 21) Some industries have advanced in this space more than others. For example, user centricity is a major focus of consumer systems. The driving navigation apps on our phones prominently displays directions right when they are needed – helping to reduce cognitive load and improve user safety. These systems are continuously improved through human-computer interaction research and innovation.
- 22) Enterprise systems should similarly endeavour to prioritise human-centric design. By mirroring the user friendliness of consumer applications in systems deployed at workplaces, we reduce adoption hesitancy and allow our workforce to harness the benefits of technology.
- 23) An example is the use of Augmented Reality glasses. IMDA recently supported Keppel Offshore and Marine, together with M1, to use 5G-enabled smart glasses to improve performance and safety. The glasses seamlessly deliver work instructions and equipment information to users based on their needs.
- 24) Beyond human-centric design, system owners should also ensure technology emulates not just human capabilities, but also reflects our desired governance and ethics. For instance, in the field of AI, we should ensure that the AI systems remain transparent, fair, and robust.



- 25) Singapore's approach to AI governance balances innovation, safeguarding society, and building public trust in technology. Earlier this year, we launched AI Verify, an AI governance framework and testing toolkit, to help developers assess these considerations. AI Verify is now available as an open pilot, and I invite system owners, designers, and users to join us on this journey towards better and safer AI, especially in robotics.

Closing

- 26) I spoke about helping humans adapt to machines by cultivating the right mindsets and equipping them with the right skillsets. Concurrently, we need to adapt machines to be more user friendly through human-centric design and robust safeguards.
- 27) Finally, we should constantly share good practices. The Asia Pacific Assistive Robotics Association is a good platform to do so, and I encourage participants and speakers to exchange insights, share frankly and openly, and co-innovate on human-centric solutions that allow man and machine to complement each other.
- 28) I wish you a fruitful event. Thank you.