

Opening Address by Dr Janil Puthucheary, Senior Minister of State, Ministry of Communications and Information, at the Singapore Cybersecurity Education Symposium on 19 November 2020

Ladies and gentlemen,

1. Good morning to everybody, and thank you for joining us here today at the inaugural Singapore Cybersecurity Education Symposium. This is organised and brought to you by the Cybersecurity Agency of Singapore, together with the Ministry of Education.
2. This symposium is the first of its kind in the region. It aims to equip educators like yourselves with a better understanding of cybersecurity and give you the confidence to guide and inspire our youth to understand the opportunities that are available to them as cybersecurity professionals.

Cybersecurity in the post-pandemic world

3. As we deal with COVID-19 - immediate issues as well as long term issues, digitalisation is going to be important, and technology is what has allowed our schools, our businesses and our social interactions to keep going, even when we had our circuit breaker. We had social distancing, and in that time, businesses embraced telecommuting using "Zoom" or "Slack".
4. Food delivery platforms became a regular part of our lives. Hawkers went online and braced e-payments, helped by pushes from the SG Digital Office. These digital solutions have been just as important in how we have been able to progressively reopen our economy safely. We've had our national digital tools to help contact tracing and the public health response - TraceTogether proximity checking by Bluetooth and SafeEntry location check in. They have supported our collective efforts, together to safely and slowly open up our economy, because they allow faster and effective contact tracing.
5. But we cannot imagine that it is going back to business as usual. We're experiencing our worst recession since independence. Jobs, livelihoods have been affected. We don't know what the future economy is going to look like. We know that traditional industries like aviation and tourism are disrupted.
6. There will be new jobs being created but old ones will be displaced. What is it that we can do to position ourselves to bounce back quickly? We don't know all the answers, but it's clear that the future will be based on technology and digital technology. This has risks because cyber threats have grown in scale and

sophistication over the years. We are increasingly connected, we are increasingly reliant on technology, and that makes the security of our technology a crucial enabler for the digital future.

7. But this is also an area of opportunity, because as long as that technology remains part of our lives, cybersecurity professionals will have exciting jobs, they will have economic opportunities. It is a dynamic field, diverse and rewarding career paths - many different roles such as security architects who design and secure systems for organisations; digital forensics experts that investigate, analyse and reconstruct cyber-attacks; ethical hackers that conduct attacks and stress test systems and networks to uncover vulnerabilities; and roles involving strategy, planning, manpower development, non-technical skillsets, management issues.

8. The role of the Chief Information Security Officer, which are senior cybersecurity professionals accountable to CEOs and boards, are increasingly gaining prominence. Researchers and innovators that develop new solutions will also need support and go-to market access and we're trying to provide that through solutions such as ICE71 – the region's first cybersecurity start-up hub. Whether you're a technical expert or you're interested in strategy or an entrepreneur, there's opportunities being created for everybody in cybersecurity.

9. Even if you are not going to specialise in this field, you'll benefit from developing some cyber skills, because this is not just an issue about the laptops or desktops or the servers. These types of cyber-attacks also affect industrial systems and power plants, water plants. manufacturing systems, as well as the smallest of Internet-of-Things devices like baby monitors. A few years ago, hackers stole data from a North American casino using a cybersecurity weakness in an internet-connected fish tank thermometer! So, if you are designing something, building something, creating something with digital technology, if you're an engineer or a programmer of any nature, having some cybersecurity skills will make you more effective.

Building a strong cybersecurity pipeline

10. Along the way, educators, like you, are crucial to helping our youth understand and prepare for jobs of the future. In schools, we have programs such as the National Digital Literacy Programme, helping students acquire skills, such as coding and computational thinking. This will help them thrive and what we want is for them to see and seize good career opportunities in tech.

11. Some reports have suggested there are up to 4 million unfilled cybersecurity jobs worldwide, including two and a half million in the Asia Pacific region. In Singapore, the Government is taking steps to grow our own cybersecurity talent

pipeline and our professional communities. We have efforts such as the SG Cyber Talent initiative, the Cyber Security Associates and Technologists Programmes - all brought about by CSA and IMDA, and addressing fresh graduates, as well as mid-career professionals for cybersecurity jobs.

12. But we also have to move upstream to engage the youngest students early on, get them interested in tech and in cyber. We offer a wide variety of scholarships for technology leaders, including within the public service for cybersecurity. Male students can get involved and get started in a cyber career through MINDEF's Cyber NSF Scheme, which deploys full-time national servicemen (NSFs) in these roles to contribute to our defence. With exceptional skills, they will be offered the Cyber Specialist Award, through which they will take on more advanced roles and a work-learn program with the Singapore Institute of Technology or the National University of Singapore.

13. We've continued to engage youth through things like the Youth Cyber Exploration Programme, a four-day cybersecurity bootcamp for secondary school students, and this year conducted virtually because of COVID-19. Since it started, over 700 students have benefitted. We will be launching our SG Cyber Olympians programme for Singapore youth with exceptional cybersecurity talent, to establish a sparring arena for youth to practice their cybersecurity skills, to offer mentorship and to provide opportunities for these individuals to attend specialised training and prepare for overseas competition.

14. We also need to encourage more girls, more young women to join this sector. They are underrepresented. We've put up Capture the Flag competitions, specifically for women, and this is part of the SG Cyber Women programme. Our students can look forward to more opportunities, and we hope to help them explore these interests with the broader cybersecurity community.

Engaging cyber educators

15. Career choices are complex, and often bewildering for our youth. The advice provided by you – their educators, play an important role, and as their advisors and role model, you give them the knowledge to help them make informed decisions and connect them with the learning opportunities. That's why we are launching the new SG Cyber Educators Programme, as part of our concerted effort to help educators engage and interact with wider industry and community, so that they can better understand how to prepare their students best for the future workforce.

16. Today's symposium is a key initiative under this programme, and we hope that through the symposium you will be excited and empowered. We need to engage with educators like yourselves to raise awareness of cybersecurity developments in

this fast-moving area and career opportunities, and we hope that you can help the next generation of students develop their interests. So, I'm very happy that you come today from a wide and diverse field – educators, teachers, career counsellors, school leaders, academics.

17. I think there are three key ways I hope you can benefit from today's symposium. First, I hope you are excited about the cybersecurity industry and the career prospects it offers. Second, I hope the new knowledge you gain empowers you to understand the latest trends, the best practices; and lastly that this allows you to engage with other educators, cybersecurity practitioners, because then you maybe can start to build those links for yourselves, and ultimately your students into our cybersecurity ecosystem.

18. We have a great line-up of talks, panel discussions and quizzes, conducted by Institutes of Higher Learning, but also start-ups and renowned cybersecurity companies such as FireEye and Group-IB. We hope this will also provide you an opportunity to expand your network, acquire useful first-hand knowledge about cybersecurity and take this back to your schools, get your students excited about it.

19. It's one of just a sustained series of engagements we hope to conduct under the SG Cyber Educators programme. We've got from March 2020, a series of webinars to engage educators in bite sized sessions on the specific cybersecurity trends and educational approaches. We're heartened that despite the pandemic more than 600 educators have participated in these webinars and today's symposium. So, we'll continue, not just with webinars, but more organised learning journeys that will include immersive hands on activities to demonstrate the different aspects of cybersecurity.

20. At the tertiary level, CSA, Industry and academia should use these opportunities to engage. This will facilitate a continual refreshment of the cybersecurity courses, so the curriculum and the content are current and interesting, and it will better prepare graduating students for cybersecurity workforce. I hope that educators who participate will spread the word and encourage more colleagues to join in and learn about the importance of cybersecurity.

Conclusion

21. In conclusion, a robust cybersecurity pipeline and tight-knit professional community is a key enabler of our Smart Nation project. Strengthening our resilience and cyberspace, continuing to grow our ecosystem of professionals and businesses requires a whole of nation effort. We will roll out more programmes and more initiatives in the near future, but this will require the active participation of

stakeholders - from the private, the public and the people sectors, industry partners, schools, our youth, and of course, educators like yourselves.

22. Thank you for your support and your interest in this symposium, and I hope this marks the start of your journey to become cyber specialists in your own way.