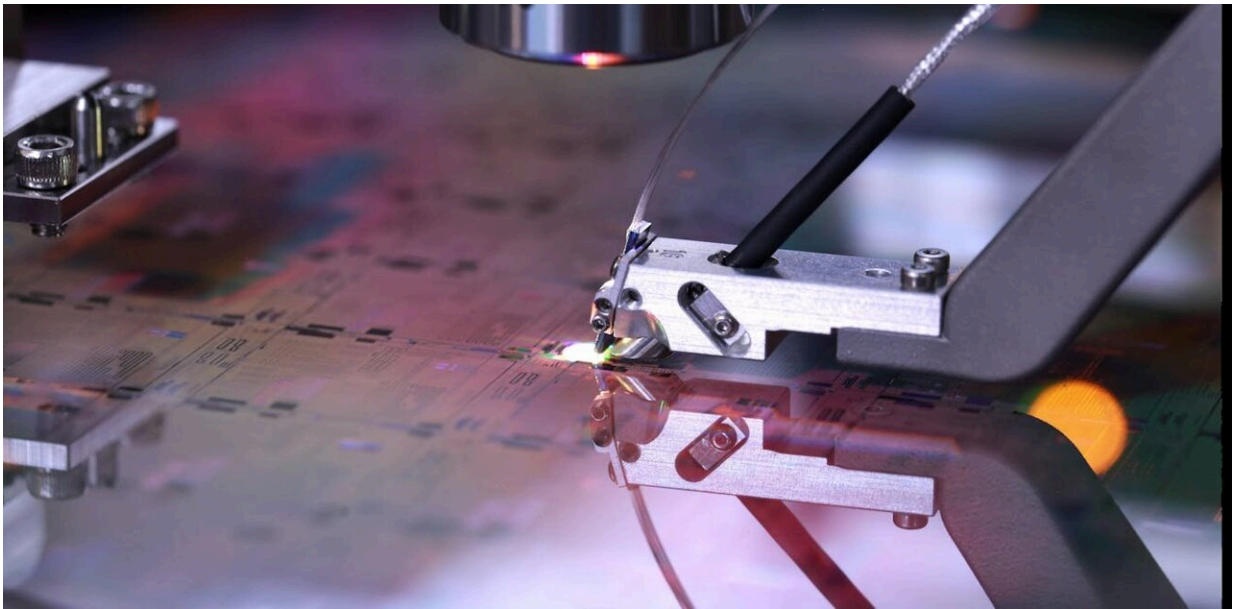


# Quantum tech is a high-stakes gamble. Here's how Australia can find a way forward

August 26 2024, by Susanne Lloyd-Jones and Kayleen Manwaring

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Credit: PsiQuantum

Last week, quantum computers were added to Australia's [Defense and Strategic Goods List](#) of controlled items facing export restrictions. That's because quantum technologies—which may soon provide huge advances in computing, communication and sensing—are rapidly growing in strategic importance.

The AUKUS partnership between Australia, the United States and the

United Kingdom includes arrangements for [sharing quantum technologies](#). Last year, [Australia and the UK agreed to cooperate on quantum](#) by sharing research and expertise and encouraging investment. [A similar arrangement](#) was signed with the US in 2021.

Governments and businesses are jostling for economic, strategic and defensive advantage. Nobody knows which approaches to the technology will prove successful, nor which countries will come out ahead.

Despite this uncertainty, Australia needs to make decisions about investment and regulation or risk being left behind. We think the best way to do this is by creating an accord between government, private industry, tech workers and researchers to create consensus on the best way forward.

## **A controversial investment**

In April, the federal and Queensland governments [invested A\\$466 million each](#) in a US company called [PsiQuantum](#), which is aiming to build "the world's first useful quantum computer." The deal was [widely criticized](#) for a lack of transparency and for bypassing Australian companies.

Investing in quantum technology is highly uncertain and complex. Researchers around the globe are [making rapid progress](#), and calls for countries to develop their own [sovereign capability](#) are growing louder. At the same time, there is [no shortage of hype](#) from companies and researchers promoting their own work.

Giant companies such as [Google](#), [IBM](#), [Microsoft](#) and [AWS](#) are sometimes seen as "leaders" in quantum tech, but there are many other players in the field.

Several are based in Australia. These include [research institutions](#) as well as companies such as [Quintessence Labs](#), [Diraq](#), [Quantum Brilliance](#), [Silicon Quantum Computing](#) and [Nomad Atomics](#).

Last year, our government published a [national quantum strategy](#), but it's unclear how it should be implemented in the current messy environment, even with CSIRO's [roadmap](#).

In April, the University of Sydney was awarded A\$18.4 million to set up [Quantum Australia](#) to be the "[single front door](#)" for quantum in Australia. Quantum Australia is in its infancy and it's still unclear what its governance capacity will be.

More broadly, tech policy researchers have called for a [more coordinated and regulated](#) national approach to technology policy.

## **Is it time for a national accord on quantum?**

Other countries are taking a much stronger approach to quantum coordination and cooperation.

In Europe, the [Quantum Flagship](#) establishes a working agreement between industry, governments and academia. In the US, [QED-C](#) established a consortium of stakeholders from government, academia, and industry to "identify gaps in technology, standards, and workforce and to address those gaps through collaboration." In the UK, the [National Quantum Computing Center](#) brings together businesses, the [research community](#) and government to enable the UK to secure a competitive position in the quantum industry.

What might this kind of coordination look like in Australia? We think it might look like an accord: a structured and formal mechanism for articulating a range of different agendas.

[Our research](#) looked at quantum tech arrangements in Australia, the UK, the US, India and the EU. We found examples of inclusive, structured, formal arrangements that feature government, [private industry](#), industry leaders, academic bodies and academic researchers.

Europe has the most complex and far-reaching governance structure with its [Quantum Flagship](#). We think an Australian accord needs to include representatives of the tech workforce too.

In the 1980s, Australia's Prices and Incomes Accord famously forged a "[working partnership](#)" between government, employers and unions. It came at a time of economic uncertainty in Australia as market liberalism was sweeping through the English-speaking world.

Could a quantum accord achieve a similar consensus today?

## Why an accord?

Technological innovation and sovereign capability are key pillars of the government's [Future Made in Australia](#) funding and reform package. This ambitious agenda will require commitment, coordination and leadership.

At present, government, local companies and local researchers are [divided](#) on the best way forward for quantum tech in Australia. A quantum tech accord could help address these conflicts. It could also help soothe tensions between the short-term interests of individuals and organizations and the long-term interests of the nation.

An accord could be a structured and consensus-building way to approach contested ideas about innovation, ethics, sovereignty, competitive advantage, regulation and skills. It could also help the Australian public better understand quantum technologies and the importance of domestic

investment in these technologies, given there is little current understanding.

## **A practical mechanism for facing uncertainty**

It is not easy to govern in the face of uncertain technological advancements and innovation. There may be no "right answers" to many decisions.

The advantage of a quantum tech accord is that it represents a practical mechanism pursued within economic, geopolitical and security constraints. It could provide an overarching governance structure and framework for coordinated policy and regulatory decision-making that favors consensus over seeming big-dog-eat-little-dog deals.

A quantum tech accord could embed Australia's democratic values and governance into its purpose, terms and frameworks. This would also serve to establish a foundation for the ethical and responsible use of [quantum technologies](#) in the future.

Successive governments have [committed billions](#) to growing Australian quantum technology and fostering innovation. As a result of decades of sustained investment and funding of research and education, Australia's growing quantum industry is up there with the best in the world.

Science and Industry minister Ed Husic has said the [government does not want to repeat the mistakes of the past](#) and miss the quantum wave. Maybe a quantum tech accord is an option to find a practical way forward.

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