

# NTU Singapore sets up new quantum cybersecurity research program with gift from the Dieter Schwarz Foundation

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**Nanyang Technological University, Singapore (NTU Singapore)** is furthering research into securing quantum cybersecurity through a gift from the **Dieter Schwarz Foundation**, a German non-profit charitable foundation.

The **Quantum Sovereignty and Resilience (QUASAR)** programme aims to develop and strengthen cybersecurity technologies in the face of major advancements in quantum technologies and new disruptive cyberthreats. NTU will collaborate with the **Technical University of Munich (TUM)** on this programme and is also strengthening its existing collaboration with TUM with the signing of a Flagship Partnership.



**NTU Vice President (Industry) Professor Lam Khin Yong** and **Dieter Schwarz Foundation Managing Director for Science Professor Reinhold Geilisdörfer** formally inked the gift donation at a signing ceremony held on the NTU campus today.

It was witnessed by **NTU Board Chair Ms Goh Swee Chen**, **NTU President Professor Ho Teck Hua** and **Chairman of the Shareholders' Meeting of the Dieter Schwarz Foundation Professor Dr Peter Frankenberg**.

Professor Ho and **TUM President Professor Thomas Hofmann** also inked a separate agreement establishing the Flagship Partnership between NTU and TUM.

**Professor Ho** said: “NTU is grateful for the generous support from the Dieter Schwarz Foundation in enabling the creation of the Quantum Sovereignty and Resilience programme. The programme will benefit society by engaging in research that keeps the global digital economy safe and cybersecure.”

“This gift is a testament to the research excellence of NTU and our long-term partner, the Technical University of Munich, with whom we are extending our collaboration through a Flagship Partnership. We look forward to building bridges to a quantum-safe future — one where our data remains secure, our systems trustworthy, and our digital world resilient.”

**Professor Reinhold Geilsdörfer** said: “We are delighted to collaborate with NTU and TUM on this pioneering research programme in cybersecurity. Our partnership with these top universities underscores the Foundation’s dedication to advancing technologies that benefit society at large. We

are confident this collaboration will result in significant discoveries that will enhance the security and robustness of our digital systems.”

**Professor Thomas Hofmann** said: “As TUM President, I am very proud of our longstanding and very successful cooperation with NTU at our TUM Campus Singapore, both in education at TUM Asia and research at TUMCREATE. For us, it was the logical next step to enter into a Flagship Partnership with NTU, where NTU joins Imperial College London, Tsinghua University and the University of Queensland in a global network of excellent, technical oriented universities. We are really excited for the future collaboration with NTU on all levels, ranging from education through research to innovation, entrepreneurship, and lifelong learning.”



## Keeping critical infrastructure safe in the quantum era

Advancements in quantum computing pose a looming cybersecurity threat, as quantum technologies can easily crack encryption algorithms used in traditional cryptographic techniques.

The QUASAR programme, led by **NTU’s School of Electrical and Electronic Engineering**, aims to strengthen cybersecurity in a post-quantum world by examining how quantum technologies can be used in encryption, building quantum-safe systems, and ensuring the safety of future Internet of Things and 5G devices.

The programme's research areas include investigating quantum algorithms to crack and gain access to encrypted messages, also known as quantum cryptanalysis; designing post-quantum encryption that can withstand quantum cryptanalysis; building strongly secured hardware that make use of quantum cryptographic modules; and developing system architecture and mechanisms that can seamlessly integrate quantum security modules.

The potential impact of the Programme's research will lead to quantum-safe application security in key domains including critical infrastructure such as telecommunications, banking and finance, logistics and advanced manufacturing.

QUASAR will be led by a top cybersecurity academic appointed as NTU's first Dieter Schwarz Foundation Chair Professor in QUASAR. The Dieter Schwarz Foundation's gift will fund the programme's research and talent development pipeline through the recruitment and supervision of PhD students and post-doctoral research fellows. The gift also covers undergraduate and PhD scholarships, along with opportunities for students to undertake research projects, internships, and exchange programmes.

### **Affirming partnership with longtime collaborator TUM**

The Flagship Partnership between NTU and TUM elevates the already well-established relations between the institutions to the next level.

Beyond the QUASAR partnership, NTU and TUM will identify new opportunities of collaboration in areas such as sustainability in farming, health and biomedical engineering, space, and artificial

intelligence for additive manufacturing and materials science.

This expanded partnership will also explore the possibility of a double degree programme where undergraduates split their course of study between the NTU campus in Singapore and TUM in Munich.

Both institutions have strong innovation and startup ecosystems and will explore leveraging respective strengths through mutual access to funding ecosystems, incubation, and collaborating on student entrepreneurship opportunities such as hackathons.

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### ***About Nanyang Technological University, Singapore***

A research-intensive public university, Nanyang Technological University, Singapore (NTU Singapore) has 35,000 undergraduate and postgraduate students in the Business, Computing & Data Science, Engineering, Humanities, Arts, & Social Sciences, Medicine, Science, and Graduate colleges.

NTU is also home to world-renowned autonomous institutes – the National Institute of Education, S Rajaratnam School of International Studies and Singapore Centre for Environmental Life Sciences Engineering – and various leading research centres such as the Earth Observatory of Singapore, Nanyang Environment & Water Research Institute and Energy Research Institute @ NTU (ERI@N).

Under the NTU Smart Campus vision, the University harnesses the power of digital technology and tech-enabled solutions to support better learning and living experiences, the discovery of new knowledge, and the sustainability of resources.

Ranked amongst the world's top universities, the University's main campus is also frequently listed among the world's most beautiful. Known for its sustainability, NTU has achieved 100% Green Mark Platinum certification for all its eligible building projects. Apart from its main campus, NTU also has a medical campus in Novena, Singapore's healthcare district.

For more information, visit [www.ntu.edu.sg](http://www.ntu.edu.sg)