PHOTONIC AND QUANTUM TECHNOLOGIES IN AUSTRALIA AND NEW ZEALAND

2026 INDUSTRY REPORT



THE AUSTRALIAN AND NEW ZEALAND OPTICAL SOCIETY

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ABOUT THIS REPORT

The output data in this report is revenue generated from the direct manufacture of photonic and quantum technologies components, goods and services in Australia and New Zealand. This, the number of employees, salaries, and companies has been supplemented with qualitative information from interviewees working in both countries. These contributors are listed at the end of this report. President of ANZOS, Professor David G Lancaster and Past-President Frédérique Vanholsbeeck, jointly commissioned the report, providing oversight and editorial review.

The data was updated in November 2025 based on the last full fiscal year reported at the time. Revenues from end-market systems or services are not included. A substantial number of new companies have been identified and added since the analysis was last undertaken in 2024 and these account for most of the growth. This is typical in markets where sector surveys are relatively new.

Data analysis was undertaken by Dr. John Lincoln of Harlin Ltd, with the support of the International Society for Optics and Photonics (SPIE). The SPIE survey methodology undergoes continuous process improvements. Accordingly, the Gross Value Added number for 2024 has been restated (as $4.27bn, reported as $5.2bn in 2024). In addition, SPIE is switching to annual global updates. An exchange rate of A$1 = NZ$1.21 was used. An updated methodology was used for apportioning profits where data was missing. A link to this methodology is provided here. https://photonicsuk.org/wp-content/uploads/2025/06/UK_Photonics_2025_The_Hidden_Economic_Engine_online.pdf

This report is representative of the industry, but not an exhaustive account.

Author: Anna Verboeket. **Data and insights:** Dr. John Lincoln, Harlin Ltd
Cover photo credit: Te Whai Ao — Dodd-Walls Centre

SPONSORS

THE AUSTRALIAN AND NEW ZEALAND OPTICAL SOCIETY

ANZOS is a non-profit organisation for the advancement of optics in Australia and New Zealand. Formed in 1983 as the Australian Optical Society (AOS), the Society embraces anyone contributing to or interested in optics in the widest sense. ANZOS is a member of Science and Technology Australia (STA, the primary science representative in Australia,) and a constituent member organisation of the Royal Society Te Aparangi (RSNZ, the primary science representative in Aotearoa New Zealand).

SPIE.

SPIE is the international society for optics and photonics. The society strengthens the global optics and photonics community through conferences, publications, and professional development, bringing together engineers, scientists, students, and industry leaders to advance light-based science and technologies. Inspired by the transformative power of photonics to enhance life around the globe, SPIE has contributed more than $24 million to the international optics community over the past five years through advocacy and support, including scholarships, educational resources, travel grants, endowed gifts, and public-policy development.

CE QuTech
Industrial Transformation Training Centre

QuTech is an Australian Research Council (ARC) Training Centre focused on educating and training Masters and PhD students in current and emerging quantum technologies. By bringing together students from diverse science and engineering backgrounds across three universities, QuTech fosters collaboration, knowledge sharing and innovation, complemented by technical, entrepreneurship, management and workplace-focused training with its six industry partners.

Te Whai Ao
Dodd-Walls Centre
for Photonic and Quantum Technologies

Te Whai Ao — Dodd-Walls Centre - New Zealand's Centre of research excellence in photonic and quantum technologies has more than 220 students and researchers from seven partner institutions working in quantum optics, photonics and precision atomic physics. Its globally recognised team regularly collaborates with international peers.

COMBS

COMBS - The Australian Research Council Centre of Excellence in Optical Microcombs for Breakthrough Science (COMBS) brings together multi-disciplinary researchers from eight universities with expertise spanning optical physics, photonic chip technology, materials science, and sophisticated digital and microwave electronics. The team uses optical frequency combs to drive transformations in the fields of biomedical imaging, communications, precision measurement, and astronomy.

QUBIC
The Australian Research Council Centre of Excellence in Quantum Biotechnology

QUBIC aims to pioneer paradigm-shifting quantum technologies to observe biological processes and transform our understanding of life. Their (or Our) research programme is developing quantum technologies that go far beyond what is possible today, from portable brain imagers to superfast single protein sensors.

uniservices
IDEAS TO LIFE RANGAHAUA KIA WHAI HUA

UniServices grows and commercialises the University of Auckland's research and expertise, connecting industry, government and academia to invest in startups, manage IP, and deliver real-world impact.

INTRODUCTION

DEFINITION AND IMPORTANCE

Quantum physics is the study of matter, energy and their interaction at the most fundamental level. The OECD (Organisation for Economic Co-operation and Development) says

"quantum technologies harness the unique behaviour of particles at atomic scales to sense, process and transmit information."[1]

This report has previously defined photonics as

"all science and technology related to the transmission and manipulation of light."[2]

So where and how do they align? Photonics underpin many core quantum technologies. Photons (particles of light) can be carriers of quantum information, where they can be engineered as quantum bits (qubits) containing the quantum properties of superposition and entanglement. Because photons travel long distances with low noise and loss, they're ideal for quantum communication and quantum networks.

Quantum bits come in six different types or "modalities", none of which are yet proven as the winning technology. One of these is photonic, the others are: superconducting, trapped ions, neutral atoms, quantum dots, and nitrogen vacancy centres in diamonds. Quantum systems are extremely fragile and often operate at cryogenic temperatures or in isolated environments. Classical systems, whether photonic or electronic, typically work at room temperature. Indeed, the link between these mature and emerging technologies is so great that Spectaris, the German photonics industry group boldly asserts "No quantum without photonics."[3]

PHOTONICS VALUE CHAINS

A common expression when talking about photonics is that light is everywhere and that it is a significant enabler of global economies. In the United Kingdom, the Photonics Leadership Group says photonics is vital to at least 20% of the European Union's economy, and drives innovation in manufacturing, defence, healthcare, and energy.[4]

Core photonic components, such as crystals, optical fibre, and semiconductor substrates are used to make medical imaging machines, 3D-printed munitions, lasers, LED displays, solar panels, and robots. See fig 1. Quantum technologies are already in use in hybrid-computers, space communications, positioning, timing, and navigation as well as simulating materials.

The International Society for Optics and Photonics (SPIE) has identified ten strategic value chains, including quantum technologies

- Displays (including wearables and holograms)
- Artificial, virtual, and mixed reality
- Medical
- Solar and photovoltaic technologies
- Defence and security
- Lighting
- Autonomous systems (drones, self-driving cars, industrial robotics)
- Advanced manufacturing (3D printing, lasers, vision-guided robotics)
- Optical communications and information
- Quantum technologies

VALUE

Photonics revenues are calculated at each level in the value chain. SPIE, in its global report for 2025, says internationally, annual revenues from production of optics and photonics core components reached US$345bn in 2023 (when converted from other currencies).[5]

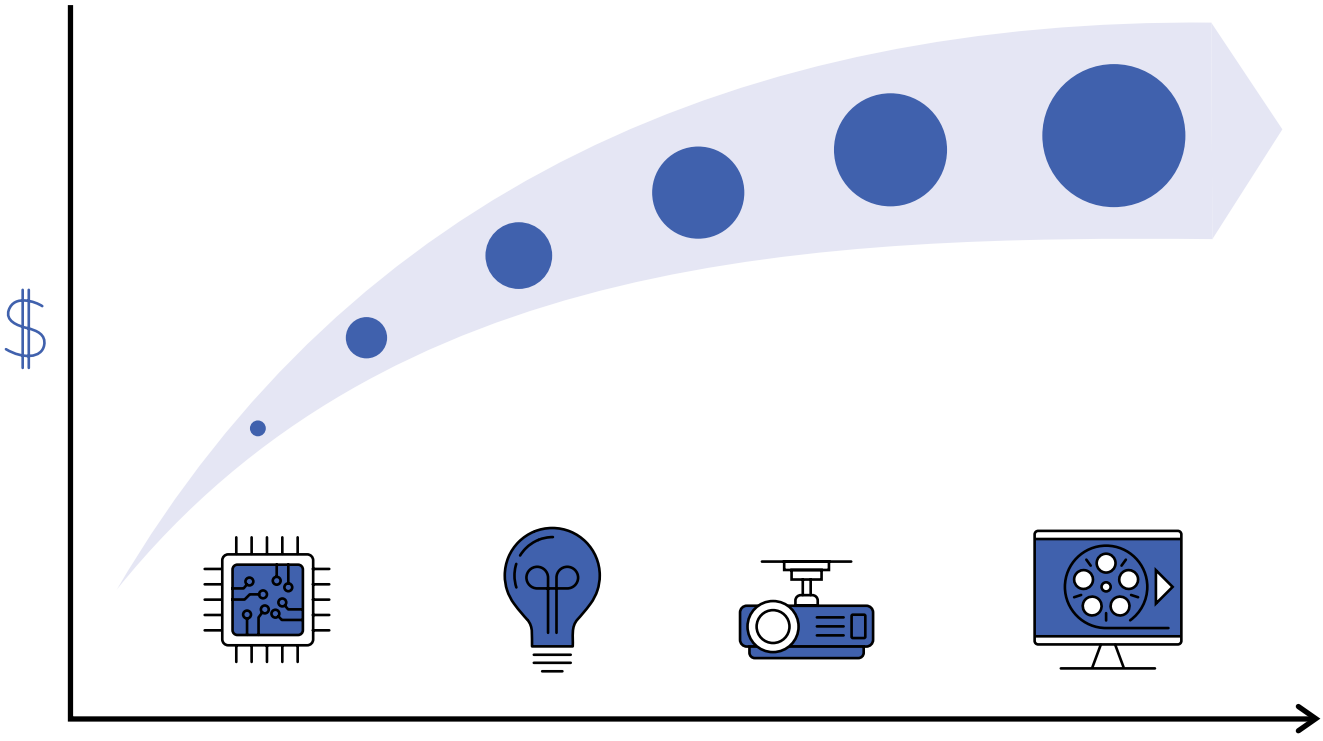
According to TEMATYS, the entire global photonics market was worth US$865bn in 2022, growing an average of just under seven percent each year since 2011.[6] More recent sources suggest the value of the whole end-to-end photonics market is now US$1 – US$1.05T.[7]

Quantum technologies: computing, communications, sensing, and materials each have their own market.

The Quantum Economic Development Consortium (QED-C) suggests total quantum technology revenues across all types reached US$1.9bn in 2025.[8] Theirs is a modest estimate compared to McKinsey, which finds global quantum computing revenues, alone, totalled more than US$1bn that year.[9] Quantum sensing revenue estimates differ, with McKinsey reporting US$2.8 – US$3.1bn in 2025,[10] while QED-C suggests they were closer to US$470m.[11] Estimates of global quantum communications revenues range from US$1.1bn[12] to US$1.3 – $1.6bn[13] in 2025. Different methodologies have been used across the data gathering.

PHOTONICS VALUE CHAIN EXAMPLE

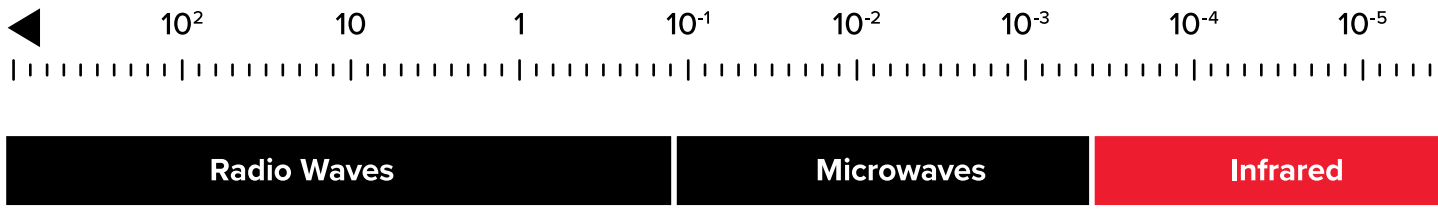
(Fig. 1 Source: SPIE)



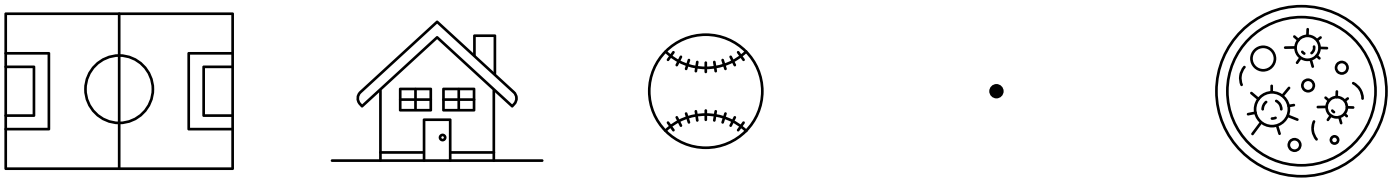
PHOTONICS IS EVERYWHERE IN OUR WORLD

(Fig. 2 Source: SPIE)

Wavelength (m)

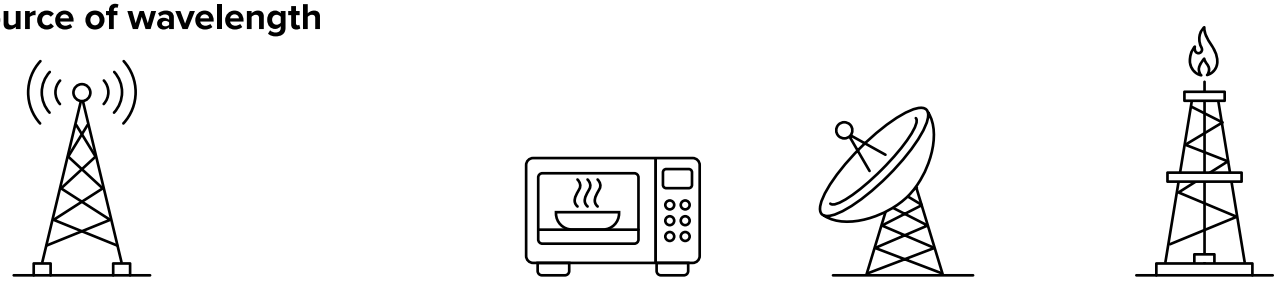


Size of wavelength



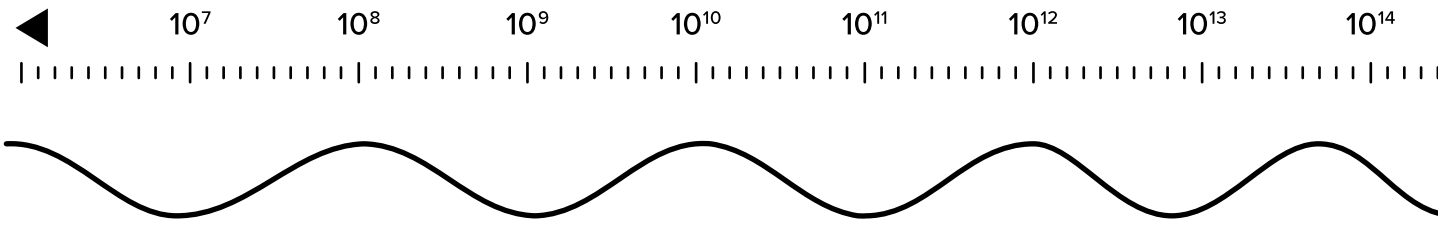
Soccer Field | House | Baseball | This Dot | Cell

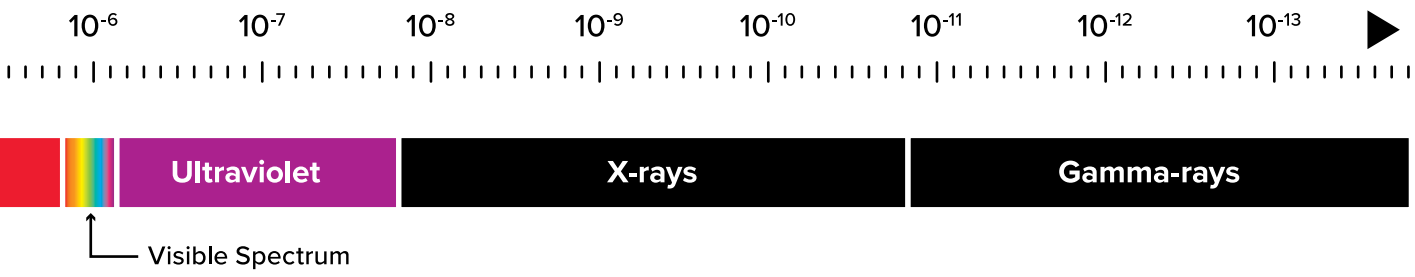
Source of wavelength

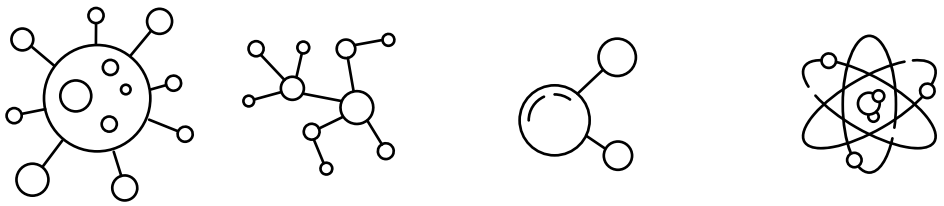


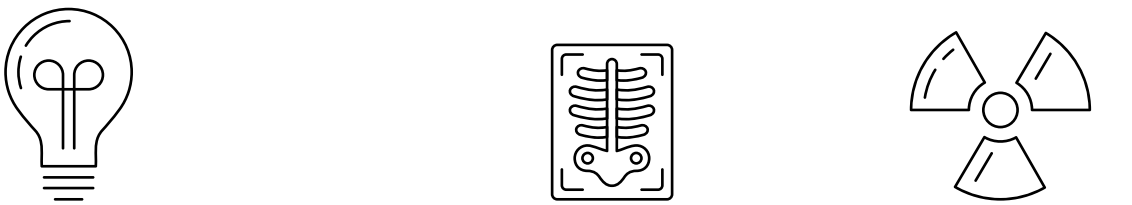
Radio | Microwave Oven | Radar | Flare Stack

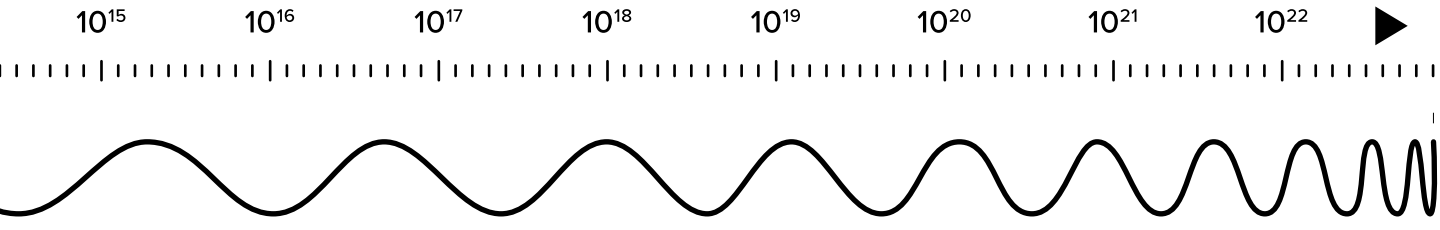
Frequency (Hz)




10^{-6}
10^{-7}
10^{-8}
10^{-9}
10^{-10}
10^{-11}
10^{-12}
10^{-13}
Ultraviolet
X-rays
Gamma-rays
Visible Spectrum


Virus
Protein
Molecule
Atom


Light Bulb
X-ray Machine
Radioactive Elements


10^{15}
10^{16}
10^{17}
10^{18}
10^{19}
10^{20}
10^{21}
10^{22}

EXECUTIVE SUMMARY

THE DITCH IS A DIGITAL DIVIDE

The growth rate of the photonic and quantum technologies industry in Australia and New Zealand has improved since 2024, despite cuts to research funding in both countries and volatile economic conditions. However, it remains below the international average. New start-ups are continuing to emerge but warnings that the innovation pipeline is at risk and funding is insufficient to compete are loud and persistent.[14] A host of new infrastructure and academic institutions have emerged in Australia, but there's been no change in New Zealand.

The International Society for Optics and Photonics (SPIE) data for Australasia demonstrates that photonic and quantum technology revenues have increased from A$6bn – A$7.4bn and Gross Value Added – a proxy for Gross Domestic Product – has risen to A$4.4bn. When split out, Australia's annual photonics core components goods and services output is A$5.6bn and New Zealand's is A$1.8bn (NZ$2.18bn). The SPIE data suggests that the number of people employed in the Australian industry has declined[15] and anecdotal evidence later in this report supports this.

By way of comparison, Scotland's photonics output is now more than £1.5bn, with revenues up by more than 50% since 2019.[16] SPIE reports that the top five revenue producing countries (in order) are Japan, the United States, South Korea, China and Taiwan.[17]

Since the last ANZOS market report in 2024, both governments have: reviewed and reprioritised their science funding; changed their criteria for assessing academic success; reviewed tax incentives for research and development; and released new defence strategies. Australia's use of artificial intelligence (AI) has led to the establishment of a government office, while NZ has low adoption of AI by international standards.

Australia has enjoyed consistent political support for photonic and quantum technology for over a decade. The market demonstrates growing maturity and a transition from research to application. The country's challenge in the short-term will be to fill the increasing number of roles available in industry. It has adopted a policy of international collaboration and is attracting foreign investment, alongside a deepening relationship with the United States. Industry players are moving from proof-of-concept through use cases, to co-investment in research and development at scale. There have been at least ten quantum start-ups In Australia in the last year.

By comparison, New Zealand has been slower to change economic priorities and associated funding, but more money is starting to flow into advanced technologies. Widely touted as the most significant science system reforms in a generation, the 2026 budget marked a significant transfer of funds (including NZ$56m from primary products) to technology and a greater focus on commercialisation. Venture capital firms had a record year and deep tech is considered a strength. At the same time, the profile of photonic and quantum technologies has been raised considerably and an industry ecosystem is being developed. A coalition of the willing is forming.

In the face of global urgency and investment in quantum applications, a "discovery" process to determine the viability of a quantum research platform has, at the time of writing, run into New Zealand's pre-election period of restrained decision making. During the eight months of deliberation, at least four new quantum and photonic start-ups have emerged. Defence, security, quantum communications, and natural hazard assessment are leading areas of demand in both countries.

As McKinsey puts it,

> "As capital, talent, and access tighten, the cost of waiting is rising."[18]

RECOMMENDATIONS

1. Develop a national photonics and quantum technology strategy for New Zealand

ANZOS and Te Whai Ao — Dodd-Walls Centre for Photonic and Quantum Technologies should lead the co-design of a national strategy for photonics and quantum technologies. The strategy should propose co-ordinated activity across research talent, infrastructure industry development for economic growth and international competitiveness.

2. Review and update the National Quantum Strategy 2023 to prioritise photonics research and development.

ANZOS recommends that in considering the continued remit of Quantum Australia, the Australian Government acknowledge the importance of national photonics capability to the growing quantum industry. That it refreshes the 2023 strategy to include photonics alongside quantum within the organisation's purview.

3. Support increased national investment in research and development

ANZOS should formally support the calls from Science & Technology Australia, the Australian Academy of Science, the New Zealand Association of Scientists and the Save Science Coalition to increase national expenditure on research and development to 3% of GDP. Increased investment should support the full research and innovation ecosystem.

4. Establish a trans-Tasman capability and infrastructure mapping initiative

Working with Chief Science Advisors, Centres of Research Excellence (CoREs), Centres of Excellence and relevant government agencies, ANZOS should support photonic and quantum technology capability mapping across both countries. New Zealand should establish and maintain a nationwide map of nationally significant research infrastructure, using photonic and quantum technologies as a pilot.

5. Improve sector visibility and standards readiness

ANZOS should continue improving and validating its industry database in collaboration with Quantum Australia, Tech New Zealand and other ecosystem organisations. Governments should develop better mechanisms to identify and measure quantum and photonics activity, recognising the limitations of existing ANZSIC classifications. Australia and New Zealand should actively participate in the development and adoption of emerging ISO and IEC standards for quantum technologies.

6. Reduce barriers to industry collaboration and international investment

The New Zealand Government should review barriers that discourage domestic and international investment in science and innovation. Particular attention should be given to reducing the cost of industry engagement with universities and public research organisations.

7. Strengthen research translation and industry engagement

Australia and New Zealand should continue reducing barriers to research translation (including for indigenous research) by supporting industry partnerships, researcher mobility, access to prototyping facilities, international market development, investment attraction and entrepreneurship support.

8. Develop workforce pathways for quantum and photonics industries

Governments, universities and industry in both countries should work together to develop clear education and workforce pathways for photonics and quantum technologies, including specialised pathways for under-served or under-represented communities.

ANZSIC, Australian and New Zealand Standard Industrial Classification
ISO, International Organization for Standardization
IEC, International Electrotechnical Commission

HEADLINE NUMBERS

CONTEXT

This report is written against a backdrop of global uncertainty with wars in Ukraine and the Middle East driving the growth of defence technology, sharpening supply chain strategies and bringing sovereign capability to the fore.

Geopolitical competition has ramped up considerably since 2024. The United States (US) is treating quantum computing as sufficiently strategically important to justify public ownership. In May, the Trump administration took US$2bn in equity stakes[19] across nine quantum companies in a major push to secure US leadership in the technology. In June, an executive order required all critical information systems to accelerate their transition to post-quantum-cryptography (PQC) for use by the end of 2030. With recent estimates bringing the date for PQC forward to 2029, agencies will be required to report on progress.[20]

A European Union-wide quantum strategy was developed in 2025, with a Quantum Act to follow later this year. This has been underpinned by intensified Franco German industrial and policy cooperation in May.[21]

Artificial Intelligence (AI) is being blamed for thousands of technology company layoffs since 2025. It appears companies are either genuinely experiencing increased productivity, or they are shedding staff in order to pay for AI models.

The OECD reports that 18 OECD countries plus the European Union have adopted national quantum strategies as of November 2025. It says since 2013 state funding of roughly US$55.7bn has been made for quantum science and technology with economic opportunity and national security the key motivations.[22]

STATE OF THE PHOTONICS AND QUANTUM TECHNOLOGIES INDUSTRY IN AUSTRALASIA 2024 – 2025

(Fig. 3 Source: Dr John Lincoln, Harlin Ltd)



AUSTRALIA	NEW ZEALAND
Annual output **A$5.6bn**	Annual output **NZ$2.18bn**
People employed **21,200**	People employed **5,300**
Companies **1402**	Companies **717**
Gross value added (GVA) **A$3.48bn**	Gross value added (GVA) **NZ$1.18bn**

Note: At least 100 companies operate across both countries

ANALYSIS

The data suggests that total annual photonic and quantum core components, goods and services output grew from A$6bn to A$7.4bn between 2024 — 2025. Australia's revenue was A$5.6bn and New Zealand's A$1.8bn. For Australia and New Zealand together, the Compound Annual Growth Rate (CAGR) over two years since the last report, demonstrates a fairly stable upward trajectory of 11.1%, which is in line with annual growth rates internationally.

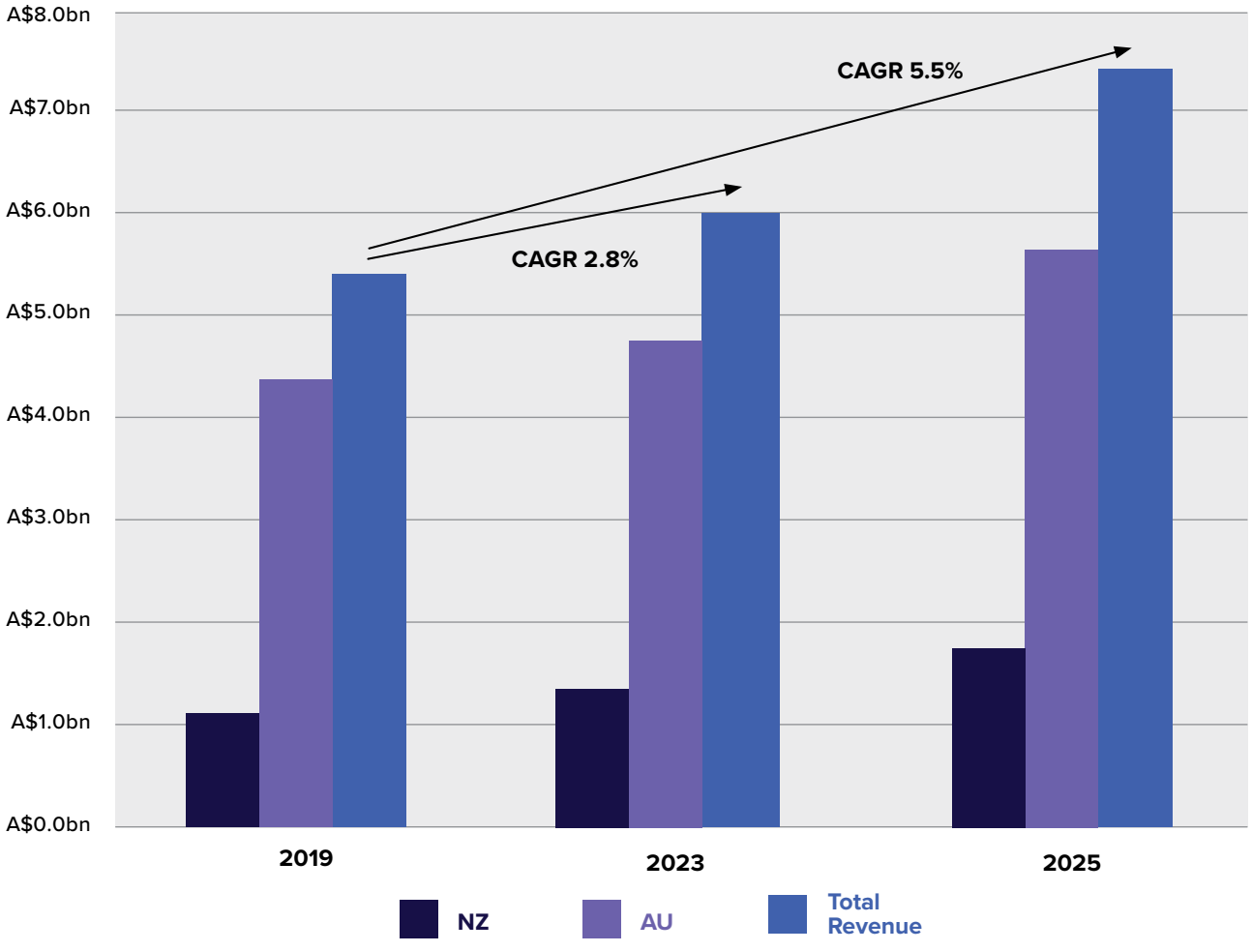
Our focus is the longer-term trend, rolling CAGR since ANZOS reporting began in 2019. This shows an improving rate of growth, increasing from 2.8% (2019-2023) to 5.5% (2019-2025). It demonstrates the extent to which COVID-19 was still impacting the sector at the last report. It now indicates recovery, consistent with, but still below the average worldwide. The global average rolling compound growth rate is around 6% according to the International Society for Optics and Photonics' (SPIE) 2025 global report,[23] or 6.8% according to TEMATYS and Photonics21.[24] Scotland's CAGR for 2019-2025 is around 7%.

Globally SPIE reports a trend of falling photonic and quantum employees and this is reflected in the Australian data, but not so for New Zealand. Factors for the drop in Australia could include adoption of AI workflows in technology roles and automation. The numbers demonstrate the inability to find skilled staff as well as the maturing of the photonic and quantum industry.

OUTPUT AND ROLLING COMPOUND ANNUAL GROWTH RATE
2019 - 2025

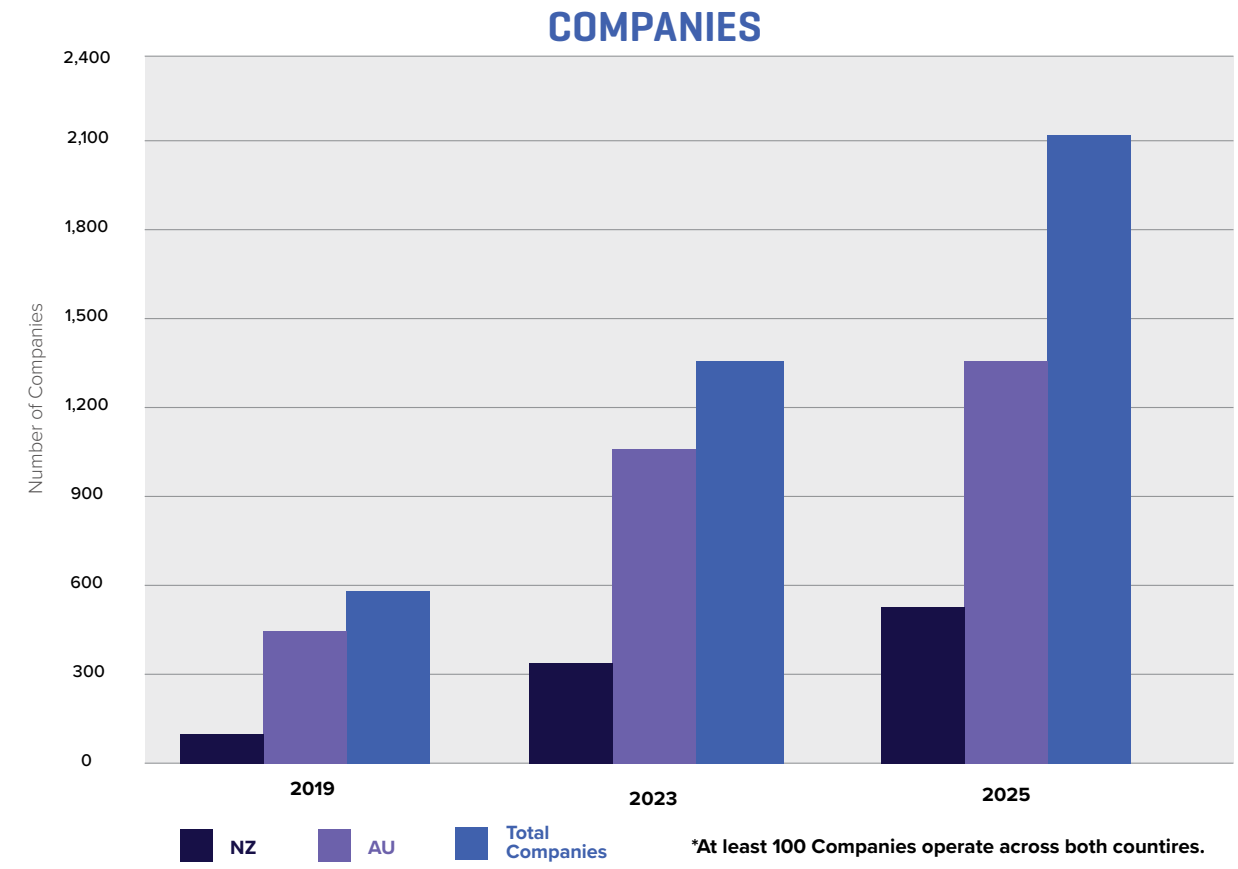
Revenue generated from the direct manufacture of photonic and quantum technologies components, goods and services.

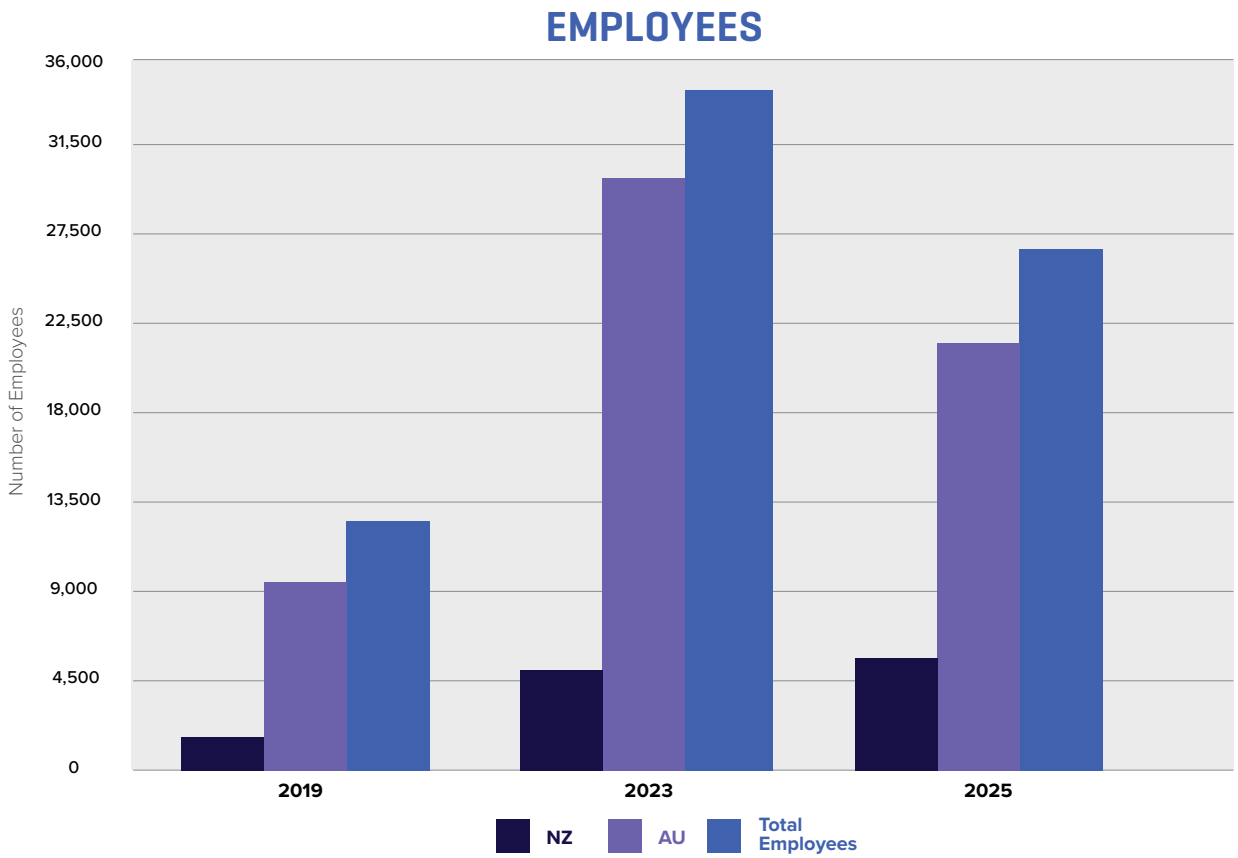
Fig 4. (Dr John Lincoln, Harlin Ltd)



COMPANIES AND PEOPLE EMPLOYED (NOT ROLES) 2019 - 2025

Fig 5. (Source: Dr John Lincoln, Harlin Ltd)





PROGRESS SINCE 2024



AUSTRALIA

Australia has continued to implement its National Quantum Strategy 2023, with stable leadership under a two-term Labour Government and two Ministers responsible for science since 2022. Policy demonstrates a strong emphasis on commercialisation, international collaboration and sovereign capability.

Since September 2024, Australia's quantum and photonics sector has moved into a scale-up phase, characterised by hundreds of millions in new public research and development funding, large private capital raises and infrastructure builds, policy alignment with defence, and a growing convergence of quantum and photonics in real-world applications.

Quantum Australia was created to establish a consortium of industry, research and government organisations with nodes.[25] At the time of writing, its funding is due to come to an end next year.[26] Quantum Australia has made significant inroads in building a quantum ecosystem in a short time. The relationship between industry and academia is closer than it was in 2023, before the last edition of this report.

Two new funding vehicles have been introduced by the Federal Government since 2023 to advance the quantum and photonics industry. There is the Critical Technologies Challenge Programme,[27] and the National Reconstruction Fund,[28] a special purpose Crown entity, which can invest in infrastructure as well as operations.

Two years ago, the Strategic Examination of Research and Development was underway. The final report, called Ambitious Australia, found the existing system overly complex, making 20 recommendations, from a new governance framework to tax incentives, reforms to build a mature investment ecosystem and urgent action to develop skills and attract talent. At the time of writing, some scientists expressed scepticism about whether the recommendations will be executed, with some suggesting the targets are "aspirational".

The report's overview was stark. "Our RD&I system is not just atomised. Funding is declining and pressure increasing. There are too many programmes, upwards of 150 in the Commonwealth alone. Some programmes involve multiple grant schemes, few of which fund the actual cost of the research."[29]

In May 2026 the Federal Government announced that Australia would join the European Union's flagship research and innovation programme, Horizon Europe, next year. This would give the country access to approximately A$155bn.[30]

Alongside the strategic examination of the research and development system and new funding models, two Centres of Research Excellence in quantum technologies and two quantum related Industrial Transformation Training Centres have been opened since 2024. Further, a 27-member strong Quantum Decarbonisation Alliance, has been launched, hosted by the Centre of Excellence in Quantum Biotechnology with A$10m from the state government.

In mid-July Prime Minister Albanese announced the creation of an Office of AI to accelerate implementation of Australian standards, require data centre operators to underwrite their own new power supply and protect copyright.

NEW ZEALAND

By comparison with Australia, New Zealand has had four Ministers of Science, Innovation and Technology since 2022, and one change of government. A new Science Innovation and Technology Strategy was introduced in January 2025.

The strategy accepted many of the recommendations made by the Science System Advisory Group. These included the creation of a Prime Minister's Science Innovation and Technology Council to provide long-term direction and oversight of the system. It simplified funding bodies to create a single entity, now Research Funding New Zealand. Four economic pillars have been developed to guide research and development. The Government has reduced seven Crown Research Institutes into four Public Research Organisations (PROs) and each of these has now been formed.

The New Zealand Institute for Advanced Technology PRO reflects the "technology for prosperity pillar". In September 2025, its first platform was announced, through a seven-year NZ$71m investment in future magnetic and materials technologies with Paihau — Robinson Research Institute. That was followed by a contestable process to form an artificial intelligence (AI) platform and in December 2025 the Government said it would undertake a "discovery" process to determine whether to include a quantum technologies platform.

Also, in 2025, the Government launched an applied doctorates scheme. When funded, it received less than half the figure originally announced by the previous Government.

In April that year, the Government dropped any target for research and development funding measured as a share of Gross Domestic Product (GDP).[31]

The earlier target for successive governments had been to lift total research and development to 2% of GDP by 2028, but this was abandoned in a policy reset after successive efforts to reach it had failed.

New Zealand was the last country in the OECD to publish an AI strategy, in mid-2025. The guidance was considered very light touch and garnered a tepid response locally.

Although security has been a key theme in the world of photonics and quantum computing, the New Zealand Government has been largely silent on post-quantum cryptography. When its Government Communications Security Bureau released a cyber security strategy in February this year, it was panned by many in the industry as lacking real teeth.[32]

The establishment of a photonics and quantum technology community in August was widely welcomed. It followed two years of profile raising and stakeholder engagement to create a forum for greater industry education and policy development.



Prof. Lezanne Ooi & Dr Dzung Do-Ha, brain theme research

Cr. QUBIC

KEY GROWTH INDICATORS

FUNDING & INVESTMENT

Globally, growth is being driven by measurable technical progress and expanding public and private investment, according to the Quantum Insider. It reports there was US$56.7bn in total public funding for quantum technologies and US$4.9bn in venture capital in 2025, alongside a 14% increase in the pure-play workforce.[33] Hardware development now dominates funding allocation, reversing the software focus of 2023 – 2024.[34]

PUBLIC FUNDING

AUSTRALIA

Australian research funding as a percentage of Gross Domestic Product is now 1.7% against an OECD average of 2.7%. The Ambitious Australia report carried a warning.

> "The ongoing success of the sector depends on sustained funding. Yet funding for basic research provided through competitive grants has been in real decline for over a decade."[35]

Two new funding vehicles have been introduced by the Federal Government since 2023 to advance the quantum and photonics industry in Australia. The first is the Critical Technology Challenge Programme (CTCP), providing almost A$36m, until the end of 2027. It provides support to test and demonstrate solutions to market-led challenges of national significance. By February 2026, eight projects including mine site sensors, data centre cooling, and optical imaging had made it through the first round. A second round of funding is underway.[36]

The other main funding and financing entity is the National Reconstruction Fund (NRF). It is a special purpose Crown corporation which provides debt, equity and guarantees, investing A$15bn "to diversify and transform" Australia's industry and economy. There's no end date to this fund and investments are considered for their potential in the medium-to long-term.[37]

In its May 2026 budget, the Federal Government axed what had been a popular programme, Australia's Economic Accelerator.[38] It had committed more than A$240m, since 2022, to drive the commercialisation of research. Its closure without warning raised the ire of the country's scientific community, hundreds of whom had made grant applications.[39] A$800m in previously unallocated funds were redirected to support Australian science and research.

The CTCP and the NRF complement Australian Research Council (ARC) funding. The ARC distributes around A$800m per annum through the National Competitive Grants Programme (NCGP), for projects across the Discovery and Linkage Programmes. The NCGP has recently been reviewed, and a final report was released in July 2026. The ARC had called for the programme to be brought back to its initial mission and legislative intent; to fund early-stage research.

Projects in the Linkage Programme have required a cash and in-kind contribution from the industry partner. Chief Executive of the Australian Research Council, Professor Ute Roessner, says for some schemes, the cash contributions from the private sector have risen up to 60 cents for every dollar the ARC funds.

"We'll see what cash contributions might be appropriate, depending on the different schemes as we develop them. We need to make it easier for industry to become part of, but also not lose sight of the cash that has come through those partnerships."

Australia's 2026 budget also delivered an additional A$387m over four years for the Commonwealth Scientific and Industrial Research Organisation (CSIRO). That's on top of CSIRO's annual appropriation and A$278m received from the Government last year.[40] Scientists broadly welcomed the creation of a National Resilience and Science Council in line with the Ambitious Australia report's recommendation for a National Innovation Council.[41,42]

Photonic and quantum-related funding from state governments has increased notably since 2023. Victoria, New South Wales and South Australia are the states most invested.

The Federal Government announced changes to the Research and Development Tax Incentives in the 2026 – 2027 Budget intended to encourage firms to undertake large scale research and development in Australia.[43] The ARC is developing a new framework for research excellence and impact evaluation.

It is exploring flexible, data-driven capabilities, after stakeholders called for incorporation of responsible research assessment principles.[44]

NEW ZEALAND

As in other countries, New Zealand scientists regularly criticise the country's low level of research and development funding relative to Gross Domestic Product (GDP). Albeit having abolished any target, combined figures for government and industry funding total about 1.5% of GDP, compared with an OECD average of 2.7%. That's less than Iceland, Estonia and Portugal.[45]

In its annual report on the economy, the OECD says New Zealand's GDP is expected to grow by 1.4% in 2026, and by 2.3% in 2027.[46]

Under the re-organisation of its science system, New Zealand's public research funding is now guided by the Prime Minister's Science Innovation and Technology Advisory Council (PMSITAC). The PMSITAC released its new priorities in April 2026 recommending adjusting the funding balance to be 60% mission-led (aligned to national priorities and outcomes) and 40% investigator-led (competitively funded, curiosity-driven research).[47] It has been reported that around NZ$80m per annum has been entirely removed from the overall science budget this year.[48]

June's Science Investment Plan, informed by the PMSITAC prioritisation, progressively shifts NZ$122m from other areas into the technology pillar, with the percentage share of all science funding changing from 15% to 32% for technology by the end of the decade. Correspondingly, investment in primary industries will reduce by 7%.[49]

The budget placed greater focus on commercialisation with support for the government investment vehicle, NZ Growth Capital Partners (NZGCP). NZGCP's Aspire Seed Fund was granted NZ$24m over four years. It's Elevate Fund had already received NZ$100m in the 2025 budget. The Founder and Start-up Support Programme received additional input to offer a dedicated deep-tech incubation programme.[50]

In keeping with the emphasis on growing new businesses, the government announced more than NZ$40m funding over three years through the existing Commercialisation Partner Network programme. Under this scheme, universities will be required to co-invest, more like the Australian model. This is planned to start as a pilot programme, followed by a full investment round from July 2027 and sits alongside new rules for intellectual property emerging from universities.[51]

A standout moment for the New Zealand industry was the government's loan in support of fusion energy company OpenStar Technologies in early 2026. It pledged up to NZ$35m to help anchor a bespoke fusion energy research and development facility near Wellington.[52]

Many New Zealand scientists consider the reforms to be at the expense of fundamental, investigator-led research. The Director of Quantum Technologies Aotearoa, Jevon Longdell is one of them.

"It should be remembered that New Zealand's capability in quantum technologies was developed while it was supported through basic science funding mechanisms. We should continue to support basic research, so we are in a strong position for whatever happens in the future."

The Prime Minister's Chief Science Advisor, Dr John Roche, says the Government's aim to drive outcomes from investment has been misconstrued.

> "The intention in these science reforms is to join up the innovation pipeline so that there are logical off-ramps for the basic sciences into alternative funding streams, whether that is another government funding stream or it's a VC [venture capital] funding stream or it could be a philanthropist funding stream."

The NZ Research and Development Tax Incentive provides a 15% credit on research and development spending. It was tweaked in the 2026 budget to introduce in-year payments to improve cashflow. A new Transition Research Fund of nearly NZ$85m was announced in July, with the closure and wind-down of the popular Marsden, Endeavour and Health Research Funds.[53]

In its annual report on the New Zealand economy, the OECD says structural factors including shallow capital markets, geographic remoteness, declining education outcomes, and high energy costs continue to limit investment and productivity performance. It says these are compounded by outdated regulations in fast-moving digital markets.[54]

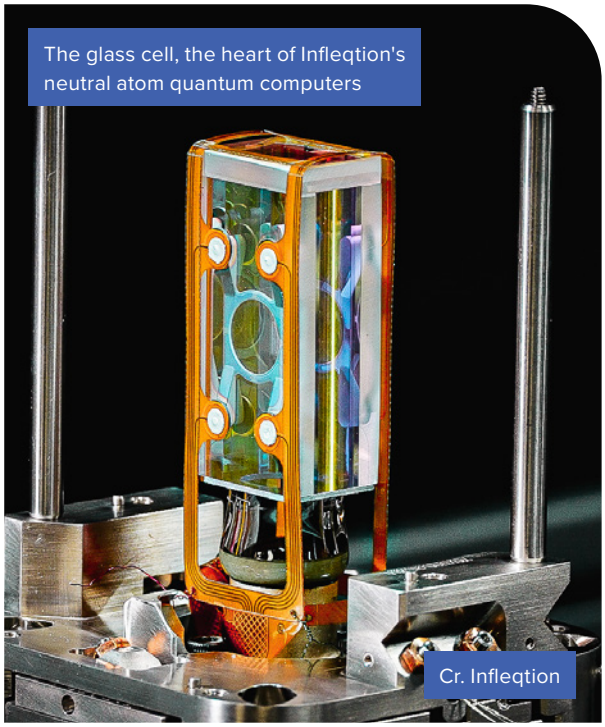
In line with the budget focus on translation for application, a change in the funding metrics for universities was announced in June. This is a move away from a pure focus on published papers, such as the change underway in Australia.[55]

VENTURE CAPITAL

According to McKinsey, globally quantum technology start-up investment increased from US$2bn – US$12.6bn between 2024 and 2025. Ninety percent of investment is in quantum computing.[56] The Quantum Index Report says following a big decline in 2023, the sector worldwide reached a new peak in 2024. It notes that quantum technology investment still represents less than 1% of total venture funding.[57] Photonics market analyst Ceres notes last year's photonics market saw a 20% decrease in transaction volume, while deal value increased by more than 40%.[58]

AUSTRALIA

Australia generates significant venture capital (VC). VC funding across the board increased from A$4bn in 2024 to A$5.4bn in 2025. Cut Through Ventures recorded a shift to investments in robotics, hardware, Internet of Things and deep tech that year, with artificial intelligence (AI) remaining table stakes for investors.[59] Professor Stephen Bartlett, Director of the ARC Training Centre for Future Leaders in Quantum Computing says the market has matured rapidly in recent years.



The glass cell, the heart of Infleqtion's neutral atom quantum computers

Cr. Infleqtion

> "Back in 2022 there were a couple of start-ups and big-tech multi-nationals, but it was very early days. Now these start-ups have billion-dollar valuations and they're hiring. They're here, now, and they're hungry to go fast."

The NRF Corporation prioritises enabling capability such as quantum technologies. It was involved in the top two deals in the quarter: Gilmour Space Technologies securing A$217m total and Advanced Navigation receiving A$158m total.[60]

In May, US President Trump's US$2bn investment in quantum computing companies extended to Australian founded businesses, with PsiQuantum receiving US$100m and Diraq US$38m. The National Institute of Standards and Technology announced it would take a minority, non-controlling stake in each company.[61]

Main Sequence Ventures (MSV) is a VC business founded by CSIRO to accelerate deep tech commercialisation. MSV co-founder and Managing Partner, Bill Bartee says the firm has developed a strong co-investment relationship in quantum with American counterpart In-Q-Tel. In-Q-Tel was established by the Central Intelligence Agency. The two companies now share several investments.

Bartee says MSV seeks complementary investments, both across the ecosystem (computing, sensing, communications, materials) and along the supply chain.

"I can't tell you which architecture will win. We want to have a winning system versus a winning piece of kit", he told the 2026 Quantum Australia conference.

MSV Principal Alejandra Romero is often asked how Australia can retain its deep tech start-ups and believes the National Reconstruction Fund is doing a great job helping companies scale and stay.

"What matters is that we're smart about retaining the core IP, the leadership, the high-value jobs. Quantum Brilliance is headquartered here, but has many European operations, as well as in Japan. Same for QuintessenceLabs. I think the goal is not to stop the expansion; it's designing it so these regions stay as the answer and not just the origin story. We're always going to encourage our companies to go global and to build as they scale."

NEW ZEALAND

The Government's investment vehicle New Zealand Growth Capital Partners (NZGCP) says 2025 was a record year, pointing to a healthy climate within the start-up ecosystem.[62] Deal volume increased with a total investment of NZ$754m. Alongside that, the average amount per deal continued to rise. NZGCP recommends ecosystem development efforts focus on strengthening the pathway from early-stage funding into scale-up readiness. It says technology sector strengths lie in software, climate-tech and deep-tech. The 2025 Technology Investment Network Report says early-stage investment hit $467m last year.[63]

Australia's compulsory superannuation funds are older and many times larger than New Zealand's. It's reported that some 4.4% of the nearly A$4T accumulated is invested in local VC, compared to only 0.2% in New Zealand.[64] Executive Director at deep tech VC Outset Ventures Mat Rowe says Outset and others are looking for an intervention to increase the amount of retirement savings invested in New Zealand VCs.

MSV Principal Alejandra Romero says the Australian VCs receiving superannuation investments work hard to give providers a sense of security.

"What they're doing is giving superannuation funds a clear understanding of the technology, the market opportunity and the long-term upside. That the more patient you are with this capital, the better results you'll see, and you'll see it as well on the GDP front. So, I definitely think that there's an education piece to be leveraged there."

In a surprise to many, the New Zealand Government provided up to $60m to secure domestic cement production in July 2026.[65] The amount available for a quantum platform is about NZ$70m and Mat Rowe queries the Government's determination of what is inalienably sovereign.

"Around $60 million, that's what you're thinking about spending on quantum and photonics. It is a drop in the ocean. Look at what Australia is investing in quantum and then look at the start-ups that are raising money in quantum and look at the investment attraction into it.

Some form of matching private capital against some of these technologies would be useful."



Dr Nicholas Condon working with a laser

Cr. QUBIC

SKILLS

The OECD has mapped the global quantum ecosystem and reports that skills in quantum computing and quantum information are among the most regularly cited in quantum related job advertisements. Search trends are emerging for people with skills in quantum error correction, quantum algorithms, and superconducting quantum bits (qubits). It says a broader range of quantum knowledge is now being sought. Demand for photonics outpaces other quantum-enabling skills.[66]

Technical Director at Quantum Brilliance, Dr Cedric Weber, says recruitment has changed.

"The skill sets are more diverse and more specific at the same time. We need FPGA [field-programmable gate array] engineers, people with expertise in photonics, microelectronics, and device testing and quality control, and we equally need communications, design, marketing and sales. The field draws on far more disciplines than before, and each one calls for more precise expertise."

AUSTRALIA

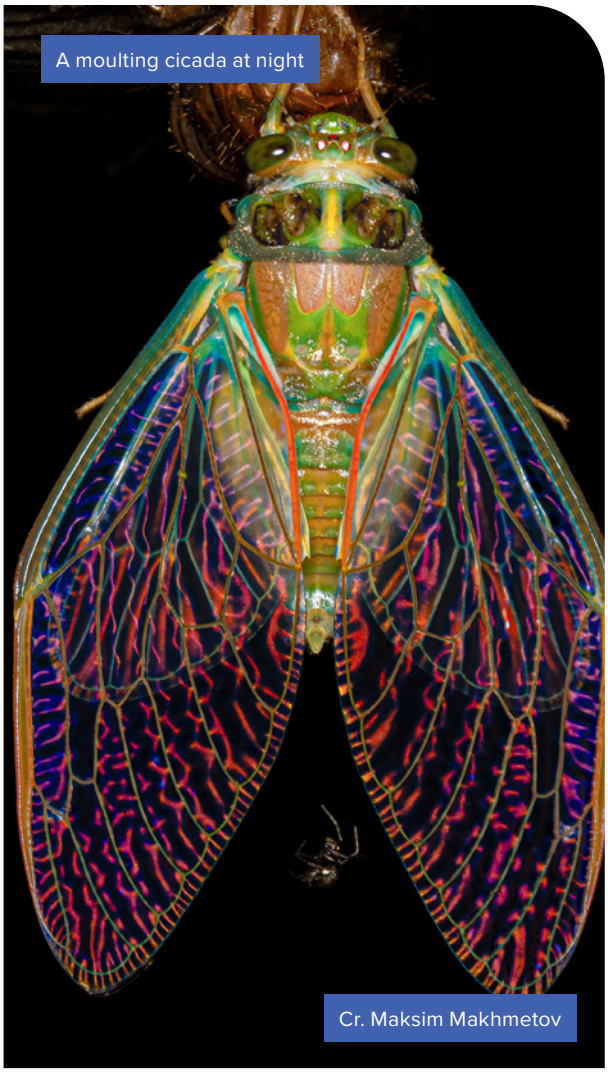
Australia has a target to create 1.2m technology jobs by 2030, but the International Society for Optics and Photonics' (SPIE) data for 2025 suggests the number of available employees has shrunk and the Department of Industry Science and Resources (DISR) says the goal isn't being met. Initiatives to fill the gap, such as the Next Generation AI and Emerging Technology Graduate programmes, which DISR says are expected to train over 500 job-ready graduates, cannot come soon enough, with funding for up to 20 PhDs in quantum research.[67] While it has been recommended that the stipend for Australian PhDs be increased, it was tracking below the poverty line in 2025.[68]

Perhaps more visible to those in the technology sector has been the termination of nearly 4,500 technology jobs between January and April 2026. Sydney-based WiseTech Global reduced its workforce by 2,000 roles, software firm, Atlassian, cut 1,600 jobs, and Melbourne telecommunications company, Telstra, closed 650 positions.[69]

The start of the PsiQuantum build was delayed until June 2026 at a new site in Moreton Bay Central. It was expected that the company would create hundreds of jobs in its mission to build a commercially useful quantum computer by the end of 2027, but in May PsiQuantum's Australian headcount reportedly sat at around 15.[70]

The dearth of skilled Science, Technology, Engineering, Mathematics (STEM) professionals really concerns Science and Technology Australia (STA), the country's peak body for scientists. It was pleased to see the ARC's proposals having previously expressed concern at the country's extremely low rates of grant success.[71]

STA President, Jasmine Chambers, says the low success rate is one factor that has led to a third of all STEM professionals planning to exit the sector entirely, while the number of STEM jobs is projected to grow 24% by 2035, meaning more than half a million additional roles will need to be filled. In response STA is piloting a new programme starting in November 2026, called 'Science Meets the Economy'.



A moulting cicada at night

Cr. Maksim Makhmetov

"This is STA's response to Ambitious Australia – preparing future STEM leaders to better understand the entirety of the operating environment into which their research can make a meaningful contribution. We want to build a level of literacy and understanding about where science and research fits into driving the national economy."

Chambers says "it's bonkers" that scientific expertise is not more widely utilised in business, finance and industry decision-making and there's an extraordinary amount of talent that is not being deployed.

Last year two new ARC Centres of Excellence (CoEs) in quantum technologies were funded, each with A$35m. They represent the largest new coordinated academic investment in quantum since the national strategy rollout. One is a University of Sydney-led project, the ARC Centre of Excellence in Mathematics for Quantum Era Security and Trust (MathQuEST). The other is the ARC Centre of Excellence for Quantum Computer Performance and Integration at the University of New South Wales. Its focus is on overcoming scientific barriers to scalable, reliable quantum computers and unlocking the full potential of quantum technologies.[75]

Alongside the CoEs, the ARC's Industrial Transformation Training Centres (ITTCs) and Industrial Transformation Research Hub schemes provide funding for partnerships between university-based researchers and those in industry. These schemes are aligned with NRF priorities, providing higher degree by research, postdoctoral training, and conducting applied research in industries considered vital to Australia's future.[73] The scheme began in 2012. Its last round will open in September this year.[74]

Of the six ITTCs funded in 2024, two are quantum technologies related. The ARC Training Centre for Current and Emergent Quantum Technologies (QuTech) and the ARC Training Centre for Future Leaders In Quantum Computing (FLiQC), were both launched in 2026.

FLiQC Director, Professor Stephen Bartlett, says anecdotally there are three vacancies for every skilled applicant. He suggests internships and recruitment from adjacent industries could help but says the lack of skills remains a systemic issue.

"I would love to see workforce planning done for quantum technologies in the same way it's done for doctors, built into the system and not something that has to be advocated for every few years."

To interest more PhDs, former Chief Scientist, Dr Cathy Foley says the opportunities for them have to be attractive. The Ambitious Australia report recommended increasing the stipend for students working in fields aligned with the National Innovation Pillars, as well as adjusting migration settings.[75]

Those changes could not come soon enough for QuTech Chief Operating Officer, Dr Ruth Shaw, who says it's hard to encourage students into academic research when they can go straight into good salaries in industry. Her colleague, Director, Professor Glenn Solomon, says another impediment is the visa programme.

> "It took one of our students a year to get to us after we offered her a PhD. Then it takes six months to ramp up. So, in a five-year programme you've lost 18 months before you begin."

Industry relationships are central to the ITTCs, but the pair say standard agreements are complex, it takes time to develop collaborations, and this too can chew into grant funding periods.

NEW ZEALAND

The Save Science Coalition says 700 scientists have left the country since 2023 – across the breadth of science disciplines.[76]

At the time of writing there remains a shortage of skilled workers in photonic and quantum technologies, but it is not reflected in the SPIE data for New Zealand, which shows modest employee growth. This may be because AI has not had the impact in New Zealand that it has had in Australia and other economies.

The International Monetary Fund (IMF) released its report on the NZ economy in late June 2026, saying that the country was well placed to adopt AI but warned it needed to be careful about the impact on workers because potentially one third could be made redundant.[77]

New Zealand ranks in the top ten globally on the IMF AI Preparedness Index, but while the country may be well organised from a regulatory and human capital perspective, it lags in terms of AI adoption. Both the IMF and KPMG have called out New Zealand's comparatively sluggish uptake.[78,79]

No new opportunities have been created to train in photonic and quantum technologies since 2024. In February 2025, an applied doctorates scheme was established in response to calls for stronger connections

between research and industry. Although more than NZ$55m was originally allocated for the scheme and some fellowships, the total available to students is now NZ$20m over five years. This is expected to support up to 150 PhD students with the skills to grow Kiwi businesses.[80,81] The first cohort focussed on energy started in June 2026, with the second call made for students in aerospace, defence, and security, who will start in March 2027.

While the New Zealand Institute for Advanced Technologies was created in 2025, the first half of 2026 has been spent reviewing the economic opportunity for a platform focused on quantum technologies. At the time of writing there had been no announcement. Chief Executive of industry peak body Tech New Zealand, Graeme Muller, is broadly positive about the process, but questions officials' reticence and pace.

> "We might not be able to spend millions, but we should be going, 'If quantum is this important for America, Australia, Europe, and others, it's got to be important for us.' Taking a punt, you've got a proportional chance of getting it right. Working at the pace we are, we've got 100% chance of getting it wrong."

The Prime Minister's Chief Science Advisor, Dr John Roche, says more than NZ$120m is being moved across organisations over three years and there's a risk that moving any faster would deeply impact the system.

"These reforms are happening really quickly."

While the Ambitious Australia report proposes increasing the stipend paid to PhDs, this year's New Zealand budget put a cap on the government fee subsidy for international doctoral students. Fees have traditionally been the same as for domestic students. From 2027 the fees for international students are expected to increase, which risks constraining the overall pool of PhD students.[82]

Director of the MacDiarmid Institute, Professor Nicola Gaston, is concerned the cap will undermine the country's ability to attract foreign students in the competition for talent, especially in advanced technologies.

"Two thirds of our PhD students are international and two thirds of all our students remain in New Zealand after completing their studies. These are the kind of immigrants we should be wanting, you know, young, motivated, ambitious people."

Principal Investigator at Te Whai Ao — Dodd-Walls Centre for Photonic and Quantum Technologies, Dr Jami Shepherd, points out that the remuneration in New Zealand makes it hard to recruit.

> "It's tough to attract talent when the pay is not competitive with countries like Australia, particularly when rare skillsets are required. The lifestyle New Zealand offers is second-to-none, but that isn't always enough to attract and keep people here."

INFRASTRUCTURE

AI and the corresponding increase in data volumes is driving massive growth in data centres around the world. This infrastructure is central to a future high performing photonic and quantum technology ecosystem. AI can enhance quantum computing by helping develop error correction techniques for quantum hardware. In turn, hybrid quantum computers can help AI make more precise predictions about natural phenomena, simulate complex natural processes more accurately, and generate synthetic data to train generative models when real data is scarce.

The growth in data centres comes with multiple concerns about the power required, the built environment, and the impact on the workforce.[83] Ensuring this growth is sustainable will require considerable use of energy-efficient photonic technologies, not only for interconnection but also for data processing. Analysts such as Deloitte have noted the attractiveness of Australasia as a location for hyperscaler compute – where a network of data centres operates.[84]

In May 2026, CDC Data Centres, the largest Australasian data centre provider, secured a contract with a US investment grade customer for 555MW of operating power capacity, equal to about 40% of all the capacity across Australia's data centres in the previous year. It forecast that capital expenditure in 2027 would be up to



An aerial view of the Australian synchrotron. Cr. ANSTO

A$4.2bn, excluding land, with construction lifting to meet demand.[85] According to DataCentres New Zealand there are 56 data centres across New Zealand, with 20 more planned, supporting NZ$16.5bn in ICT sector GDP and enabling NZ$76.5bn in knowledge intensive services.[86]

AUSTRALIA

The National Reconstruction Fund is a significant investor in photonic and quantum technology related infrastructure, which falls under the Government's economic "enabling" priority. Such investment could range from an early-stage semiconductor manufacturer,[87] to a launchpad for spacecraft,[88] or sovereign digital and cyber services infrastructure. The A$15bn fund invested A$585m in 2024.[89,90]

For the last 20 years, the Australian government has invested A$5.5bn in national research infrastructure through the National Collaborative Research Infrastructure Strategy (NCRIS) programme.[91] While the programme will develop another roadmap to determine needs across the ecosystem, there is currently no formal funding commitment beyond 2028 – 2029. The Ambitious Australia report argues the NCRIS programme is at risk and says the National Science and Technology Council has highlighted major gaps in system-wide strategic planning and a lack of investment in national research infrastructure.[92]

Australia's former Chief Scientist, Dr Cathy Foley, believes NCRIS is in the wrong portfolio and should be in the DISR. It sits in education. Director of the Centre of Excellence in Quantum Biotechnology (QUBIC), Professor Warwick Bowen says NCRIS is the "jewel in the crown" of Australian infrastructure and it's uniquely structured with staff who run and maintain state-of-the-art facilities, as well as training the users.

NCRIS infrastructure projects have included: the Australian National Fabrication Facility, Australian Research Data Commons, Heavy Ion Accelerators, Microscopy Australia, National Computational Infrastructure, National Imaging Facility, Nuclear Science Facilities and the Pawsey Supercomputing Centre (Pawsey).[93]

In June 2026, NCRIS announced three separate allocations towards Pawsey which strengthen Australia's sovereign compute and data capabilities for research. These totalled more than A$34m.[94] There are reports that Pawsey is oversubscribed, and CSIRO's own annual report suggests that while usage has improved to 78% of core hours in 2024 – 2025, that was below the aspirational usage target of 90%. It appears Australian universities are not using all their allocated computing time at the centre.[95]

Construction got underway at the Bradfield commercial advanced semiconductor facility in mid-July 2026.[96] It is the second part of the Advanced Manufacturing Readiness Facility in Bradfield City Centre, Western Sydney. This is a state led innovation and manufacturing precinct next to the new Western Sydney International Airport, in which the New South Wales Government invested A$300m. Finally, a new quantum photonic research and development lab was opened at Griffith University in Queensland.

NEW ZEALAND

New Zealand has laser micromachining, nanofabrication, and optoelectronics fabrication facilities, but none of these are new. Its quantum enabling infrastructure includes dilution fridges, a cryogenic lab, and high-temperature superconducting magnets. Imaging and characterisation include spectroscopy, optical coherence tomography, and photoacoustic and ultrasound imaging. The country's ambitions for advanced technologies far outweigh its current investment.

Te Whai Ao — Dodd-Walls Director, Professor Frédérique Vanholsbeeck, says New Zealand simply doesn't have the infrastructure investment at the scale needed for success.

"You can't compete on the world stage with a Number Eight wire mentality (that a piece of fencing wire can fix everything).

"New Zealand is at the point, where rather than buying a 5kg bag of washing powder, we are reduced to buying by the dose. So, it costs us more, for a less productive result. It's driving unhelpful competition at a time when we need unity."

The Strategic Science Investment Fund (SSIF) (which ran until the end of 2024) has traditionally been guided by Science Investment Plans. But, in the future, administration will be by the Ministry of Business, Innovation and Employment (MBIE).[97]

The Prime Minister's Chief Science Advisor, Dr John Roche, says universities, the Public Research Organisations (PROs) and the PMSITAC are all working on an infrastructure plan together with the Ministry of Education and MBIE. Defence Science and Technology also provides some limited infrastructure advice.

"We want to plan what will be industry's needs in this space from an infrastructure point of view, as well as the universities, as well as the PROs, as well as the independent research organisations."

The eResearch Infrastructure Platform (previously funded under the SSIF) provides New Zealand institutions and researchers access to high-performance computers, data storage, data networks, and digital tools for data intensive research. In mid-2025, the New Zealand eScience Infrastructure was integrated into Research and Education Advanced Network New Zealand (REANNZ) to expand its high-performance computing offerings and the Government invested NZ$69.6m until 30 June 2030.

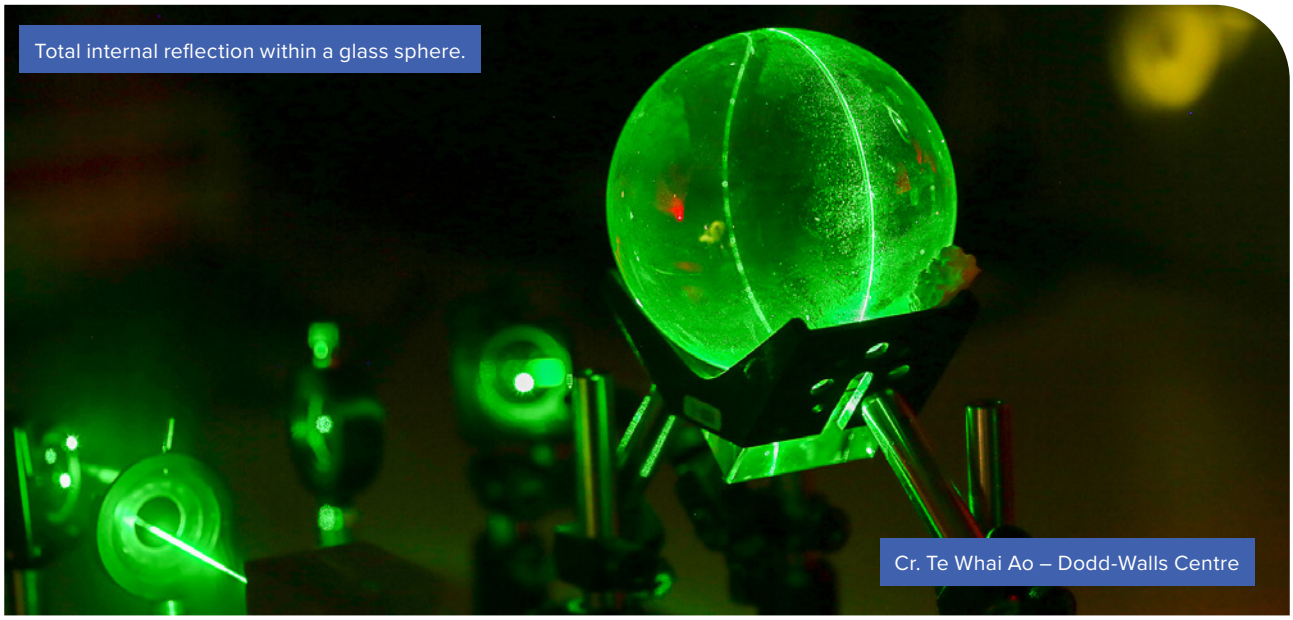
In June this year, the New Zealand Government said it would continue its 20-year investment in the Australian synchrotron, agreeing to provide NZ$1.4m per annum for five years to maintain access to the beamline facility operated by the Australian Nuclear Science and Technology Organisation. That contribution will be matched by the research sector for a total New Zealand investment of NZ$2.8m per year.

In making the announcement the Government suggested the investment was complemented by enhanced collaboration with infrastructure providers REANNZ and the Pawsey Research Centre, and New Zealand and Australia were positioning themselves as more co-ordinated regional partners. Whether there really is active collaboration is unclear, as the latest update on the Pawsey website references events, conferences and training back in 2018.[98] Anecdotal evidence from would-be users in New Zealand suggests otherwise.

ECOSYSTEM AND TECHNOLOGY TRANSFER

AUSTRALIA

Contributors to the 2024 ANZOS market report suggested the relationship between industry and academia was not as strong as it could have been. The ARC's Chief Executive, Ute Roessner, says there are some close relationships with industry of over 20 years standing. While this may be the case, Australia's record of technology transfer remains comparatively poor. A well cited OECD report in 2017 flagged weak collaboration between Australian business and research.[99] In 2025, the Department of Industry Science and Resources found international innovation indices positioned Australia near the bottom. It said Harvard's Economic Complexity Index ranked Australia 105 out of 145 countries, putting the country last in the G20, and the Observatory for Economic Complexity's Trade Index ranked Australia similarly.[100]



Total internal reflection within a glass sphere.

Cr. Te Whai Ao – Dodd-Walls Centre

Quantum Australia serves as the delivery arm of the National Quantum Strategy 2023 with a correspondingly powerful mandate from government. Foundation documents seek "a strongly branded, single 'front door' for the quantum industry and broader quantum ecosystem in Australia.[101]

By mid-2026, Quantum Australia appears to have achieved many of its founding intentions, building relationships across industry, research, consumer, and government stakeholders to drive innovation and translation, as well as international collaboration and competitiveness. According to Chief Executive, Petra Andren, Quantum Australia has accelerated the growth of the quantum industry in Australia. It's estimated there are now 50 – 60 quantum start-ups operating across Australia, compared to around five back in 2018.[102]

Quantum business, Infleqtion, has an office in Melbourne, Victoria. Colorado-based technology veteran and company founder, Dr Dana Anderson doesn't see the national alignment he's used to in the UK or between state and federal Governments in the US.

> "The Australian states seem to compete with each other, whereas they'd be a powerhouse as a co-operative entity. Individual states in the US are being very aggressive about how aligned they are with the government in co-investing to make quantum a local strength."

Impact-focused measures of research are thought to accelerate the movement of academics into business. The ARC is developing a new approach to research evaluation.[103] It is exploring flexible, data-driven capability after stakeholders called for incorporation of responsible research assessment principles.

NEW ZEALAND

New Zealand is well regarded for its industry ecosystems in almost every domain, because of its small, well-connected population. Te Whai Ao — Dodd-Walls Centre undertook an intensive round of stakeholder engagement in August 2025. Inspired by the work of Australia's former Chief Scientist, Dr Cathy Foley, Te Whai Ao — Dodd-Walls Centre invited leaders within the infrastructure, space, sustainability, health, and agriculture sectors to a series of workshops called "Quantum Meets". The objective was to understand business needs and consider how photonic and quantum technologies could address them. In Australia, since 2024, the White Papers produced from those discussions have been steering the development of photonic and quantum technologies.

QED-C reports that countries with a quantum industry organisation demonstrated greater per capita growth in 2024 – 2025 than those without them. It says countries with an industry peak body had about seven times more in per capita venture capital investment growth than countries without such organisations, citing China, France, and New Zealand, as those without.[104]

In the absence of a steering group in New Zealand, Tech New Zealand launched the Quantum and Photonics Forum in mid-2026. Even before emerging formally, it supported the Government's discovery process through the first half of the year. The discovery process, the formation of this group and emerging collaboration with Australia have identified the need for shared information to map the ecosystem, including for this report. So far in 2026, at least four new start-up companies have been created.

Executive Director, Strategic Growth at the University of Auckland's UniServices, Analeise Murahidy, says the country has a sophisticated transfer system aided by mechanisms such as the Return on Science. She says VCs have line-of-sight to opportunities flowing through the system and often choose to syndicate.

"We have this community that's tracking ideas from the research phase and looking at the point when they can come in, the universities have de-risked, and they will take it forward. We see them coming earlier and earlier wanting to know what's ahead."

The New Zealand Government has approved the final design of an alternative to the Performance-Based Research Fund for universities, building on initial decisions last year. The new Tertiary Research Excellence Fund will distribute NZ$315m per annum and be phased in from next year. It features new metrics for citations and will pursue profitable outcomes.[105]

Together with changes to the Intellectual Property management policy for innovation emerging from universities and the strong commercialisation focus of the budget, the environment for start-ups appears more nurturing.

LEADING VALUE CHAINS

Photonic and quantum value chains attracting most market interest and adoption include sensing technologies for mining, security (notably post quantum cryptography), health and energy (especially fusion energy), and space and defence. Rising interest in defence technology has sparked a focus on related sectors such as drones, advanced manufacturing, and robotics. Positioning, timing and navigation (PNT) are vital for defence, especially in GPS denied environments. They rely on photonic and quantum sensing technologies such as atomic clocks, free space connections, and magnetic field sensors.[106]

In late May this year, Australia, the United Kingdom and the United States agreed to advance Pillar II initiatives under the AUKUS trilateral partnership. Pillar II focuses on advanced capabilities and quantum is among them.[107] The first Pillar II project is aimed at developing "payloads and enabling systems for unmanned underwater vehicles" with initial deliveries from 2027. In May, the United States revealed a new US$54.6bn plan to build a Defence Autonomous Warfare Group (DAWG) and ramp up the development of drones.[108]

SPOTLIGHT ON DEFENCE

A closer defence relations statement 'ANZAC 2035' was signed by Australia and New Zealand in March this year. It envisioned the armed forces collaborating in an "increasingly seamless and integrated combat-capable ANZAC force by 2035", while remaining respectful of their individual sovereign status.[109] A month later, Australia's National Defence Strategy and 2026 Integrated Investment Plan were released outlining an increase in investment from 2% – 3% of Gross Domestic Product (GDP) over the next decade.[110] The government pledged an additional A$53bn spend out to 2036.

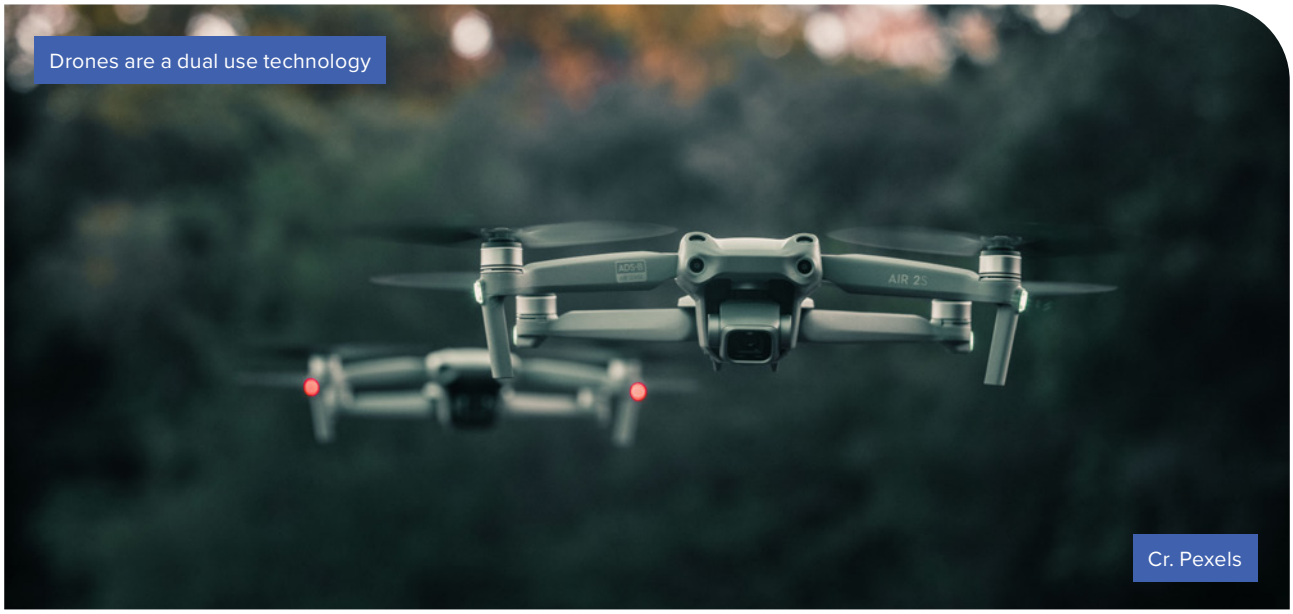
Further expenditure was announced in July with the release of the Defence Industry Development Strategy (DIDS).

Australia launched an Advanced Strategic Capabilities Accelerator (ASCA) in 2023 to hasten development and address increasingly "VUCA" environments, those which are volatile, uncertain, complex and ambiguous. Since then, A$125m has been invested in dozens of emerging defence technology projects, of which more than a third are quantum related. Defence continues to benefit from the A$1.6bn Next Generation Technology Fund established a decade ago to encourage innovation. It runs until 2030.

At the time of writing PsiQuantum has signed a US$125m agreement with the US Defence Advanced Research Projects Agency (DARPA), the most it has secured from the US Government to date. DARPA has a Quantum Benchmarking Initiative (QBI), with the goal to determine whether any quantum computing approach can achieve utility-scale operation by 2033. Diraq's involvement with the QBI is well progressed.

Australia is highly aware of the need to speed up traditional procurement cycles. A new Defence Innovation, Science and Technology Strategy is produced every two years.[111] The latest, released this August places long range firing, hypersonics, autonomous systems, and undersea warfare among the Government's priorities.[112]

Speaking ahead of the Australian Defence Science, Technology and Research Summit in August this year, Australia's Chief Defence Scientist Professor Tanya Monro AC urged attendees from multiple countries to work together.



Drones are a dual use technology

Cr. Pexels

"In an increasingly complex strategic environment, strengthening collaboration – both nationally and with our international partners – is essential to ensuring Australia can leverage opportunities to respond to evolving threats."

New Zealand's 2025 Defence Capability Plan and associated Defence Strategy commits NZ$12bn over four years, which includes NZ$9bn of new expenditure as the country seeks to work with local suppliers.[113] NZ$1.6bn, including NZ$700m in capital expenditure was announced in the May budget.[114] New Zealand's Defence Science and Technology (DST) unit's particular foci includes research on uncrewed and counter-uncrewed systems, underwater systems, electromagnetic systems, space, and navigation warfare. It is also looking closely at secure communications using novel methods that may include quantum technologies.

Despite the increased spend and declared aims to lift defence spending from just over 1% of GDP to above 2% over the coming eight years, the US has accused New Zealand of "freeloading". Analysts argue that the country's remoteness is no longer a substitute for a strategy, and that New Zealand appears "unhurried".[115]

Given that rapid translation is a source of not only military but commercial advantage, those comments are worrying. Defence accelerators such as Australia's ASCA, the US's Starburst and National Security Technology Accelerator, the UK's Defence and Security Accelerator, and NATO's Defence Innovation Accelerator for the North Atlantic exist to shorten the timeframe from startup to battlefield.

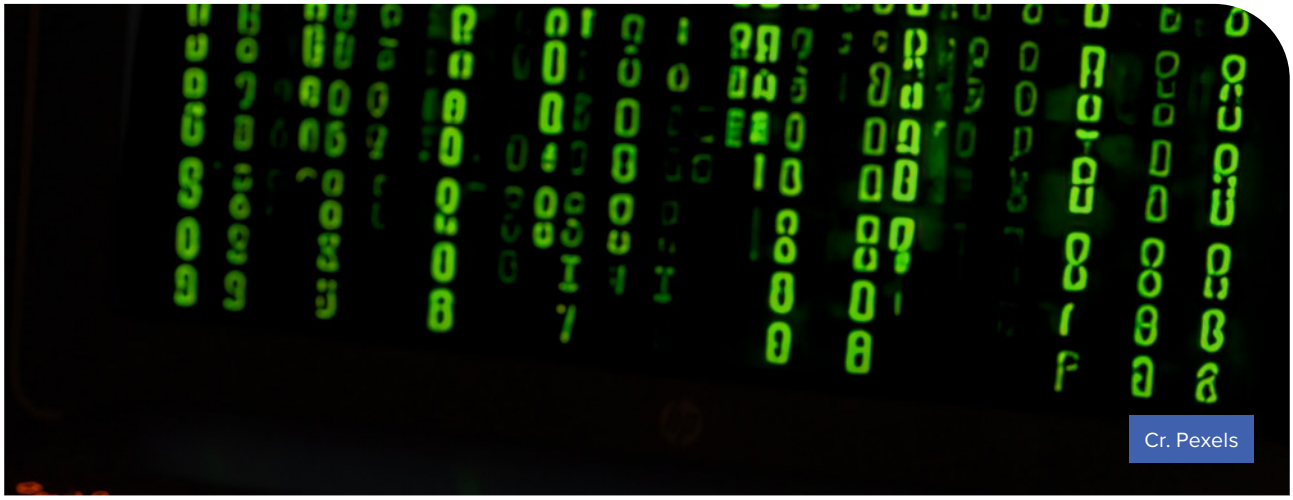
A Defence Technology Accelerator is being formed in New Zealand in late 2026, with a capital injection of $1.5m and a four-year operating uplift of $16.2m. This is starting with a pilot phase, with funding allocated for setup and a small team to deliver early activities. A formal review after the first year will inform future scale and investment decisions. Meanwhile DST has a workforce of nearly 80 staff this financial year.

Defence Science & Technology (DST) Director Dr David Galligan says compared to Australian and American organisations, New Zealand's quantum science-based defence projects are typically at a lower technology readiness level (TRL).

> "My impression is that we have a bit of work to do. The trick here is for the New Zealand advanced technologies ecosystem as a whole to think about what is not being already done somewhere else, that we're good at and which is in demand.

"This requires a mission led mindset and good contextual knowledge. There is also the matter of considering what capabilities we need to have on shore from a national resilience point of view."

The prioritisation required to confirm DST's plans is still being refined, according to Dr Galligan, including what New Zealand's unique strengths are, what sovereign capability it must have and what it can acquire from others. In any case, interoperability is a must-have, not just to partner with Australia, but to operate successfully on the world stage. He says until now New Zealand has not had a clear mission focus on quantum and photonic technologies compared to Australia and the US, but he sees that emerging, especially in positioning, timing and navigation, and secure communications. Defence seeks to grow the advanced tech ecosystem as a resilient industry in the country. It's working with suppliers who may have civilian technology with a dual use.



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NATIONAL CASE STUDIES

AUSTRALIA

QUANTUM BRILLIANCE



Quantum Brilliance's quantum magnetometer

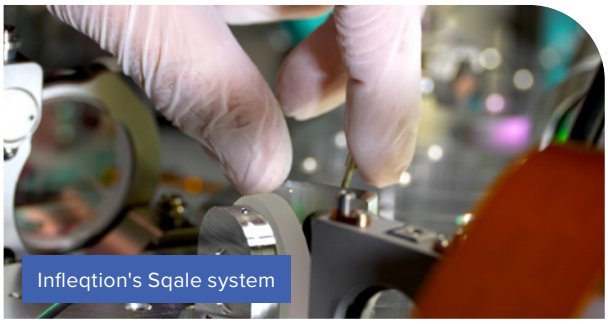
Quantum Brilliance was founded in 2019 as a spin out of the Australian National University, building on more than 25 years of diamond quantum research at ANU and the University of Stuttgart. Its technology harnesses the quantum properties of nitrogen-vacancy centres in fabricated diamond for quantum computing and sensing. Operating at room temperature, the technology can be miniaturized and integrated onto microchips using manufacturing processes similar to those used for silicon transistors in classical electronics.

Last year, Quantum Brilliance installed a cluster of three quantum accelerators at the US Department of Energy's Oak Ridge National Laboratory, enabling the exploration of advanced computing methods, including parallelized quantum algorithms, that support tight integration with HPC systems. The company also launched the world's first commercial quantum diamond foundry in Melbourne, Australia, dedicated to producing high-performance quantum diamonds at scale. In 2026, Quantum Brilliance announced a cooperation with Honeywell Aerospace to deliver a compact quantum space magnetometer to the European Space Agency by 2027.

Co-Founder and Chief Technology Officer, Dr Marcus Doherty CSM, says the company's aim is to enable the mass deployment of quantum technology by integrating it into high-performing computing and sensing and systems, ultimately taking quantum anywhere.

"What connects an accelerator cluster running inside a supercomputer, a foundry producing quantum-grade diamond, and a magnetometer, is a single material platform. We built this company on the idea that diamond could do for quantum what silicon did for classical computing. That's the bet we made back in 2019, and today, we're proving it out."

INFLEQTION



Infleqtion's Sqale system

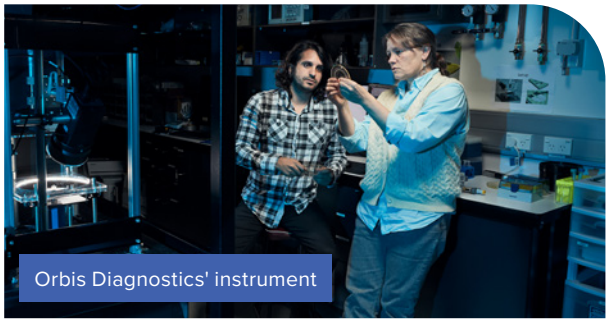
Infleqtion is a global leader in quantum technology, delivering neutral atom solutions for quantum computing, networking, sensing, and security. It was established in 2007 and operates around the world, now coining the phrase 'we're a twenty-year overnight success'. In 2022 Infleqtion received A$29m from state agency, Breakthrough Victoria as part of a bigger capital raise. Founder Dr Dana Anderson says that capital injection, which came about with the support from a former Boeing CEO, cemented the decision to start a quantum technologies business in Australia.

Infleqtion's mission is to commercialise atom-based quantum products that provide orders of magnitude improvement in sensing and computing applications. Its product portfolio spans quantum computers, quantum optical clocks, radio frequency receivers, and inertial sensors.

Infleqtion has a full-stack approach combining high-performance hardware with the company's proprietary quantum computing software platform. Its systems are already in use by the United States Department of War, NASA, the United Kingdom's government, and in multiple collaborations with NVIDIA. Dr Anderson says a defining moment for the company was when its first investor changed jobs to become its Chief Executive. He says Australia needs Infleqtion's technology for defence, natural resource exploration and health sciences, as well as computing. He believes the company's real power lies in its ability to help Australian inventors make new products and that will come.

NEW ZEALAND

ORBIS DIAGNOSTICS



Orbis Diagnostics' instrument

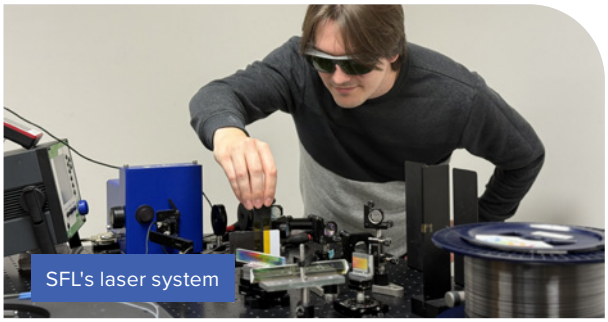
Diagnostic testing data is required for around 70% of the decisions that are made about our health. For many people, accessing a full-service medical lab can be a challenge which affects the timeliness and efficiency of diagnosis and later, treatment. The issue with most of point-of-care diagnostic platforms is that they're incapable of producing blood test results comparable to what a complex medical laboratory can provide.

Orbis is developing a next-generation diagnostics platform which can deliver clinically accurate blood test results from a single fingerstick of blood at a doctor's office, pharmacy, or other point-of-care. It is commercialising a desktop-sized medical testing platform which is robust, scalable, accurate, and can be readily repeated at the point of care in less than 30 minutes. This compares to regular turnaround times of 4-10 days.

Orbis was co-founded in 2016 by Chief Executive, Professor Cather Simpson and Scientific Adviser Emeritus Professor David Williams of the University of Auckland. At the heart of the platform is a device dubbed the "Nespresso of diagnostics". This is a compact, automated instrument that will run a proprietary disposable microfluidic disc containing all necessary onboard reagents. It is driven by a spinning disc rather than complex external pumps or valves and features a very low bill of materials, giving it an exceptional price advantage.

The company already produces a world-first point-of-care panel that simultaneously measures the three primary blood markers for the Hepatitis B Virus. A recent directive from the US Centers for Disease Control and Prevention recommending that all US adults be screened for these markers has boosted the company's commercial viability. Orbis is currently seeking to raise NZ$8.9m (up to NZ$11m) in a Pre-Series A round.

SOUTHERN FIBRE LASERS (SFL)



SFL's laser system

Daughter companies enable specialisation and growth while offering diversification options for the parent company. That's according to Professor John Harvey, ANZOS life member who is considered a pioneer of optics and photonics in New Zealand. Professor Harvey is known for his drive and entrepreneurship in establishing Southern Photonics (SP) in 2001, selling instruments and solutions for a wide range of optical test, measurement, lab, and industrial needs. He later spun out a separate daughter company, Coherent Solutions, which was rebranded as Quantifi Photonics in 2020. Quantifi was sold in 2025 for an undisclosed sum.

Southern Photonics has recently celebrated its 25th birthday and its mission has always been to promote the commercialisation of photonics technologies in New Zealand. Professor Harvey has continued in this vein by forming two other companies in recent years, as spinouts from SP. Southern Fibre Lasers (SFL) builds laser systems based on a mode locking mechanism developed at the University of Auckland, and Southern Sensors (SS) builds bespoke sensing systems based both on free space optical sensing and fibre optic sensing.

There is now a vibrant venture capital community in New Zealand interested in "deep tech" which includes photonics, but this wasn't the case 25 years ago. Back then it was necessary to "bootstrap" the company, using the proceeds of sales and other funding mechanisms. While bootstrapping is a much slower process, it is still a viable commercialisation strategy for opportunities which fail to excite the interest of VCs. The three companies (SP, SFL and SS) are dominated by staff with photonics training but include people from other disciplines, and they are currently recruiting for expansion.

The companies are co-located, and cooperate to share resources and opportunities for commercial developments. The daughter companies have not taken venture capital but SFL is in partnership with a US photonics company, which holds a minor stake. Both companies continue to find opportunities for contract development work in an ever expanding range of applications involving Lidar, cryogenic temperature sensing, surface processing, and quantum computing.

PREDICTIONS

It's forecast that by 2035 more than 60% of the United Kingdom's economy will directly depend on photonics to keep it competitive.[116] The European photonics industry has called on the European Commission to provide at least €2bn in the 2028 – 2034 Multiannual Financial Framework, alongside industry's €200bn pledge. It says, "speed is sovereignty" and warns that Europe risks losing its edge to China and the United States.[117]

McKinsey estimates the total market size for Quantum Technologies will be US$60bn – US$100bn by 2035. By that date the market for quantum computing is expected to reach US$43bn – US$71bn, quantum sensing US$7.1bn – US$10.1bn, and quantum communications US$11bn – US$15bn. McKinsey picks pharmaceuticals, chemicals, finance, and transport, travel and logistics as the four sectors in which quantum computing will have the greatest impact.[118]

Predictions of the value of the global photonics market differ depending on whether you're talking about components, or the whole end-to-end value chain in photonics enabled markets. For the former, both the International Society for Optics and Photonics (SPIE) and Spectaris, the German photonics group, estimate that it was about US$400m in 2024 – 2025. Spectaris forecasts it increasing to approximately US$3.3bn by 2030.[119] Using different methodologies, other analysts suggest lower growth, but from a higher starting point, estimating the photonics market will increase from US$1.1bn in 2026 to US$1.8bn in 2034.[120,121]

AUSTRALIA

The Federal Government's National Quantum Strategy estimates the country's quantum industry could be worth AU$6bn and support 19,400 jobs by 2045.[122]

Quantum Australia's vision for the future has been shared widely with international investors. Chief Executive Petra Andren told the Quantum World Congress that Australia projects A$5.9bn in annual quantum industry revenue, A$6.1bn in Gross Domestic Product impact and 35,000 quantum-related jobs nationwide by 2045.[123]

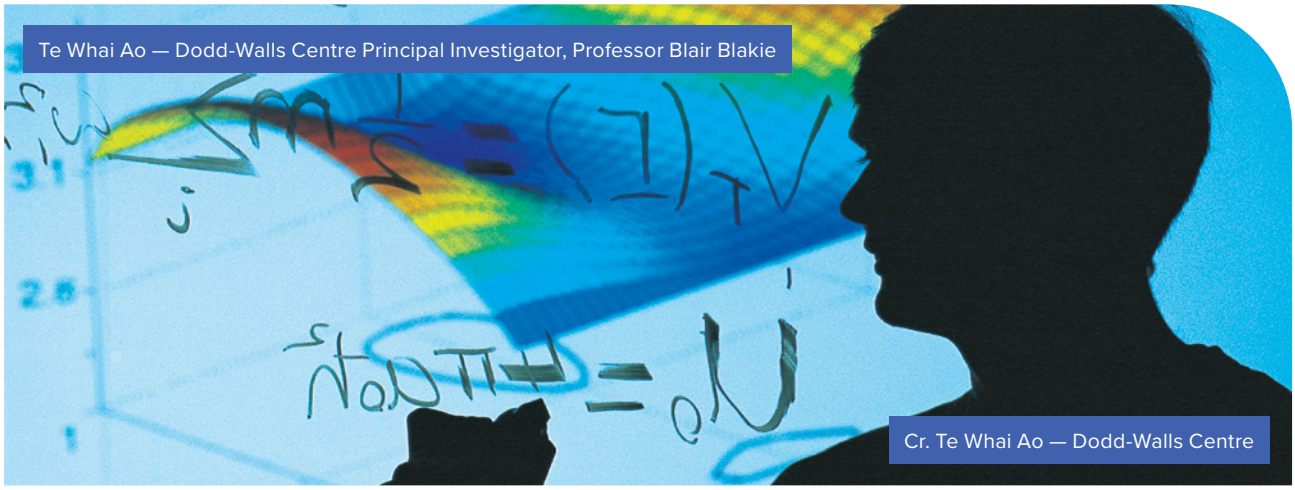
Former Chief Scientist, Dr Cathy Foley would be surprised if the world doesn't have a fault-tolerant workable quantum computer by the end of the decade. And she's seeing a significant leap forward in quantum communications.

> "Singapore, Spain and China have got full stacks of quite complex, highly secure quantum communications. And I think we may end up buying it from countries we may not want to buy it from."

Director of the Centre of Excellence in Quantum Biotechnology, Professor Warwick Bowen foresees "very, very fast" growth in the industry in the near term.

"I would expect to see some of the companies that have been founded in the last two years getting series A, B, and C capital raises growing into companies, maybe with values in the A$50m to A$200m range. If I was going to try to put numbers on it, I would say that the workforce would grow in the next two years by a factor of maybe four."

Infleqtion founder, Dr Dana Anderson received his PhD in the early 1980's. Today he picks space as holding the most exciting future for quantum technologies.



Te Whai Ao — Dodd-Walls Centre Principal Investigator, Professor Blair Blakie

Cr. Te Whai Ao — Dodd-Walls Centre

"Space is a big place, you know, and there are many things that are so hard and important to do in space that the way to do it best, is probably with a quantum solution. I see it as just so important to do it now, do it early. The Chinese are well ahead of us. That's clear to me. We're very excited about the future of quantum in space. We think it's very important for our countries."

Science and Technology Australia President Jasmine Chambers argues that a measure of success is whether people understand and see value in photonic and quantum technologies.

"The test is that the everyday investor can be looking at these technologies and understanding: 'That will help our nation, that will help my back pocket, it will help society.'

"Part of our role in the STEM industry is to translate the value of our research so that people can understand how their lives are going to be better. Can we get there in two years? That's probably ambitious, but we have to be optimistic regarding our end goals, otherwise, what are we doing this for?"

NEW ZEALAND

Looking ahead, Director of Te Whai Ao — Dodd-Walls for Photonic and Quantum Technologies, Professor Frédérique Vanholsbeeck, says the new science system needs to bed-in before there will be any great advances.

"We need a lot more stability and investment in the system after these reforms. Buy-in across the board. Ten years for me is the magic number. That's three PhD cycles. We need that length of time to have a strong and productive ecosystem," says Vanholsbeeck.

By the next edition of this report in 2028 the Prime Minister's Chief Science Advisor, Dr John Roche, expects the system to be operating smoothly, in line with the investment pillars developed and the new criteria for prioritisation. He says the Government is also creating a new "Ignition" fund with a quick assessment cycle and there will be different investment mechanisms in future.

Director of Paihau — Robinson Research Institute, Professor Nick Long, is supportive of the reforms and optimistic about the future for quantum and photonics in New Zealand, but he says Treasury has always been lukewarm about science investment.

"To invest in science the way Singapore or other advanced countries have, it needs the New Zealand Treasury to change their mindset. It has to be that voice to the Minister of Finance, which is changing. Somebody has to say, stop building roads, start building research capacity as the priority."



Dr Martin Sadraeian, former QUBIC Postdoctoral Fellow

Cr. QUBIC

CONTRIBUTORS

Dr Cathy Foley, former Chief Scientist Australia (2021-2024)

Dr John Roche, Chief Science Advisor to the New Zealand Prime Minister

Professor Ute Roessner, Chief Executive, Australian Research Council.

Professor David G Lancaster, EOS Professorial Chair in Laser Physics, Adelaide University and President of the Australian NZ Optical Society (ANZOS)

Professor Warwick Bowen, Director, Centre of Excellence in Quantum Biotechnology

Professor Stephen Bartlett, Director, University of Sydney Nano Institute and the ARC Industrial Transformation Training Centre for Future Leaders in Quantum Computing.

Professor Glenn Solomon, Director, ARC Industrial Transformation Training Centre for Current and Emergent Quantum Technologies

Dr Ruth Shaw, Chief Operating Officer, Industrial Transformation Training Centre for Current and Emergent Quantum Technologies

Professor Frédérique Vanholsbeeck, Director, Te Whai Ao — Dodd-Walls Centre for Photonic and Quantum Technologies and Past-President of the Australian NZ Optical Society (ANZOS)

Professor Nicola Gaston, Director, MacDiarmid Institute

Professor Nick Long, Director, Paihau — Robinson Research Institute

Associate Professor Jevon Longdell, Director, Quantum Technologies Aotearoa

Dr Jami Shepherd, Principal Investigator, Te Whai Ao — Dodd-Walls Centre for Photonic and Quantum Technologies

Dr Cedric Weber, Technical Director, Quantum Brilliance

Dr Marcus Doherty, Co-Founder and Chief Technology Officer, Quantum Brilliance

Professor John Harvey, Founder Southern Fibre Lasers

Professor Cather Simpson, Chief Executive, Orbis Diagnostics (Case study only)

Dr Dana Anderson, Founder and Chief Science Officer, Infleqtion

Alejandra Romero, Principal, Main Sequence Ventures

Mat Rowe, Executive Director, Outset Ventures

Analeise Murahidy, Executive Director Strategic Growth, UniServices, University of Auckland

Jasmine Chambers, President, Science and Technology Australia

Graeme Muller, Chief Executive, Tech New Zealand

Dr David Galligan, Director, New Zealand Defence Science & Technology

Dr. John Lincoln, Harlin Ltd

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