



**SPEECH BY PERMANENT SECRETARY (DEFENCE DEVELOPMENT),
MR MELVYN ONG,
AT BRAINHACK 2023 ON 22 JUN 23**

Principals and Teachers,

Parents and Students,

Ladies and Gentlemen,

1. A very good afternoon.
2. I am very happy to be here with you today and it gives me great joy to see so many bright young minds gathered through your interest and love for science and technology. I walked through some of the exhibits earlier, and I'm convinced that many of you return year after year, because you find great value in this activity.
3. Since 2019, the Defence Science and Technology Agency (DSTA) has organised BrainHack. In fact, the originator of BrainHack, Mr Tan Peng Yam, former Chief Executive of DSTA is right here amidst the crowd, and he conceived BrainHack to provide students like you a unique and hands-on experience into the world of digital technologies. Over the years, we have expanded the range of activities across technology domains, from cybersecurity, artificial intelligence, which is now getting increasingly commonplace amongst us, extended reality, fake news detection – in MINDEF, we deal a lot with fake news detection – and app development to space technologies. The interest in BrainHack has more

than doubled since it started, from 1,500 participants in 2019, to over 3,000 this year.

4. I'm thankful that we're able to move away from the virtual format during the COVID-19 pandemic years, to a physical one this year. I'm very glad that DSTA organised the activities, including a chance to hear from Dr Soichi Noguchi, a former astronaut from the Japan Aerospace Exploration Agency. I heard that many of you enjoyed the range of activities and engagements. May I invite everyone to give a warm round of applause to the staff who made BrainHack possible.

5. At its core, BrainHack is focused on digital technologies. From smart devices, robotics, to cloud computing and (IoT) internet-of-things, we see digital technologies playing a big part in our lives – year after year, it becomes even more true. In fact, the digitalisation landscape is evolving very rapidly. I'm sure youths like you are very much aware, and it's going to be even more rapid going forward. In recent months, generative AI capabilities have generated lots of excitement and buzz. I am sure many of you use ChatGPT, and the rate of adoption of these digital technologies has never been faster. It took just five days for ChatGPT to reach 1 million users; in comparison, it took Instagram 2.5 months to reach the same user base¹. That's how quickly it's moving nowadays.

6. From where I sit in the intersection of defence, security and technology, digital technologies will play an increasingly important role in national security and military operations. For example, many of you are aware of the ongoing Russia-Ukraine conflict, we are seeing a whole range, and the wide-spread use of Telegram chatbots to crowd-source the location of enemy forces. When internet connectivity was affected, what did they do? The Ukrainians continued to have access to the internet that was enabled by Starlink, a satellite communications system. But, with digital-enabled opportunities, there will also come new threats. For example, AI can be used to generate deepfake videos –

¹ Data from Statista

you can see many of it online today; and fake audios to misinform and cyberattacks can have devastating impact on our critical infrastructures.

7. For the SAF, to cope with the growing importance of the digital domain in warfare, we established the fourth service, the Digital and Intelligence Service, or DIS, last October. The DIS will ensure that the SAF keeps pace with emerging digital technologies and leverage these to enhance our operational effectiveness. Our Defence Technology Community works closely with the DIS to build up the SAF's digital capabilities.

8. Digital technology no longer just supports the services (the Army, Navy and Air Force). Today, it is at the forefront. The services support our digital and intelligence service in the achievements of outcomes. That is how the world has changed. In the Armed Forces, science and technology must now lead the SAF in its transformation in the next generation. The science and technology community must be leading at the forefront, and at the heart of this, our community of science and technology experts must work closely with the DIS and services on their digital capabilities to build new structures, new concepts for the SAF and MINDEF in peace and in conflict.

9. Delivering digital capabilities is not new to the Defence Technology Community (DTC). For example, I was involved during the COVID-19 pandemic and when that happened, DSTA developed a suite of digital solutions for the multi-ministry task forces, and I collaborated with them to respond swiftly in the fight against the pandemic. These digital solutions supported various important activities that enabled us to ride through COVID-19 safely, ranging from contact tracing, patient care, testing operations to food supply-chain risk management. In the world of digital technologies, we need to collaborate extensively with the best partners in the world. In the past two years, DSTA has been working with Carnegie Mellon University and Massachusetts Institute of Technology in the research and development of advanced capabilities in cyber, computer vision, natural language processing and robotics.

10. In the past few weeks of BrainHack, many of you would have had a glimpse of the DTC in action, participating in hackathons, workshops, competitions and tech showcases. I hope that these have inspired you to go further in your own S&T journey, perhaps even as part of our DTC. I have seen the fast-moving threat landscape. You will have opportunities – and I have seen it – to do interesting work; work that people outside of defence industry will not get to do; challenging work. We will need people like you, potential defence scientists, engineers and cybersecurity enthusiasts. Those who are interested in cyber, you can also join the DIS.

11. I mentioned earlier “repeat customers”. In fact, many of our scientists and engineers started out in events like this, such as BrainHack. One such example is Nicholas Neo, who is currently an engineer in DSTA’s Digital Hub. He works on automatic speech recognition models. His interest and passion in AI saw him participate in BrainHack three times, like you, in 2020, 2021 and 2022, and he eventually joined DSTA. There are many Nicholases out there; perhaps you too will take on the exciting challenge and responsibility of shaping the future of Singapore’s defence.

12. Finally, I would like to thank the participating schools, our partners, and the organising team here again, for making BrainHack 2023 possible. I wish everyone the best as you proceed on in your studies and in your future endeavours.

13. Thank you very much.