

**OPENING ADDRESS BY PROF YEOH LEAN WENG, PRESIDENT OF
THE INSTITUTION OF ENGINEERS, SINGAPORE (IES), AT IES
CHARLES RUDD DISTINGUISHED PUBLIC LECTURES 2019 “5G: A
SAFE AND BETTER WORLD?” AT SINGAPORE UNIVERSITY OF
TECHNOLOGY AND DESIGN (SUTD) ON SATURDAY, 23
NOVEMBER 2019, 9AM**

Our Guest-of-Honour, Professor Yaacob Ibrahim, Member of Parliament,
Jalan Besar GRC and former Minister for Communications and
Information and Minister-in-charge of Cyber Security;

Distinguished speakers and panel members;

Fellow engineers;

Ladies and gentlemen;

Good morning.

1. Welcome to the 2019 IES Charles Rudd Distinguished Public Lectures. I would first like to thank Professor Yaacob Ibrahim for gracing today's event as the guest-of-honour and for chairing our panel discussion. Thank you, Prof Yaacob.
2. Since 2007, The Institution of Engineers, Singapore (or IES) has held the Charles Rudd Distinguished Public Lectures series periodically, for prominent field experts to educate the public about various topics related to engineering. The series is named

after the late Er. Charles Rudd to emulate his spirit of continuous professional development and active learning.

IES Charles Rudd Distinguished Public Lectures 2019

3. Today's lecture focuses on the fifth generation of wireless networking technology, or 5G. Wireless communications have come a long way since the invention of technologies such as the optical telegraph, the telegraph, the radio and the photophone in the 18th and 19th centuries.
4. These early inventions set an important foundation for the mobile networks era that started in the 1970s with 1G. In 1991, the launch of 2G introduced a whole new way of life as it enabled people to send text, picture and multimedia messages on their phones. 2G gave way to 3G in early 2000s, making possible applications like video conferencing, video streaming and voice over IP.
5. 4G was introduced in the late 2000s. Offering a speed of 25 megabytes per second, 4G has allowed consumers to access applications such as HD TV on mobile, high-quality video calls and fast mobile browsing. 4G also laid the foundation for applications such as cloud computing, artificial intelligence and fintech.
6. But we are once again at another turning point, with advancements in 5G technologies. 5G is exciting because it could potentially reach an average speed of 400 megabytes per

second, promising device speeds to be 10 times faster than 4G. Latency for 5G is also at just 10 milliseconds, compared to 20 to 30 milliseconds for 4G. 5G is also exciting because it could act as a gateway for an Internet of Things (or IoT) connected world at scale.

7. As Singapore prepares to roll out commercial 5G services next year, IES hopes to help engineers, professionals and members of the public ready to ride new waves of opportunities brought about by 5G. Therefore we have chosen '5G: A Safe and Better World?' as the theme of the 2019 IES Charles Rudd Public Lectures.
8. We are privileged to have chief technology officers from leading 5G players as the distinguished speakers of today's lecture.
9. We have here today Dr Magnus Ewerbring, Chief Technology Officer, Asia-Pacific Group Function Technology of Ericsson. He will be providing valuable perspectives on how our world will increasingly be driven by 5G, with a focus on industrial partnerships and state-of-the-art 5G experiences.
10. We will also have Mr Leon Zhang, Vice President of 5G product line, Huawei. Mr. Zhang will provide us with insights into how 5G is gearing up to give us a fully connected world and cover the global 5G ecosystem, commercial development, industry applications and Huawei's investment plans.

11. Last but not least, we have Mr Sami Hoisko, Chief Technology Officer and Head of Technology for Asia Pacific and Japan, Nokia. Mr Hoisko will be speaking on the 5G technology vision, cutting-edge technologies in 5G and lessons learned so far.
12. I would like to thank all three speakers for sharing their expertise with us today.

Conclusion

13. I would also like to thank our joint organiser - the Singapore University of Technology and Design (or SUTD), supporting partners, sponsors and the organising committee for their contribution towards this event.
14. I hope that this conference will bring all of us a step forward in harnessing 5G to create a safe and better world for all of us.

Thank you.