

Speech by Minister Josephine Teo at Singtel's 5G Virtual Event on 30 Aug 2021

1. Good morning. Thank you for inviting me to Singtel's official celebration of your 5G standalone network. I'm happy to be joining you.
2. One of my favourite quotes about technology is by Arthur C. Clarke, the author of *2001: A Space Odyssey*. He said:

"Any sufficiently advanced technology is indistinguishable from magic."
3. Well, for digital connectivity, 5G promises to be that technology.
4. Over the past 40 years, each G or generation introduced something new that we can transmit with our phones.
 - In the 1980s, 1G gave us sound.
 - In the early 1990s, 2G gave us texts.
 - In the early 2000s, 3G gave us the mobile web.
 - From the 2010s, 4G made possible live video streaming.
5. 5G promises to be ultra-fast, with peak data rates of up to 100 times faster than 4G.
6. What's more, it supports near-zero latency, which means there will be practically no delay in sending and receiving information between devices. With a lag of just 1 millisecond, the devices can talk to each other in almost real time.
7. Why is this important to Singapore? We can look at it on several levels.
8. For individuals, in a 5G world, it will take us seconds to download a typical high-definition movie, whereas it takes minutes today. For gamers, 5G's lower latency will let you enjoy almost instant response times.
9. But 5G is not just for fun and recreation. For example, in telemedicine today, we can consult a doctor anywhere in the world through a video call over the Internet. But the connection is still not good enough for that doctor to perform surgery remotely. 5G will likely change that.
10. In factories, robots will be able to communicate wirelessly to perform complex tasks. With 5G, telcos can also offer 'network slicing'. This is like offering an ala carte menu instead of a fixed set menu - customers can now choose the slice of 5G offerings that best satisfy their needs.
11. The Internet of Things can become commonplace.
12. More devices connected to networks means more data with which to train AI algorithms.
13. This will change the way we live and work, in profound ways.
14. But realising the promise of 5G is easier said than done. How should we do it?

15. We can certainly build non-standalone 5G networks on top of existing 4G infrastructure. This is cheaper and faster, but only slightly better.
16. Instead, Singapore decided on standalone 5G networks. They are more costly to build up and take time. But our people and businesses will enjoy far better innovations.
17. Singtel's launch keeps us on track to provide nationwide outdoor coverage for standalone 5G services by 2025. In fact, half of Singapore will have coverage by the end of 2022. This puts us as one of the leading countries around the world.
18. However, building the 5G infrastructure is only the start of it.
19. Imagine an app store with no apps for us to download. Likewise, 5G infrastructure itself cannot deliver magic without actual use cases being developed, tested and scaled up.
20. This is where we need partnerships between the Government, telcos, the industry, and our research institutions.
21. We already have good examples:
 - a. Last year, the Port of Singapore handled a container throughput of nearly 37 million. Many of the boxes are moved automatically and remotely in the yard. At Pasir Panjang Terminal, operators supervising the move of up to six cranes each intervene by remotely controlling the cranes when issues arise. During 5G trials, latency of the images improved by up to 75%. This means less lag, more timely interventions and better efficiency. Similar technology will be deployed in our fully automated Tuas Megaport, which can eventually handle 1.5 times more containers.
 - b. In the near future, 5G-enabled robots or drones would be able to deliver packages to customers by communicating with sensors in smart streets and lifts. IMDA is already running trials in the Jurong Innovation District.
22. In time to come, I'm sure Singtel and its partners will demonstrate more exciting use cases for 5G.
23. At the same time, as we expand the adoption of 5G, we must be mindful of the potential for new cyber risks.
24. 5G systems are fundamentally different from those of previous generations, which were primarily based on hardware. 5G is more software-based, which opens up new potential vulnerabilities.
25. Digital infrastructure must be secure. Consumers and businesses must have confidence that our 5G networks are resilient. It is important to uphold Singapore's reputation as a trusted player, here and abroad.
26. This is why from the moment that IMDA called for proposals from the industry, we made clear the regulatory priority on security and resilience. Telcos also committed to adopt a 'zero-trust' posture. This means that telcos must first verify all activity before trusting it. There must also be constant monitoring and vigilance for suspicious activities.

27. Last year, IMDA announced it would establish a 5G Security Testbed programme. Under this programme, IMDA is working with telcos to strengthen your security posture and capabilities, for better assurance to consumers.
28. Telcos must also actively do your part. You need to build up not just the infrastructure and capabilities, but trust and confidence as well. This is fundamental for businesses and consumers to realise the full transformative potential of 5G.
29. It can also be an opportunity for you. Telcos which are able to offer innovative solutions to distinguish yourselves in the 5G cybersecurity space could, one day, export new products and services. Enhanced security investments can, therefore, provide telcos with strategic openings into overseas markets, allowing you to break new frontiers.
30. However we look at it, our 5G networks are an investment in digital infrastructure to support more innovations and add vibrancy to our digital ecosystem.
31. Even as we complete its rollout, the Government is looking ahead.
 - a. Last month, we announced that US\$50million (S\$70 million) has been set aside for Singapore's first Future Communications R&D Programme.
 - b. This programme will provide grants for research and translation in future communications technologies.
 - c. It will also provide scholarships for local talent to become experts in the field.
32. In conclusion, our digital economy has been remarkably resilient during this pandemic. We continue to attract good investments and create many good jobs.
33. 5G is a critical digital infrastructure that will further strengthen Singapore's position and promote more digital innovations to keep us competitive as a global business hub.
34. The well-loved author of children's books Roald Dahl said: "Those who don't believe in magic will never find it." My best wishes to Singtel – may your adventures with 5G bring many happy discoveries. Congratulations once again.

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