The U.S.-Australia Strategic Innovation Alliance

Quantum in Australia Factsheet

Overview

In 2025, Australia's quantum technology sector stands as one of the nation's most dynamic and internationally connected fields. The year has been marked by major conferences, new policy initiatives, and a growing recognition of quantum's potential to transform industries ranging from finance and logistics to healthcare and national security. The United Nations has designated 2025 as the International Year of Quantum Science and Technology, reflecting the global momentum and the pivotal role that Australia now plays within this landscape.[1]

National Strategy and Policy

Australia's approach to quantum technology is guided by the National Quantum Strategy, which was launched to provide a long-term vision for the sector's growth. The strategy outlines key priorities: supporting fundamental and applied research, building a skilled workforce, fostering industry partnerships, and creating pathways for the translation of research into commercial products. The government has committed more than $580 million to quantum initiatives, including a $611 million partnership with U.S. based PsiQuantum to build a utility-scale, fault-tolerant quantum computer in Brisbane. The National Reconstruction Fund has also allocated $650 million for critical technologies, with quantum as a central focus.[2]

Queensland has emerged as a key hub, with its own Quantum and Advanced Technologies Strategy launched in 2023. The state's initiatives include the Queensland Quantum Decarbonisation Alliance, which applies quantum solutions to industrial decarbonization challenges, and the hosting of international conferences on quantum in life sciences.[3]

[1] CSIRO, "The quantum promise," May 26, 2025.
[2] Department of Industry, Science and Resources, "Quantum," accessed June 2025; Austrade, "Big ideas about qubits at Quantum Australia Conference 2025," April 22, 2025.
[3] QUBIC, "International Year of Quantum 2025," June 9, 2025.

Research and Industry Ecosystem

Australia's quantum ecosystem is anchored by globally recognized research centres such as the ARC Centre of Excellence for Engineered Quantum Systems (EQU.S.) and the ARC Centre of Excellence in Quantum Biotechnology. These institutions, along with leading universities, have contributed to advances in quantum algorithms, quantum sensing, and silicon-based quantum computing.

The commercial sector is expanding, with startups like Diraq, Q-CTRL, and Quantum Brilliance bringing new technologies to market. Q-CTRL, for example, has developed quantum control software that is now used by IBM and NASA. Quantum Brilliance is focusing on room-temperature quantum accelerators, while Silicon Quantum Computing announced a world-first demonstration of atomic-scale logic gates in silicon in 2025.[4]
International engagement is a defining feature of the sector. The 2025 Quantum Australia Conference in Brisbane brought together nearly 700 attendees, including representatives from Google, IBM, Microsoft, Nvidia, and PsiQuantum, as well as government officials from Europe, Asia, and North America. The event highlighted Australia's role as a valued collaborator in the global quantum industry and showcased the breadth of international investment and partnership.[5]

Workforce and Skills

The competition for global talent is intense, with demand for quantum professionals far outstripping supply. Many Australian quantum experts are drawn to leading international hubs such as the United States, Europe (notably Germany and the Netherlands), and Canada, where significant investment and established quantum ecosystems offer advanced research opportunities and industry collaborations. In response, the government and industry have launched scholarships, fellowships, and repatriation programs designed to attract Australian quantum professionals back from overseas or retain emerging talent domestically. Centers like EQU.S. and other research institutions have initiated translation research programs to accelerate the movement of discoveries from the lab into practical applications, while also providing hands-on training for students and early-career researchers. These initiatives aim to strengthen Australia's quantum workforce by offering competitive opportunities and fostering collaboration between academia and industry.

[4] Austrade, "Big ideas about qubits at Quantum Australia Conference 2025," April 22, 2025.
[5] Quantum Australia Conference 2025, EventsAir, accessed June 2025.

Economic Impact and Market Outlook

The Australian quantum sector is forecast to generate $1.4 billion in revenue by 2030 and $3.9 billion by 2045. This growth is expected to support nearly 19,400 jobs, spanning research, manufacturing, software, and services. Quantum technologies are already being explored for their potential to improve logistics, enhance cybersecurity, and accelerate drug discovery. However, the uptake of quantum by industry remains in the early stages, with most applications still in the pilot or research phase.[6]

Challenges and Opportunities

Despite its strengths, the Australian quantum sector faces several challenges. Private investment is still limited compared to public funding, and many startups struggle to secure the scale of venture capital available in more mature markets. Translating research into commercial products is an ongoing challenge, as is the need for robust intellectual property frameworks and engagement with international standards bodies.

International Collaboration and Events

Australia's international profile in quantum continues to rise. The 2025 Quantum Australia Conference and related events have fostered new partnerships and highlighted the country's commitment to global collaboration. Delegations from the United States, including the Quantum Economic Development Consortium (QED-C), have visited to explore opportunities for joint ventures and research.[7]

[6] Austrade, "Big ideas about qubits at Quantum Australia Conference 2025," April 22, 2025.
[7] Austrade, "Big ideas about qubits at Quantum Australia Conference 2025," April 22, 2025.