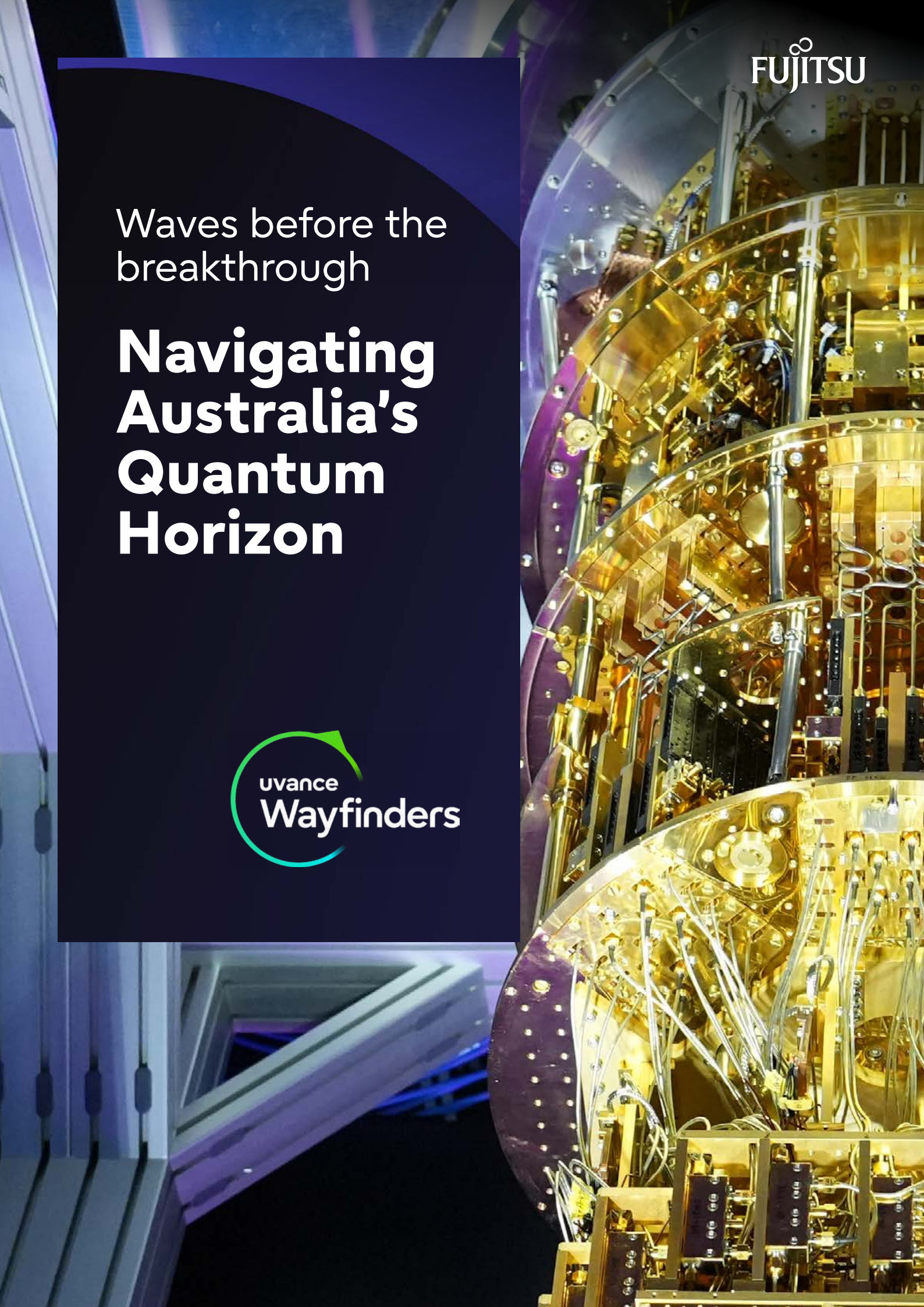
FUJITSU

Waves before the breakthrough

Navigating Australia's Quantum Horizon

uvance Wayfinders



Introduction

In 2026, one message becomes increasingly clear in boardrooms and policy circles alike: quantum is no longer a distant concept sitting at the edge of possibility, it's a present-day readiness challenge. From navigation and medical imaging to mining, logistics and critical infrastructure, the signals are clear; Australia's leaders must pivot from watching the tech evolve to actively preparing their systems for the quantum era.

In February, Fujitsu released its 2026 Quantum Research, conducted with Financial Times Longitude, which surveyed 300 senior decision-makers across six countries, including Australia. The findings reveal a pivotal shift: organisations aren't just curious about quantum; they are actively preparing for it. This includes cross functional executives who see quantum as a disruptive force that will reshape innovation, security and long-term competitiveness.

These forces form the backdrop of a recent conversation between Mahesh Krishnan, Fujitsu's Chief Technology Officer, and Laura Entwistle, Partner at Uvance Wayfinders, Consulting by Fujitsu. As they compared notes on Australia's emerging quantum landscape, a shared insight surfaced instantly:

The paradox of quantum readiness is that it doesn't start with quantum at all, but rather, you cannot leap into quantum without a solid digital base.

To prepare for quantum's eventual arrival, organisations must first master their current hybrid environments. This means prioritising the right infrastructure, talent, partnerships and perhaps most importantly, the right mindset today, so the transition to quantum tomorrow is a natural evolution rather than a frantic scramble.

Quantum technology is advancing quickly, but not all at the same speed

Before assessing market pace, Mahesh distinguishes three fields of quantum technology.

Quantum computing

Solves problems beyond the reach of today's most powerful supercomputers.

Quantum sensing

Uses highly sensitive quantum states to measure changes in gravity, magnetic fields, and time with exceptional precision.

Quantum-safe communications

Leverages quantum mechanics to secure data against future quantum-enabled cyber threats.

Not all three are maturing at the same pace. Quantum computing and quantum-safe communications are advancing rapidly but have yet to reach full industrial scale. When they do, their impact will be structural rather than incremental. In contrast, quantum sensing is already commercially deployed in areas like high-precision navigation, medical imaging, and subsurface mapping, delivering measurable gains in accuracy today.

This uneven maturity is reflected in how industries are responding. Public sector organisations are setting the pace globally, with 73% actively assessing quantum use cases and 70% investing in exploration, signalling both urgency and strategic intent. Financial services are close behind, with 55% investing resources and the same proportion exploring applications to tackle complex business challenges. Manufacturing, however, remains more cautious, with only 30% assessing use cases, underscoring a slower uptake.

The implication is clear: organisations engaging earlier are already seeing results. Nearly half (49%) of public sector organisations report measurable benefits from quantum exploration, alongside 32% in financial services. These gains range from stronger cybersecurity foresight to more informed long-term technology bets and early optimisation advantages.

Quantum and AI are on a collision course...in a good way

The relationship between quantum computing and artificial intelligence is rapidly evolving into a unified "hybrid" stack, marking a profound shift for Australian leaders.

> ***"Quantum isn't competing with AI. It's the next accelerant for AI. Real breakthroughs will occur when orchestrating high-performance computing, AI accelerators and quantum systems together."***
>
> **- Mahesh Krishnan**

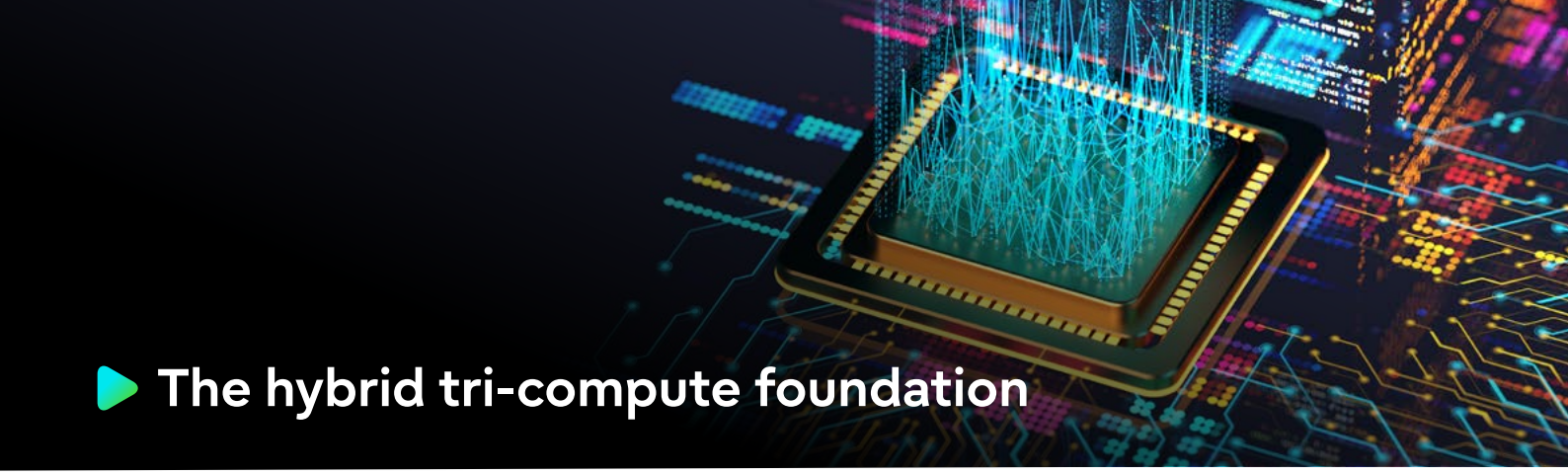
This convergence is already reshaping expectations. In fact, 82% of global executives say AI's rapid advance has been a "reality check" on how quickly emerging technologies can mature, reinforcing why quantum is now being taken more seriously, sooner.

Quantum Machine Learning (QML), for example, goes beyond speeding up AI; it has the potential to fundamentally change how models learn. By overcoming limits in training speed, model complexity and high-dimensional optimisation, quantum can "turbocharge" AI particularly in sectors like finance, energy, logistics and defence. It enables movement beyond the computational ceiling of traditional silicon.

In practice, this creates a powerful division of labour. AI (especially LLMs) helps define problems, structure data and orchestrate workflows. Quantum then tackles the computationally intensive elements, exploring complex feature relationships in ways classical systems cannot. This hybrid future should be a central consideration for Australian organisations that are under pressure to achieve more with constrained budgets, rising cybersecurity demands, and increasing expectations for real-time intelligence.

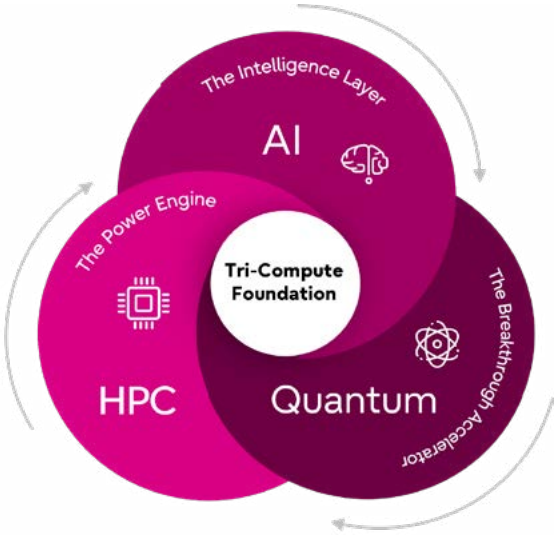
Leading organisations are already leaning in. Public sector agencies, for example, are 15% ahead of others in exploring how quantum and AI can amplify one another, signalling where early advantage is forming.

> ***"When leaders understand that tomorrow's breakthroughs come from combining these technologies, not choosing between them, they start to see quantum readiness in a completely different light."***
>
> **-Laura Entwistle**



The hybrid tri-compute foundation

63% of organisations stated challenges in balancing long-term quantum investment with near-term technologies like AI. Quantum readiness, however, begins with strengthening all digital foundations, not because quantum is slow or distant, but because the path isn't linear. It's a hybrid continuum where different compute models along with AI evolve together, each accelerating the other.



Mahesh put it simply:

> ***"Leaders first need to understand how today's computing landscape fits together. It's not a ladder, it's a triangle."***

Together, they broke this down into three interconnected components where Fujitsu is actively investing to create a unified value proposition.

High-performance computing (HPC)

HPC remains the backbone of modern scientific, industrial, and strategic computation. It powers the simulations, modelling, and analytics across sectors ranging from defence to energy forecasting.

Mahesh likens HPC to the steady workhorse - what Laura calls "the quiet engine."
Classical computing operates on deterministic logic, processing bits as either 0s or 1s in a linear, sequential fashion, which makes it unmatched for high-speed, reliable calculations and the massive data processing required for AI training. HPC won't go anywhere, even as quantum matures. HPC will continue solving 90% of today's computing challenges and will be more powerful when you pair it with what comes next.

Building on this, Mahesh explained how the FUJITSU-MONAKA[1] processor, arriving in 2027, represents the next evolution in this space.

Next-gen efficiency

Designed for high-efficiency and high-performance, MONAKA is engineered explicitly to integrate into hybrid architectures.

The AI bridge

It is optimised for the heavy lifting of AI workloads and large-scale simulations—the very tasks that form the bridge between classical and quantum environments.

Strategic scaling

MONAKA strengthens the middle layer of the hybrid model. It lets organisations scale their AI and analytics today, while preparing them for the orchestration required when quantum accelerators become part of the stack.

1 This new technology applied to the FUJITSU-MONAKA is based on results obtained from a project subsidized by the New Energy and Industrial Technology Development Organization (NEDO)

Artificial Intelligence (AI)

AI is the "intelligence layer" of the triangle. While HPC provides the raw power, AI provides the ability to find patterns, automate workflows, and frame complex problems. In the tri-compute model, AI serves as the orchestrator, helping to translate business challenges into the mathematical language that both HPC and quantum can then solve. By combining AI with HPC powered by FUJITSU-MONAKA[1], organisations can achieve immediate value while building the structure needed for a quantum future.

Quantum computing: The specialised accelerator

Unlike linear processing of classical systems, quantum computing utilises probabilistic behaviour, using qubits to exist in multiple states simultaneously. This allows exploration of an exponential number of possibilities at once - a fundamental difference in computational behaviour.

Quantum won't replace HPC; instead, it will become an accelerator for challenges classical systems can't efficiently solve: optimisation, cryptography, molecular modelling, and high-dimensional simulations. The "exciting part" as Laura mentioned is that:

"Quantum isn't theoretical for Fujitsu. We're building the future right now."

Current Capability → 2026 Milestone → The 2030 Vision

In collaboration with RIKEN, Fujitsu developed a world-leading 256 qubit superconducting quantum computer, now available for early experimentation.

A 1,000 qubit superconducting quantum computer is set to arrive this year.

A national-scale initiative in Japan to build systems exceeding 10,000 qubits.

1 This new technology applied to the FUJITSU-MONAKA is based on results obtained from a project subsidized by the New Energy and Industrial Technology Development Organization (NEDO)

Australia's window of opportunity

Shifting from strategy to action, the message is clear: you don't need a quantum computer to start preparing for the quantum era. In fact, waiting is the greatest risk. Quantum won't arrive in a single leap, but in waves, and real transformation happens when those waves converge. The tri-compute foundation creates value by using AI to frame problems, HPC to process large-scale logic and data, and quantum to solve the most complex mathematical challenges. Organisations that strengthen their digital foundations today will be ready to ride those waves, not be overtaken by them.

Here are five steps leaders can take immediately:

1 Build quantum literacy within teams

Skill shortages remain the #1 barrier globally. Introducing training programs early gives organisations a multiyear head start.

2 Prepare for postquantum cybersecurity

With quantum expected to challenge existing cryptography, early planning is critical.

3 Modernise classical compute environments

Strengthen HPC and prepare for hybrid architectures by adopting next generation chipsets like FUJITSU-MONAKA[1].

4 Adopt quantum inspired solutions

Tools such as **Fujitsu's Quantum inspired technology - Digital Annealer,** a commercial solver delivering optimisation capabilities for today's industrial needs and Quantum simulator to efficiently run ideal quantum algorithms and circuits.

5 Start small with low-risk quantum pilots

Cloud-based simulators allow experimentation with quantum algorithms at minimal cost.

1 This new technology applied to the FUJITSU-MONAKA is based on results obtained from a project subsidized by the New Energy and Industrial Technology Development Organization (NEDO)

Australia has world-class researchers, a vibrant emerging quantum ecosystem, and industries that stand to benefit from quantum-accelerated optimisation, modelling, and cybersecurity. But as other nations pour investment into their quantum ecosystems, the window to secure competitive advantage is narrowing.

It's not about waiting for a machine to arrive; it's about preparing your organisation to thrive when it does.

Explore the quantum research

Learn more about Fujitsu's Computing capabilities

Contributors

Laura Entwistle

Partner, Fujitsu Uvance Wayfinders

Laura Entwistle is a Partner at Uvance Wayfinders, specialising in business-led transformation for critical infrastructure organisations. With experience across energy, utilities, resources and transport, Laura works at the intersection of business and technology to help organisations solve complex challenges and deliver meaningful outcomes. She is passionate about sustainability, ethical leadership, and ensuring technology investments are grounded in real business value. Laura has a strong interest in emerging future technologies, including quantum computing, and the potential they hold to transform industries and unlock new ways of solving complex, system-level challenges. Laura brings a human-centric approach to consulting and is committed to helping clients build resilience and shape a better future for communities and the next generation.

laura.entwistle@fujitsu.com

Laura Entwistle

Mahesh Krishnan

Chief Technology Officer, Fujitsu

Mahesh Krishnan is the Chief Technology Officer for Fujitsu in Oceania, where he plays a critical role in driving sustainable digital transformation for customers. His focus spans artificial intelligence, advanced computing, networking, cybersecurity, data services and converging technologies delivering outcomes that align with business, environmental, and societal goals. Based in Melbourne, Mahesh is a seasoned technology leader with a strong track record in both the private and public sectors leading major transformation programs and championed emerging technologies.

Mahesh is widely recognised for his contributions to the technology community, having authored several technical publications. He is a passionate advocate for innovation and a frequent contributor to technology events and industry forums. Under his leadership, Fujitsu continues to strengthen its role as a trusted partner in delivering cutting-edge digital solutions across Oceania.

mahesh.krishnan@fujitsu.com

Mahesh Krishnan