

Singapore aims to be ‘trusted enabler’ of quantum innovation: Josephine Teo

The minister notes that the Republic is moving from theory to application when it comes to quantum computing

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Minister for Digital Development and Information Josephine Teo says that Singapore must move from reactive regulation to proactive preparation, as the long-term implications of quantum computing cannot be fully predicted. PHOTO: MDDI

[SINGAPORE] Singapore aims to be a “trusted enabler of innovation” and a “bridge between research and application” for quantum technology, said Minister for Digital Development and Information Josephine Teo on Thursday (Oct 23).

She was delivering the opening address of the IBM Quantum Summit Asia-Pacific at the National University of Singapore (NUS). She also attended the launch of the IBM-NUS Research and Innovation Centre.

While IBM did not disclose exact figures, it noted that the centre is among the largest investments made by IBM Research in Singapore since 1985.

Unlike traditional computers, which use bits to process information as zeros or ones, quantum computers use quantum bits – or qubits – that can represent both at the same time. This vastly increases processing power.

This means that quantum computers are faster than their traditional counterparts, and can also solve problems that they cannot.

Singapore is not new to the quantum computing scene.

Last year, it announced that an [additional S\\$300 million](#) will be invested into quantum computing over five years, as part of its National Quantum Strategy. This is on top of the S\$400 million that was already invested.

Teo noted that quantum computing promises to reshape industries and economies, adding that Singapore is moving “from theory to application”. “We see use cases in [financial modelling](#), biopharmaceuticals and energy optimisation,” she said.

Oliver Dial, chief technology officer of IBM Quantum, pointed out that there has been some success in applying quantum computing in practice.

For instance, IBM collaborated with global financial services company [HSBC](#) to combine quantum and classical computational resources to analyse real-world, production-scale bond trading data.

The hybrid-quantum algorithm yielded improvements of up to 34 per cent over purely classical techniques, the research indicated.

Complexities must be navigated

However, quantum computing also brings about new complexities, Teo said. These include the risk that threat actors could break the encryption that protects nations’ most sensitive data and communications.

“This concern has prompted growing international action – to ensure that our systems are prepared before the risk becomes reality,” the minister added.

She noted that Singapore must move from reactive regulation to proactive preparation by building foundations now, as the long-term implications of quantum computing cannot be fully predicted.

She identified the “narrow” talent pipeline as another complexity.

Dial echoed the sentiment, adding that quantum computing is an “extremely multidisciplinary endeavour” which requires talents from computer science, electrical engineering, materials science and physics.

“It turns into a very challenging problem to find all the right people to fill those roles,” he said.

To train more talents in quantum computing, IBM is working with NUS faculty members to co-develop courses on topics such as quantum information science and the application of quantum computing.

In addition, as part of the National Quantum Scholarship Scheme launched in 2024, the government will support 100 PhD students and 100 master’s students in the field by 2030, Teo added.

While these student numbers are modest compared to other countries’ figures, she said that they are still significant to Singapore.

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