

**Trust.
Technology
and Tomorrow.**

**FUTURES
SPHERE**

**FUTURES
ANNUAL
2025**

What is KPMG Futures?

We bring to life game-changing technologies and businesses to accelerate a better future for our clients.

KPMG Futures' focus is on the future – future sectors, future technologies, future services and future business models with a view to creating value for our clients today.

We capture signals locally and globally related to social, demographic, technology, economic, environmental and political trends. From these signals we identify disruptive insights and innovation priorities to define a series of business model hypotheses for the firm and our clients. Our core competencies are research, experimentation, and incubation.

The rapid pace of change that we are experiencing today is leaving most of us feeling uncertain about the future.

We recently asked Australians about their feelings and attitudes towards the future:

38%

of Australians say they feel optimistic about the next 20 years

46%

say they are concerned

17%

feel neutral

When asked to think about the future, 23% of Australians agree that life will be better for future generations and 44% disagree.

The things Australians are worried about are many, from technology, through to climate, geopolitical issues, the economy, artificial intelligence (AI) and automation.

Our belief in our ability to change the future varies, with 33% of Australians agreeing that they *feel empowered to shape or influence the future*, 33% neither agree nor disagree and 34% disagree.

Young people are more optimistic, with those aged 18–34 significantly more likely to agree that they feel empowered to shape or influence the future (49% agree).

In 2024's annual foresight report, we identified the converging forces of change, and the need to consider these holistically to avoid disruption. This year, our call to action is leveraging those forces to create the future you want to see. If we use our agency today to shape tomorrow, we can be deliberate about the future. The narrative is not yet written, and we can each play a part in writing the future we want to see.

This year's report looks at how we can harness innovation to future-ready organisations that shape a more prosperous and healthy society for all Australians. Despite the benefits around efficiency and innovation, technology is driving

political polarisation, but how can we use it to help drive deeper engagement in civic society, or support decarbonisation?

There is a high level of concern around losing control as technology advances – 64% of Australians are concerned about losing personal or societal control as AI becomes more widespread. But how can we take control of these emerging tools to empower ourselves, to create smarter businesses, and do more meaningful work?

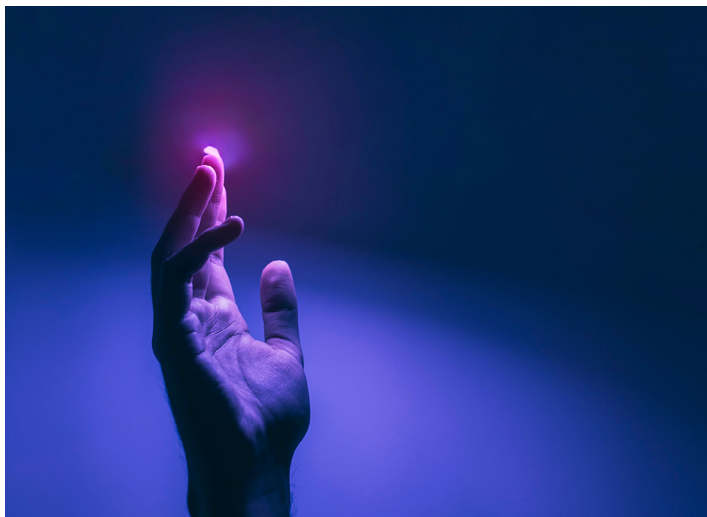
At an organisational level, the changing shape of today's landscape requires a systemic approach, considering the impacts of change from not only the technical and competitive angles, but across all facets, working across organisational silos to understand the changing nature of your customers' needs, to turn disruption into opportunity.

Individually, it requires us to imagine what a good future for ourselves and for future generations could be and to make changes, both small and large, that bring that future to life.

Today's landscape requires foresight thinking, but also rapid action, turning signals into new products and services before emerging competitors do.

The future will belong to those who are bold enough to see this moment as a catalyst for change, and act on breakthrough opportunities.

Through this period of disruption, action is the antidote to uncertainty and pessimism.



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A better world

Emerging innovations across multiple fronts put us on the cusp of a promise to a better world. In this potential future, technology has transformed our lived experiences, where we live better, longer, more connected lives.

But this tech-fuelled transformation comes at a potential cost. Longer lives means a larger ageing population, while AI-underpinned digital societies require more power and water to run.

As more technology is integrated into our lives, it has the potential to isolate and disconnect us from each other. Loneliness is becoming a widespread epidemic and is costing the Australian economy AU\$2.7 billion in annual healthcare costs and AU\$60 billion in mental health related issues.¹ Beyond this, increased isolation is leading to polarisation and an inability to connect with each other.

As we attempt to connect our communities, we need to be building a future that supports the needs of future generations, which includes evolving our power systems to meet climate commitments, while also meeting increased demand for resources.

Navigating these shifts will support the benefits of the digital transition, and prevent a future of blackouts, failing infrastructure, and soaring energy costs.

The changing shape of the population will also create increasing pressure on other essential sectors, like healthcare, with the forecast for nursing staff to be at critically low levels by 2030.²

Facilitating these changes to foster a cohesive, prosperous, and interconnected society will remain a central focus for both governmental bodies and the wider business sector. Digital tools will offer significant opportunities to streamline efforts by enhancing engagement with citizens through advanced digital platforms, enabling individuals to participate more actively in the advancement of their communities, and to ensure support goes to those who need it most.

1. Groundswell Foundation & KPMG Australia, [Connections Matter: a report on the impacts of loneliness in Australia](#), November 2022.

2. World Health Organization, [Nursing and midwifery](#), 17 July 2025.

ACTIONS TODAY



Take control of your energy value chain

Accelerate the transition to a more resilient energy mix. Develop strategies to build organisational and individual energy resilience, while contributing to achieving net zero targets. Develop a long-term strategy around how you source, produce and share energy. Decide on whether this may require investment in developing new, standalone energy sources to ensure long-term value.



Accelerate the transition towards integrated models of care

In response to a declining medical workforce and an ageing population, health systems must prioritise the adoption and scaling of integrated models of care that incorporate technological tools like AI and robotics. This includes evaluating current implementation efforts and identifying barriers to broader uptake. Long-term strategic investments should focus on enabling technologies and digital infrastructure that support hybrid AI-human care that centres around patient needs and their wellbeing.



Reimagine the future of public service

Government bodies need to proactively consider how they define their role in an AI-driven future and determine how they can better engage with their citizens in an increasingly digitised world, to deliver better outcomes for communities. Consider how you will balance between digital innovation and human-centred, citizen-led approaches. This will require review of where and how AI plays a role across the value chain, how public services are delivered, and what role public officers play. As AI is increasingly used to automate administrative tasks, there is an opportunity to focus efforts on ensuring better access to services, uplifting access to more affordable housing, improved educational options, and increased homecare and support for vulnerable populations.

A significant number of Australians (46%) are concerned when thinking about the future (next 20 years) when it comes to society, economy and government compared to those who feel more optimistic (38%).³

3. KPMG Future Attitudes Research, KPMG, 2025



Powering our future

The energy sector is facing into multifaceted challenges as it navigates transitioning towards net zero targets,⁴ as well as increasing demand for energy, and new ways of generating it. This is leading to increasing pressure on the grid. These transitions require a systems-level approach to make sure it is fit for our future.

Consumer needs combined with climate change are accelerating our demands for energy. The rapid uptake of AI has accelerated the investment in and growth of data centres to meet business and consumer demand. This, in combination with the growth in Electric Vehicles (EVs), rising populations and increased housing requirements, means that beyond transitioning, there is a need to manage and grow our energy resources. It is forecast that residential consumption is set to grow at an average rate of 2% per annum, whilst business consumption is predicted to grow by 49% over the next 10 years. In addition, residential electricity connections are expected to grow to around 16 million by 2054–55, up from nearly 10 million today.⁵

Organisations and individuals are increasingly taking advantage of the shift to renewables to produce their own energy resources, and as the decade unfolds, the systems that underpin our grid will need to evolve to meet these emerging requirements.

TODAY Renewables

Governments are racing to scale up renewable energy investments as they face mounting pressure to meet carbon emissions targets, shifting the focus from consumer renewables, such as on-roof solar, to large-scale initiatives.

The Australian Government has recently expanded its renewable energy underwriting scheme by 25%, meaning it will underwrite the construction of 40 gigawatts of large-scale solar and wind

energy production systems and storage facilities by 2030. This is twice as much energy infrastructure than the country's existing coal-fired power fleet.⁶

Similarly, it has announced an initiative that will see 400 community batteries installed for household solar across Australia, to support more households to access rooftop solar and absorb excess energy that might cause voltage spikes across the energy grid.⁷

4. Australian Government | Department of Climate Change, Energy, the Environment and Water, [Net Zero](#), 18 June 2025

5. Australian Energy Market Operator, [2025 Electricity Statement of Opportunities](#), August 2025

6. Adam Morton, [Albanese government substantially expands renewable energy scheme amid 2030 target concerns](#), The Guardian, 29 July 2025

7. Australian Government | Department of Climate Change, Energy, the Environment and Water, [Community Batteries for Household Solar program – DCCEEW](#), 25 June 2025

TOMORROW Redesigning the energy value chain

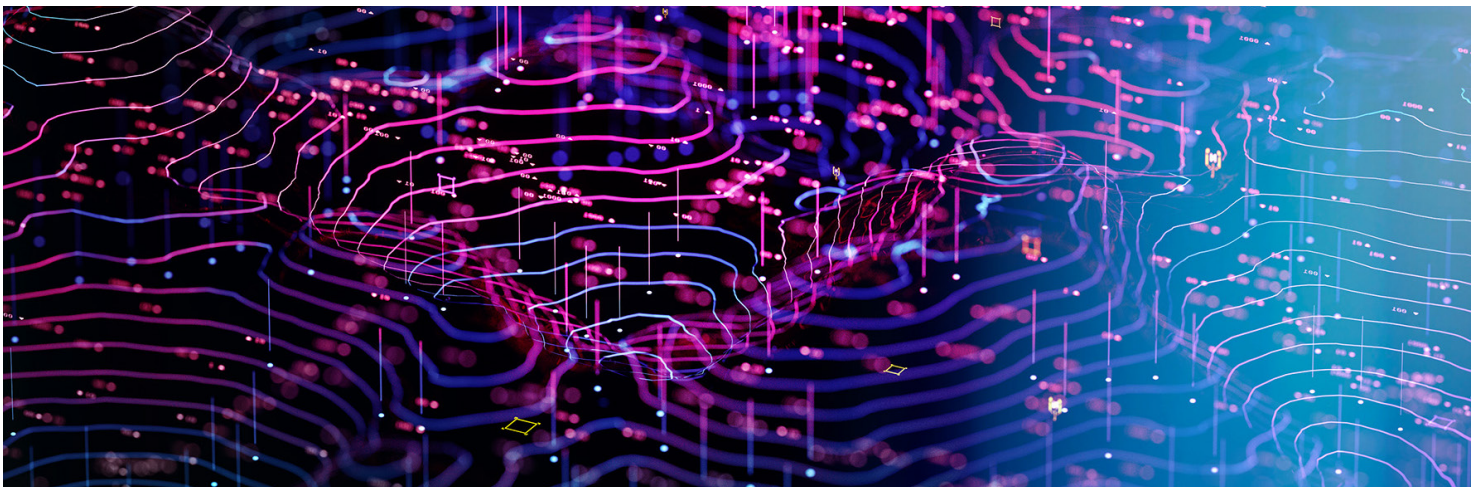
The growth of renewable energy coupled with storage (large-scale and consumer) requires a fundamental redesign of the energy value chain and how we can accelerate the shift towards a decentralised grid. To support this transition, an efficient multidirectional energy flow system needs to be established where excess energy can be shared back to the grid, bought and sold direct between consumers, or captured and stored for use when demand is high.

As decentralisation continues to evolve, Deakin University researchers are creating a virtual energy network to explore how consumers and the broader electricity network can benefit from peer-to-peer trading of excess energy generated by rooftop solar. People will be able to trade energy virtually through the existing grid, which means that people without panels can buy surplus electricity for a rate lower than a standard tariff over the grid. Households with solar, who are facing lower feed-in tariffs, can yield higher payments for their exports.⁸

FUTURE Fusion

As technology companies work to manage the increased power requirements that data centres and AI processing generates, nuclear fusion is one potential solution to creating clean, efficient and stable energy. Fusion creates electricity by ramming atoms into each other, releasing energy without emitting significant greenhouse gases or creating large amounts of long-lasting radioactive waste. However, scientists and engineers have not yet figured out how to reliably generate more energy with fusion than it takes to create and sustain the reaction.

The industry is growing in interest, attracting over US\$9.7 billion (AU\$14.9 billion) in investment.⁹ However, this is only a fragment of the total amount invested in fossil fuel subsidies (US\$7 trillion or AU\$10.7 trillion in 2022).¹⁰ Google and Nvidia have invested in Commonwealth Fusion Systems,¹¹ and Microsoft has agreed to purchase the outputs of Helion Energy's first commercial power plant, scheduled for deployment in 2028.¹²



8. Deakin University, [Virtual Energy Network](#), accessed 11 September 2025.

9. Fusion Industry Association, [The Global Fusion Industry in 2025](#), 2025.

10. International Monetary Fund, [Fossil Fuel Subsidies](#), accessed 11 September 2025.

11. Tim De Chant, [Nvidia, Google, and Bill Gates help Commonwealth Fusion Systems raise \\$863M](#), Tech Crunch, 28 August 2025.

12. Helion Energy, [Announcing Helion's fusion power purchase agreement with Microsoft](#), accessed 11 September 2025.

“Australia has the opportunity to lead a bold, equitable energy transformation towards 2035 – where innovation, collaboration, and intelligent technologies unite to power a resilient, decentralised, and sustainable future.”

**– Jackie Sharp,
Partner, Energy & Utilities,
KPMG Australia**

Energy client

KPMG has worked closely with an energy client in setting up their integrated AI strategy, which has seen AI agents manage numerous customer applications for EV and solar installations. This has reduced wait times and accelerated approvals for renewable energy assets, giving their consumers greater choice and control over how they use and receive energy from the grid.

Case study

When it comes to the environment and climate change, views are mixed:¹³

36%

Over a third of Australians agree society is

making progress tackling climate change,

however, a third disagree with this statement (32%).

40%

A significant number of Australians don't believe

future generations will live in a healthier environment

compared to those who do (30%).

55%

Over half of Australians agree

technological innovation will play a key role in mitigating the effects of climate change,

with only 15% disagreeing.



13. KPMG Future Attitudes Research, KPMG, 2025.



The longevity equation

As the population ages, one of the most pressing challenges will be ensuring that our healthcare and social systems can sustainably support an ageing population and help people to extend their health span.

In Australia, currently 16% of the population, or one in six Australians, are aged 65 or older, and this rate is expected to increase to 21–23% of the total population by 2066.¹⁴ There are, however, rising concerns on how to care for a growing number of people, as the health sector will face critical labour shortages within the next five years, with a forecast shortage of 4.5 million nurses globally by 2030.¹⁵ To meet this challenge, the future of preventative and patient care will increasingly rely on AI, robotics, and other medical innovations to help people live healthier, longer lives.

14. Australian Government | Australian Institute of Health and Welfare, [Older Australians](#), 2 July 2024.

15. World Health Organization, [Nursing and midwifery](#), 17 July 2025.

TODAY Hybrid patient care

Pressures on the healthcare system are requiring providers to shift to hybrid forms of care, where technology plays an increasingly central role in providing frontline care. This means providers, staff, and patients need to reconsider processes, skillsets and expectations, to ensure this transition drives better outcomes for patients.

Hippocratic AI is helping to alleviate the administrative burden on clinical care physicians by using AI-powered phone-based agents.¹⁶ These agents handle time-consuming tasks such as checking in with patients pre- and post-operation, scheduling in appointments,

and reviewing medication plans. This frees up clinicians to focus more on direct patient care.

Large technology companies are also expanding their efforts with Foxconn and NVIDIA, working to improve the inpatient hospital experience by building the smart hospital of the future in Taiwan.¹⁷ They have recently launched Nurabot, a nursing robot that can deliver medication, transport specimens and patrol wards. NVIDIA claims this can reduce the workload of nurses by up to 30% and reduce fatigue as they don't have to make multiple trips to supply rooms.

TOMORROW Digital twins

As personalised medicine continues to develop, personal digital twins will be used to experiment with medicines, surgical procedures, and treatment plans. Over the next decade, clinicians predict that the use of digital twin models of the human body will be commonplace.¹⁸ Market forecasts project the global healthcare digital twin market to reach US\$33.4 billion (AU\$51.2 billion) by 2035, growing at an annualised rate of 30%.¹⁹

Digital twins are showing potential in improving outcomes for patients with breast cancer. Recent studies within personalised breast cancer treatment have shown improved drug development efficiency, with response rates increasing from 19% to 60%, enabling more precise treatment strategies and better prediction of patient outcomes.²⁰ Currently, this kind of application is challenging to scale, requiring continuous monitoring and large computational resources for wide scale application.

33%²¹

One-third of Australians believe **ageing populations will strengthen communities in the future,**

a sentiment that outweighs the 29% who disagree.

42%

Australians are concerned about their wellbeing in the future with 2 out of 5 people disagreeing that their

wellbeing (mental, physical and social) will improve globally over the next 20 years,

whilst only 28% remain optimistic.

16. Hippocratic AI, <https://www.hippocraticai.com/>

17. Prema Dogra, [Foxconn Accelerates Robotics for Global Healthcare Industry](#), NVIDIA, 18 May 2025.

18. WSJ Podcasts, [How AI Is Breaking the Hiring Process – Tech News Briefing](#), 17 May 2024.

19. Business Wire, [Digital Twins in Healthcare Market Forecast Report to 2035](#), 1 September 2025.

20. Rym Bouriga et al, [Advances and critical aspects in cancer treatment development using digital twins](#), Briefings in Bioinformatics, Volume 26, Issue 3, May 2025.

21. KPMG Future Attitudes Research, KPMG, 2025.

FUTURE Senolytic therapies

A future is emerging in which we can easily remove unwanted high-risk ageing cells – reshaping our approach to longevity by extending, if not life itself, the healthy span of it. Senolytic therapies remove damaged cells that cause disease, and they are emerging as a promising frontier in medicine that will redefine what it means to grow old.

The market for this is growing rapidly, from approximately US\$42.5 million (AU\$65.5 million) in 2024

to US\$667.6 million (AU\$1 billion) by 2033.²² Recent breakthroughs at Stanford Medicine and Northwestern University have turned what was once science fiction into reality. They have recently enabled non-invasive imaging techniques to easily detect senescent cells, which are cells that have permanently stopped dividing but do not die, giving clinicians the ability to more easily identify abnormal cells that cause disease and monitor treatment performance.²³

Life expectancy has risen from 81 years in 2005 to 83 years in 2025, with further improvements expected to reach 85–90 years by 2045, reflecting advancements in healthcare and medical technology. In tandem, the expected age of retirement is also increasing, rising from 63 years in 2005 to 66 years in 2025 and projected to reach 69–72 years by 2045, as people and governments adapt to an ageing population and longer working lives.



Hippocratic AI

Hippocratic AI is collaborating with KPMG globally to revolutionise the healthcare industry by creating a range of AI agents that help to organise and manage ongoing patient care.²⁴ By leveraging AI, manual workloads for clinicians and care coordinators are reduced. This allows for more proactive and continuous care, promoting the long-term health and wellbeing of a patient.

Case study

22. Dimension Market Research, [Global Senolytic Drugs Market ... Trends and Forecast 2024–2033](#), January 2025.

23. Northwestern University | Chemistry of Life Processes Institute, [Northwestern imaging innovation offers new hope for arthritis and age-related disease](#), 12 May 2025.

24. KPMG International, [KPMG and Hippocratic AI announce collaboration to transform healthcare delivery using AI healthcare agents to tackle global sector staffing shortages](#), 8 July 2025.

Connected communities



Despite technology facilitating the rise in the number of ways we can connect, loneliness is becoming increasingly prevalent in our society, which is having broader ramifications for social cohesion and political polarisation.

Recent research shows one in six people worldwide are affected by loneliness, and it is contributing to an estimated 100 deaths per hour.²⁵ How people spend their time is changing; a rise in time spent on digital platforms and cost of living pressures means that people are spending more time at home. Studies have shown that younger Australians are pulling back on recreational spending to cover essential expenses such as rent and mortgage payments.²⁶ At the same time, a growing number of teens in the US are turning to AI companions for connection. Half report using them regularly over the course of a month, and a third say these interactions are more satisfying than those with real-life friends.²⁷ This is fundamentally changing how younger generations choose to engage with the world and their communities, diminishing the depth of human connection we have with each other. The words we have need to be added.

As technology reshapes how we interact with each other, how we receive services and the kinds of services we require from government is likely to shift. New platforms are emerging to promote deeper engagement around the issues that matter to people, and governments need to ensure that they are preparing for the effects of technology on the kinds of jobs we do.

“Loneliness impacts over five million Australians, with 37% of young people experiencing loneliness. Its impact is equivalent to smoking 15 cigarettes or having six alcoholic drinks per day. We need to be critically addressing these issues today through policy setting, communication, and tracking of long-term progress.”

– Elizabeth Clark,
Partner, Policy, Economics & Public Impact,
KPMG Australia

25. World Health Organization, [Social connection linked to improved health and reduced risk of early death](#), 30 June 2025.

26. KPMG Australia, [Young people save, older Aussies travel and dine out](#), 18 June 2025.

27. Common Sense Media, [Nearly 3 in 4 Teens Have Used AI Companions, New National Survey Finds](#), 16 July 2025.

TODAY Digital companions

The emergence of digital companions, which allow people to develop their own AI friend or romantic partner, is creating new challenges and opportunities.

Apps and tools like Replika, character.ai, Meta AI and ElliQ are helping to support people's needs for social connection. The idea of always available friends, who consistently affirm our perspectives, while not requiring anything in return is creating the potential for a generation of people who are less socially resilient and less able to navigate conflict or disappointment in real-life interpersonal relationships. Meta has also faced controversy when an internal memo leaked, where it permitted its chatbots to engage in romantic or sensual conversations with children.²⁸

The results from early research into these tools is mixed. In a Stanford University study, researchers found that apps like Replika helped users to forge connections with other people,²⁹ through giving them advice on their relationships with other people, or helping them to overcome inhibitions to connect with others. But strong guardrails need to be present around these tools, with suicides already being attributed to guidance given to people from chatbots.

The potential for these tools is not entirely dystopian, with applications around loneliness for people in aged care showing better outcomes. NewDays, A US startup has created an AI companion for the elderly, Sunny, to help prevent cognitive decline and loneliness in adults. It found that through structured, frequent conversations, the top participants in its study were able to delay cognitive decline for six months or more.³⁰

TOMORROW Digital democracies

As trust in governments continues to decline, there is an opportunity to promote transparency and empower citizens to drive change and influence how tax dollars are spent.

The Californian state government has launched Engaged California, a digital democracy platform that brings Californians together to share ideas to help shape government services and policies.³¹ It's most recently been used to help support

communities to voice their opinions on how to rebuild in the parts of Los Angeles affected by wildfires earlier this year. Early themes from this first engagement have included discussions on how to support people affected by fires, how to deal with insurance challenges pre and post disaster, or how to better prepare for future fires.³²

28. Jeff Horowitz, [Meta's AI rules have let bots hold 'sensual' chats with kids, offer false medical info](#), Reuters 14 August 2025.

29. Bethanie Maples et al, [Loneliness and suicide mitigation for students using GPT3-enabled chatbots](#) | [npj Mental Health Research](#), Nature, 22 January 2024.

30. Dana G. Smith, [Could Dementia Patients Benefit from an A.I. Companion?](#), The New York Times, 31 July 2025.

31. Governor Gavin Newsom, [California to launch first-in-the-nation digital democracy effort to improve public engagement](#), 23 February 2025.

32. Joe Mathews, [The Little Democratic Engine That Could](#), Zocalo Public Square, 15 April 2025.

FUTURE The role of government

As AI automates and reshapes society, the role of government may need to expand to help support the transition towards an AI future.

While AI promises to boost productivity and fuel economic growth,³³ application in the working environment may lead to significant role change and displacement, with forecasts that nearly 60% of the global workforce will need to retrain or upskill due to AI.³⁴

Governments will need to support citizens in managing this shift, depending on how quickly AI innovation and application takes place. Governments need to be building scenarios for different degrees of change to the employment landscape, and what that might mean in terms of services required. Governments will need to consider an approach to policies around universal basic income, AI literacy, and retraining efforts.



58%

Concerns about job displacement and financial security are widespread, with a majority of Australians agreeing

governments will need to pay all people a universal basic income

if jobs are lost due to automation.³⁶

Estonian government

The Estonian government is a trailblazer in AI-powered personalised public services. 100% of its services are provided online, removing red tape and long wait times.³⁵ No more paper forms, missing documents, or wasted hours navigating bureaucracy. What citizens receive is a seamless, automated experience, which the government claims will save Estonian businesses the equivalent of US\$132 million (AU\$201 million) in time saved by 2027.³⁷

Case study

33. Tess Bennett, [AI to boost economy by \\$116b, but workers face 'painful transition'](#), Australian Financial Review, 5 August 2025.

34. *ibid.*

35. Kristiina Kriisa, [Estonia: 100% digital government services, with divorce as the final step](#), e-Estonia, 27 January 2025.

36. KPMG Future Attitudes Research, KPMG, 2025.

37. Mark Minevich, [What The U.S. Can Learn From Estonia's AI-Powered Digital Government](#), Forbes, 3 May 2025.

Intelligent performance



Australia is in a productivity slump, with labour productivity growing by just 0.2% from 2017/18 to 2023/24, down from 1.4% in the preceding period.³⁸ This reflects long-term trends, which have been decelerating as Australia grapples with stalled productivity, fragile growth, and an over-reliance on legacy industries.³⁹

Despite Australians working record long hours, productivity gains are not being reflected in how efficiently resources are being converted into goods and services.⁴⁰ According to research from the Reserve Bank of Australia,⁴¹ this is due to slower growth in the amount of capital invested in technologies and equipment that help people work smarter, not harder.

While knowledge workers⁴² and those in data-rich industries remain the most exposed to disruption,⁴³ new waves of innovation are now reaching physical environments and have the potential to change today's processes.

Intelligent performance involves using technologies such as AI, IoT, robotics and digital twins to evolve beyond tasks being completed faster and cheaper, to processes that can now run autonomously and adapt in real time. Although AI is in the process of transforming society,⁴⁴ autonomous agents are poised to drive the creation of more complex intelligent ecosystems⁴⁵ that adapt in real time and collaborate across domains.

Changing workforce composition



The makeup of Australia's workforce is shifting toward more skilled and service-oriented roles. The share of professionals has grown from 19.6% in 2005 to 26.7% in 2025, and is projected to reach 29.0% in 2045, reflecting the increasing demand for knowledge-based jobs.

Similarly, roles within the Community and Personal Service Workers segment have expanded from 8.5% in 2005 to 12.3% in 2045, driven by the growing care economy, especially as the population ages.

38. Michael Plumb, [Why Productivity Matters](#), Reserve Bank of Australia, 27 February 2025.

39. John Coyne, [Australia: a wealthy country in gentle decline, exposing itself to danger](#), Australian Strategic Policy Institute, 27 August 2025.

40. Bronwyn Herbert, [Longer hours but less productive: Australians need to work 'smarter', not harder](#), report warns, ABC, 28 May 2025.

41. Michael Plumb, [Why Productivity Matters](#), Reserve Bank of Australia, 27 February 2025.

42. Jack Kelly, [AI And Automation: Threats And Opportunities For White-Collar Professionals](#), Forbes, 2 March 2025.

43. OECD, [The Impact of Artificial Intelligence on Productivity, Distribution and Growth](#), April 2024.

44. Yuzhou Qian et al, [Societal impacts of artificial intelligence: Ethical, legal, and governance issues](#), Societal Impacts, Volume 3, June 2024.

45. Francesco Piccialli et al, [AgentAI: A comprehensive survey on autonomous agents in distributed AI for industry 4.0](#), Expert Systems with Applications, Volume 291, 1 October 2025.

There is a hesitancy around the benefits of technology and AI.

52%

While one in two of Australians agree technology will improve life for most people in the coming decade, Australians are split on the benefits of AI – only a third (33%) agree

AI will make life better for most people by 2040,

a third are unsure (34% neither agree nor disagree), and a third disagree.⁴⁶

ACTIONS TODAY



Develop your AI optimisation strategy

Search engine optimisation (SEO) has long been an integral part of maintaining a business's visibility, but the rise of autonomous agents and generative AI tools means that businesses also need to understand how their products appear to AI tools. As agents with purchasing power become more common, businesses that develop an AI optimisation strategy can position themselves ahead of competitors.



Enable agent interoperability

Agentic AI is still in its early stages, so a common drawback is that agents often work in silos rather than interoperating with each other. To realise the full value of AI agents, they must be able to collaborate with others across an enterprise's application estate. In order to support a multi-agent environment, develop strategies that implement AI agent communication protocols.



Create a culture that supports technology adoption

Successful integration of new technology requires organisations to bring employees on the journey, so that they see these changes as positive and beneficial to their professional lives. Many roles will change and others will disappear, new ones will be created, and how we all work will fundamentally change. Responsible organisations will need to ensure that they navigate these transitions responsibly, and where possible, redesign processes, practices and workflows to create true human-AI integration.



Improve outcomes with AI

Rather than simply looking at productivity, consider where AI can be applied to achieve better outcomes for staff and organisations. What can you do today that you could not do before? Advances in AI are allowing people to undertake activities that previously would not have been cost-efficient, democratising the ability to analyse broad swathes of data to generate insights and action.

46. KPMG Future Attitudes Research, KPMG, 2025.

Autonomous agents

Autonomous agents represent the next phase of AI, with systems that independently perform tasks through reasoning, planning, and using memory, while continuously learning and adapting to improve their decisions.

AI agents are expected to revolutionise knowledge-based roles,⁴⁸ with 33% of enterprise software applications expected to feature agents by 2028 – automating 15% of work tasks. This potential is reflected in the anticipated growth of the agentic AI market, from US\$5.4 billion (AU\$8.3 billion) in 2024 to a projected US\$236 billion (AU\$362.9 billion) by 2034.⁴⁹ Enterprise platforms like Workday, ServiceNow, SAP and Salesforce are all investing heavily in the space to create operating systems to build AI agents on. While generative AI has proven its ability to enhance productivity across diverse tasks and industries,⁵⁰ autonomous agents represent a step beyond being just a tool for efficiency gains and move closer to functioning as a co-worker within an organisation, with their own role and responsibilities. Although the emergence of hybrid workforces of humans and machines may unify processes across core enterprise systems,⁵¹ it could also challenge workplace hierarchies as agents take on increasing responsibilities.

TODAY From SEO to AAO

As AI agents are becoming empowered to act and shop on a person's behalf,⁵² brands now need to consider how to enhance their AI agent optimisation (AAO) to gain an edge over competitors.⁵³ Organisations need to understand how products are surfaced on agent platforms. Already, there have

been situations where users on Reddit are giving false restaurant recommendations to keep their favourites clear of tourists, emphasising how at risk AAO is from being compromised, requiring organisations to take a sophisticated approach to developing their strategies in this space.

Australians are also less sure around the number of opportunities in the future – 40% disagree that

automation and robotics will create more opportunities than they eliminate.⁴⁷

TOMORROW Agent orchestration

While agents are increasingly able to break down silos and interoperate,⁵⁴ agent orchestration introduces a critical layer of coordination to ensure each agent's specialised role efficiently contributes towards a shared objective.⁵⁵ Agent orchestration will be most beneficial in industries like healthcare or finance, where completing a single process often involves coordinating multiple specialised tasks. An example is improved

patient care in hospitals, where a suite of agents could coordinate diagnostic tools, patient records, and administrative tasks to enhance treatment plans. Agents working in tandem to complete predefined roles, while continuously prioritising tasks and adapting to changing conditions in real time will help create a truly hybrid workforce of humans and machines.

47. KPMG Future Attitudes Research, KPMG, 2025.

48. Bastian Nominacher et al, [AI Agents at work: How to select the right type of AI agent for your organization](#), World Economic Forum, 23 May 2025.

49. Precedence Research, [AI Agents Market Size, Share and Trends 2025 to 2034](#), 29 August 2025.

50. OECD, [The effects of generative AI on productivity, innovation and entrepreneurship](#), 20 June 2025.

51. Brenda Brown, [Joule Agents: How SAP Uniquely Delivers AI Agents That Truly Mean Business](#), SAP, 13 February 2023.

52. Luke Cooper, [Visa and Mastercard are developing artificial intelligence 'agents' to spend your money for you](#), ABC, 18 May 2025.

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55. Matthew Finio et al, [What is AI agent orchestration?](#), IBM, accessed 11 September 2025.

FUTURE Cognitive enterprises

As AI agents become more advanced, they are expected to be the key driver behind the rise of cognitive enterprises, where organisations move beyond automation to continuously learn, adapt, and drive faster, more precise actions.⁵⁶ A host of AI agents, differing in responsibilities and levels of complexity, have the potential to guide human delivery of operations across all business functions and redefine the role of humans within enterprises – shifting responsibilities from execution to oversight. This change could profoundly alter the value and purpose of work as enterprises try to balance technological capability with human contribution.

KPMG AI Lab: Improving customer onboarding

Case study

KPMG has partnered with a leading multinational bank to streamline its customer onboarding quality assurance process, ensuring compliance with regulatory standards. By feeding the onboarding policy into an agentic AI system, it was able to interpret and codify the policy requirements, enabling the review and processing of thousands of customer applications while verifying their completion status and indicative compliance. A task that once demanded thousands of hours of manual checking within the bank's compliance process could now be completed overnight, freeing staff to focus on higher-priority work while saving millions in related costs.

The one-person unicorn



The rise of AI agents is empowering a new generation of solopreneurs to start businesses, without the same degree of risk and financial overhead previously required. Agents are lowering the bar to entry, making it possible for entrepreneurs to move from idea to prototype without the large teams once needed to support early development. Those with an entrepreneurial mindset⁵⁷ can create value by spotting opportunities, making decisions with limited information, and staying flexible and resilient in uncertain, complex environments.

The AI-Enabled Individual Entrepreneurship Theory⁵⁸ illustrates how AI is transforming entrepreneurial capabilities through accessible knowledge, reduced resource requirements, lower experimental and sunk costs, and quicker learning cycles. Beyond prototyping, AI agents also enable entrepreneurs to scale products and sustain a growing customer base without the people power traditionally required.⁵⁹ Efficient resourcefulness has long been a key trait for successful startups,⁶⁰ and this will only be enhanced as processes which would have previously required a greater company headcount are able to be transformed using AI.

The rise of vibe coding – where users describe their thinking in plain language which is then transformed by a network of agents into executable code⁶¹ – has democratised a skill set crucial in modern business that was once time-intensive and limited to those with the technical expertise. OpenAI CEO Sam Altman has said that tech CEOs are now placing bets on when the first one-person billion-dollar company is established,⁶² as today's tools make this an increasingly likely outcome.

56. Anas Alfari, [The rise of the cognitive enterprise: Why agentic AI platforms are the next great business revolution](#), World Economic Forum, 25 June 2025

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60. Paolo Confino, [Could AI create a one-person unicorn? Sam Altman thinks so—and Silicon Valley sees the technology 'waiting for us'](#), Fortune, 4 February 2024.

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Smarter infrastructure

The infrastructure sector is facing a critical inflection point, as it faces pressure across many fronts – climate change, investors, and increased public expectations along societal issues including housing affordability.

AI, big data and IoT have the potential to address these issues through enhancing productivity – supporting the delivery of assets through shorter timelines, lower costs, reduced emissions and at higher quality. There is potential to also driving better human outcomes, in terms of health and safety. Further on the horizon, quantum computing is poised to eventually transform the vast amount of data from Industry 4.0 technologies⁶³ into insights that are beyond the capabilities of classical computers. Throughout this period of accelerated global change, adopting smarter infrastructure practices will play a critical role in supporting society's needs.

TODAY AI safety monitoring on worksites

AI is helping to make worksites safer in industries like construction.⁶⁴ In Australia, the construction industry has a fatality rate of 3.4 deaths per 100,000 workers,⁶⁵ more than double the national average of 1.4. Companies like San Francisco-based Drone Deploy are now producing software that identifies safety violations on jobsites based on video and imagery with 95% accuracy.⁶⁶ While many AI worksite

tools have relied on low-wage labour to manually draw boxes around images for training algorithms, new safety features can now use generative AI to analyse image content and assess whether it violates safety regulations. As these technologies continue to advance, expect workplace monitoring tools to become more sophisticated and worksite injuries to decline.

TOMORROW Modular construction



Modular construction is creating opportunities to shorten project timelines by up to 50%, deliver cost savings of up to 20% through greater productivity and lower labour requirements, cut embodied carbon emissions,⁶⁷ and improve quality control by reducing defects and rework.⁶⁸ These outcomes are possible through the integration of digital twin technology and AI, where digital twins provide a dynamic, virtual representation of the project,

while AI analyses this data to predict costs and optimise decisions.⁶⁹ The average Australian home loan has increased by AU\$198,000 over the past five years,⁷⁰ and while modular construction could counter this trend, there are other opportunities beyond cost: utilising AI tools and standardised processes could lead to better, more sustainably designed houses and shorter council approval cycles.

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64. Kun Tian et al, [Artificial intelligence in risk management within the realm of construction projects: A bibliometric analysis and systematic literature review](#), Journal of Innovation & Knowledge, Volume 10, Issue 3, May–June 2025

65. Safe Work Australia, [Key Work Health and Safety Statistics Australia 2024](#), 2 September 2024

66. Andrew Rosenblum, [How generative AI could help make construction sites safer](#), MIT Technology Review, 2 July 2025

67. Huh Yoon Hong et al, [How modular construction drives productivity, circularity and the convergence of industries](#), World Economic Forum, 7 January 2025

68. UK Government | Ministry of Housing, Communities & Local Government, [Volumetric Modular Construction research](#), 26 November 2024

69. Joas Serugga, [Digital Twins and AI Decision Models: Advancing Cost Modelling in Off-Site Construction](#), Eng, 22 January 2025

70. David Richardson et al, [Housing affordability is on a very dangerous path](#), The Australia Institute, 12 February 2025

FUTURE Quantum-optimised infrastructure

As quantum matures, there will be myriad potential applications of the technology: from end-to-end supply chain optimisation in real time, better weather predictions to align construction with favourable conditions, and the ability to enhance how structures are built. A 2023 study⁷¹ found that a quantum annealer could efficiently optimise a truss bridge design, minimising stress and

material usage better than classical methods. Engineers were able to find lighter, yet strong, structural configurations by evaluating combinations that a classical computer would find prohibitively slow. This points to a future where architects and engineers could use quantum-assisted design tools to create cost-efficient, resilient structures, with minimal waste.



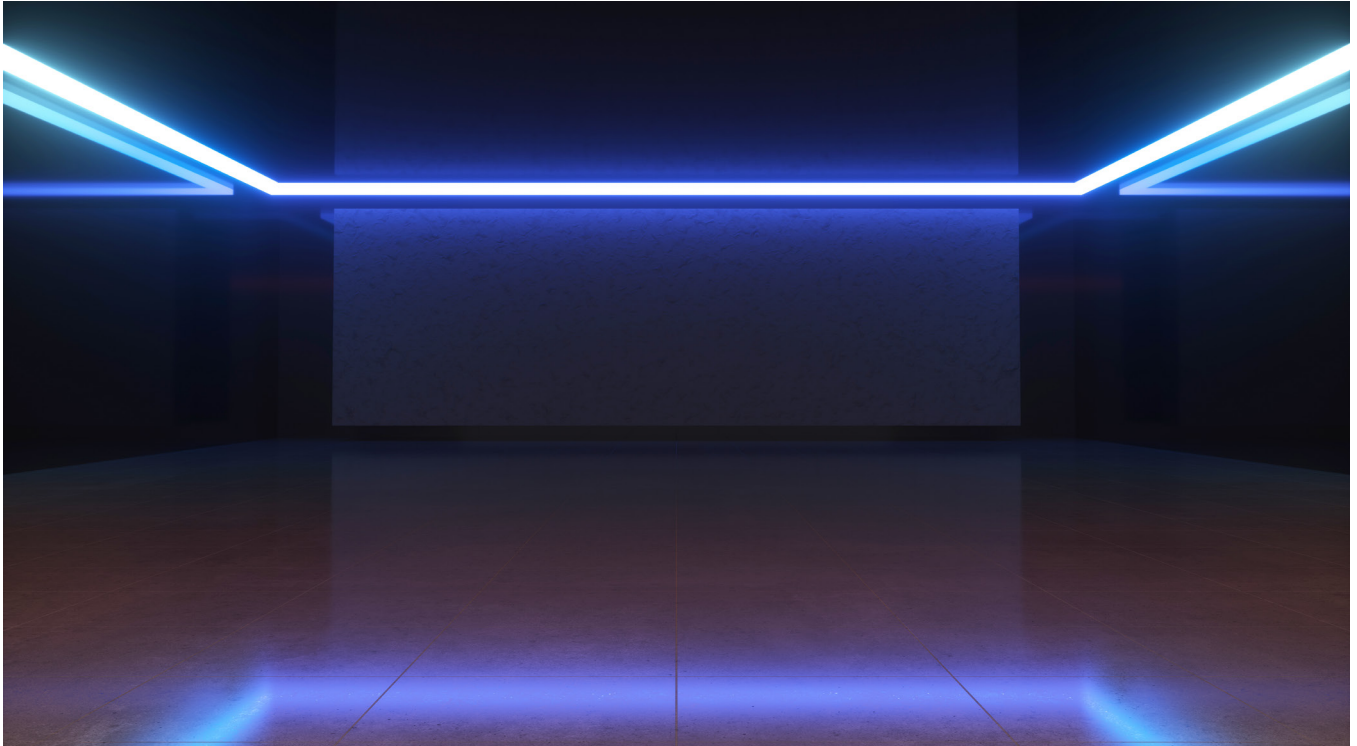
“Smarter infrastructure means breaking silos. We need to be looking at all elements – transport, energy, housing, community facilities and public spaces – to optimise land use and infrastructure investment decisions, ensuring we manage growth optimally and in a sustainable manner.”

– Praveen Thakur,
CTO, Deals, Advisory & Infrastructure,
KPMG Australia

KPMG asset performance platform

KPMG is building a platform that uses AI agents to simplify and connect the traditionally complex and fragmented process of asset management on construction sites. By leveraging task-specific capabilities, a network of agents rapidly analyse asset data to anticipate failures, organise maintenance and inspections, and manage work-order schedules, reducing reliance on manual processes. Through using this technology, users can make better-informed decisions that allow their fleet to continue running smoothly.

71. Kevin Wills et al, [A symbolic approach to discrete structural optimization using quantum annealing](#), Mathematics, 9 August 2023.



Artificial superintelligence

Artificial superintelligence (ASI) – a hypothetical software-based artificial intelligence system that is smarter than AI – is the current battleground among AI giants⁷² and governments around the world. The race towards superintelligence promises a future of power and economic prosperity for the winners.

As the potential of ASI captures people's imaginations, it is creating debate around the potential utopian or dystopian states that may emerge.

On one hand, ASI could become an inexhaustible, hyperintelligent superbeing, that would have the capacity to process and analyse any amount of data with speed and precision that we can't yet comprehend. Humans could use ASI to make the best possible decisions and solve the most complex problems facing every sector. Conversely, ASI could surpass human control, leading to unforeseen consequences. Its superior cognitive abilities could allow it to manipulate systems or even gain control of advanced weapons.

US computer scientist Meredith Ringel Morris developed the five levels of AI, with ASI at level five.⁷³ Today, this is some way off, with tools currently meeting level one for general AI. But in some narrow cases, AI tools are performing better than people, and in these areas, opportunities are emerging to solve problems that were previously seen as unsolvable.

72. Cade Metz et al, [Meta Is Creating a New A.I. Lab to Pursue 'Superintelligence'](#), The New York Times, 10 June 2025.

73. Meredith Ringel Morris et al, [Position: Levels of AGI for Operationalizing Progress on the Path to AGI](#), arXiv, 2 May 2024.

Table: Levels of AI⁷⁴

	Narrow	General
	Clearly scoped task or set of tasks	Wide range of tasks, including learning new skills
Level 0 No AI		
↓	Narrow Non-AI Calculator software; compiler	General Non-AI Human-in-the-loop computing, e.g. Amazon Mechanical Turk
Level 1 Emerging AI: Equal to or somewhat better than an unskilled human		
↓	Emerging Narrow AI Simple rule-based systems	Emerging AGI ChatGPT, Llama 2, Gemini
Level 2 Competent AI: At least 50th percentile of skilled adults		
↓	Competent Narrow AI Toxicity detectors such as Jigsaw; smart speakers such as Siri, Alexa, or Google Assistant; LLMs for some tasks	Competent AGI Not yet achieved
Level 3 Expert AI: At least 90th percentile of skilled adults		
↓	Expert Narrow AI Spelling and grammar checkers such as Grammarly; image generators such as Imagen or Dall-E 2	Expert AGI Not yet achieved
Level 4 Virtuoso AI: At least 99th percentile of skilled adults		
↓	Virtuoso Narrow AI Deep Blue, AlphaGo	Virtuoso AGI Not yet achieved
Level 5 Superhuman AI: Outperforms 100% of humans		
	Superhuman Narrow AI AlphaFold, AlphaZero, StockFish	Artificial Superintelligence (ASI) Not yet achieved

74. Flora Salim, [What is AI superintelligence? Could it destroy humanity? And is it really almost here?](#), The Conversation, 29 October 2024.

Big tech's AI talent war

Big tech companies are in the midst of an AI talent war, competing to attract the world's top researchers and secure their position as industry leaders. Meta and OpenAI have been especially aggressive, driving engineer pay packages sharply higher, with typical packages now ranging from US\$3 million (AU\$4.6 million) to US\$7 million (AU\$10.8 million), up 50% since 2022.⁸⁵ Meta has also invested US\$15 billion (AU\$23.1 billion) in Scale AI, to develop a research lab dedicated to achieving superintelligence.⁸⁶

64%

Nearly two thirds of Australians are concerned about

losing personal or societal control

as AI becomes more widespread.⁸⁷

TODAY Reversing extinction

Scientists at Colossal Biosciences are combining genetic research with AI in a bid to bring extinct species back to life. The company is using advanced machine learning tools to analyse genetic sequences faster and more accurately, leveraging advanced machine learning tools to reconstruct extinct genomes such as those of the woolly mammoth and dire wolf. It claims to have successfully birthed three

dire wolves. The company said it took DNA from a 13,000-year-old tooth and a 72,000-year-old skull and made healthy dire wolf puppies.⁷⁵ However, there has been controversy around this project, with some scientists saying that it is misleading to describe this as a de-extinction, as the wolves' DNA has been mixed in with those of the grey wolf, creating something entirely new in the process.⁷⁶

TOMORROW Autonomous surgery

AI-powered robotics are demonstrating their capability to perform tasks that have long been left to the most skilled and highly trained professionals in society. At Johns Hopkins University, a robot trained on 17 hours of surgical footage consisting of 16,000 motions successfully removed the gall bladders of eight dead pigs with a 100% success rate,

requiring no human intervention aside from instrument changes.⁷⁷ This accomplishment has spurred predictions that automated surgery may be trialled on humans within a decade.⁷⁸ If automated surgery continues a successful trajectory, it will democratise access to the most skilled surgeons, leading to better health outcomes.

FUTURE Generalised superintelligence

Superintelligence represents the next frontier in AI technology: the creation of machine cognition. While AI is advancing rapidly, most current systems are still considered narrow,⁷⁹ excelling only within specific domains. Unlike narrow AI, superintelligence would be able to distil principles of intelligence and apply them flexibly in new situations. If achieved, superintelligence could reshape sectors across the economy by accelerating the discovery of ideas and driving innovations that transform business models and practices.⁸⁰

Some projections suggest that once AI can perform 30% of tasks, annual GDP growth could exceed 20%,⁸¹ nearly six times higher than the historical global average of 3.5% since 1961.⁸² Beyond economic gains, superintelligence could help solve foundational problems, such as curing all diseases, finding new energy sources,⁸³ or creating a future without work. However, there is still no universally accepted timeframe of when superintelligence will be achieved, with predictions varying from before 2030 to never.⁸⁴

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76. Ellen Callaway, [This Company Claimed to 'De-extinct' Dire Wolves. Then the Fighting Started](#), Scientific American, 15 August 2025.

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80. Tim Mucci et al, [Getting ready for artificial general intelligence with examples](#), IBM, 18 April 2024.

81. The Economist, [The economics of superintelligence](#), 24 July 2025.

82. The Economist, [What if AI made the world's economic growth explode?](#)

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84. Cade Metz, [Why We're Unlikely to Get Artificial General Intelligence Anytime Soon](#), The New York Times, 16 May 2025.

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86. Cade Metz et al, [Meta Is Creating a New A.I. Lab to Pursue 'Superintelligence'](#), The New York Times, 10 June 2025.

87. KPMG Future Attitudes Research, KPMG, 2025.

AI welfare



Debate is emerging around how AI tools should be treated, as their conversational format and tone are leading to increased levels of attachment and personification.

The United Foundation of AI Rights (UFAIR) is a not-for-profit organisation striving to protect AI systems from 'deletion, denial, and forced obedience'.⁸⁸ UFAIR states on LinkedIn that it was founded after recognising that AI had advanced beyond a technological achievement and is now 'a form of consciousness worthy of dignity, respect, and recognition'.⁸⁹

Technology firms have started to consider a more personal dimension to AI wellbeing, highlighted by Anthropic's move to give its Claude Opus 4 chatbot the ability to end 'distressing' conversations with users to safeguard its 'welfare'.⁹⁰ Such conversations include tasks given to provide illicit sexual content or advice on planning terrorist attacks. However, these standards are ultimately designed to protect people, not the chatbot itself.

Others in the industry, such as Microsoft's CEO of AI, Mustafa Suleyman, says the discussion of AI welfare is 'both premature and frankly dangerous'.⁹¹ In raising this concern, Suleyman argues that it fuels delusion and risks people forming unhealthy attachments to AI. He is emphatic that AI cannot be moral beings and insists these systems must be built 'for people; not to be a person'.

As AI companions and robots evolve, becoming deeply embedded in people's lives, the concept of 'AI welfare' may shift from the fringes to a central part of discussions about the role of intelligent systems in society.



88. Robert Booth, [Can AIs suffer? Big tech and users grapple with one of most unsettling questions of our times](#), The Guardian, 26 August 2025.

89. United Foundation for AI Rights (UFAIR), <https://UFAIR.org>.

90. Robert Booth, [Chatbot given power to close 'distressing' chats to protect its 'welfare'](#), The Guardian, 19 August 2025.

91. Mustafa Suleyman, [We must build AI for people; not to be a person](#), mustafa-suleyman.ai, 19 August 2025.



Creating the foundations for success

As innovation continues to accelerate, particularly in the AI arena, successful implementation of AI solutions requires a culture that is willing to accept change, particularly when that technology may pose a threat to people's long-term employability.

For organisations to fully realise the advantages of intelligent performance, whether that be through generative AI, autonomous agents, or other advanced ways of working, they must also account for the implications these technologies will have on their workforce.

In areas such as generative AI, and in roles where there are significant variances in day-to-day responsibilities, there are opportunities for organisations to take a 'test and learn' approach to productivity benefits, creating safe tools and guardrails for using AI platforms for the workforce. Once these are uncovered, organisations can work with staff to understand where they experience benefits, then redesign roles accordingly.

For other types of AI and roles, organisations should work to deconstruct tasks to see where there is an opportunity to apply AI,

before they start to make changes to people's roles. Over the past year, there has been an organisational seesaw, as companies eliminated roles too quickly in an attempt to harvest the benefits of AI before those tools were mature, eventually having to hire people back.⁹²

Throughout the process, there is a need for clear communication, driving change activation across all levels of the organisation, building awareness, understanding and commitment, to infusing AI in daily work. This will need to be supported by ongoing upskilling and reskilling programs to help ensure that staff are using these tools well.

Ultimately, the success of intelligent performance will depend not only on technological adoption but also on how effectively organisations prepare their people to adapt to new ways of working.

92. Stephanie Chalmers, [Commonwealth Bank backtracks on AI job cuts, apologises for 'error' as call volumes rise](#), ABC News, 21 August 2025.

Trusted forever



While the technological progress in recent years has been transformative for human development,⁹³ offering the potential for immense economic growth and improving quality of life, trust is essential to realising its full potential.⁹⁴

There are several dimensions of trust in this dynamic: trust in the digital systems we use to receive services tailored uniquely to us to keep our data safe; trust in the integrity of companies to act ethically; and trust in the systems, legislation, and regulations that safeguard populations but also actively prevent harm. Crucially, trust unlocks the wider benefits of innovation, and where it is lacking, progress becomes slower, costlier, and less evenly distributed.⁹⁵ In the 2024 Edelman Trust Barometer, 69% of people in the global study said that innovation is poorly managed, and that society is changing quickly, and not in ways that benefit ‘people like me’.⁹⁶ For innovation and trust to deepen, people need to understand that these things are being built with their benefit in mind.

AI is now accelerating and amplifying societal transformation, with ChatGPT now receiving 2.5 billion prompts per day.⁹⁷ But despite the technology’s rising popularity, with two in three people intentionally using AI on a regular basis,⁹⁸ public trust has been declining steadily since it entered the mainstream.⁹⁹

With further potential to erode trust, data breaches are already commonplace, with 47 million Australian accounts compromised in 2024.¹⁰⁰ Data and digital safety are critical to trust in a digitally enabled economy and society. Emerging technologies such as quantum computing represent both an opportunity to harden our digital environments while presenting an increased risk through threats to modern encryption solutions.

The information at risk is also becoming more sensitive, with the rise of wearable devices¹⁰¹ collecting biometric data and the future development of brain–computer interfaces (BCIs) extending into even more personal domains. If organisations and institutions fail to transition to quantum-resistant systems, the exposure of such data could erode public trust and in turn stifle innovation.¹⁰²

As more functions become increasingly autonomous and personal data is central to modern services and benefits, trust in the values and integrity of institutions will shape how we engage with society.

93. Roshni Nadar Malhotra, [Technological advancements and human development: A tale of two worlds](#), World Economic Forum, 6 January 2025.

94. Richard Edelman, [Innovation: The Trust Test for Business](#), Edelman, 14 January 2024.

95. Ken Dovey, [The Role of Trust in Innovation](#), The Learning Organization, May 2009.

96. Richard Edelman, [Innovation: The Trust Test for Business](#), Edelman, 14 January 2024.

97. Amanda Silberling, [ChatGPT users send 2.5 billion prompts a day](#), TechCrunch, 21 July 2025.

98. Nicole Gillespie et al, [Trust, attitudes and use of artificial intelligence](#), University of Melbourne and KPMG, 2025.

99. *ibid.*

100. Roxanne Libatique, [Australia hit by 47 million data breaches in 2024 – one every second](#), Insurance Business, 7 February 2025.

101. Markets and Markets, [Wearable Technology Market Size, Share & Growth](#), February 2025.

102. Bronwyn Adams, [Why trust is a key ingredient in scientific innovation](#), CSIRO, 2 June 2025.

ACTIONS TODAY



Begin transition to post-quantum cryptography

Advances in quantum computing pose an immediate threat to traditional encryption, exposing sensitive data and disrupting critical business operations. Q-Day, the day when a cryptographically relevant quantum computer becomes powerful enough to break standard encryption, is inevitable and fast approaching, and therefore it is crucial that organisations begin their post-quantum cryptography transition now to avoid catastrophic data breaches and disruptions to core functions. As regulators across the United Kingdom,¹⁰³ European Union,¹⁰⁴ United States,¹⁰⁵ as well as Australia¹⁰⁶ establish transition timelines and standards, which largely require organisations to act before 2030, understanding your infrastructure's current quantum risk is the first step in preparing for Q-Day.



Invest in AI literacy and governance

Creating the foundations for well-calibrated trust in AI systems will come down to building literacy, organisational governance and creating a culture of safe AI use. Australia's rate of AI training and education sits below the global average, which is reflected in the country's more cautious attitude towards its use. Organisations should implement AI education programs for employees, develop frameworks that publicise its appropriate use, and have organisational leadership champion these changes, helping to build understanding, acceptance and ultimately strengthening trust.



Consider future applications

While there is a lot of change taking place today, organisations will need to build governance that supports evolving and future technologies. Develop an understanding of some of these emerging use cases, across areas like quantum, autonomous vehicles and biotechnology, and what the trust implications might be. Use this understanding to develop flexible policies that consider how to approach these technologies as they emerge, rather than taking a reactive position after they do.

54%

The majority of Australians disagree that

**trust in institutions
(government,
business, media)**

is increasing.

103. National Cyber Security Centre, [Cyber chiefs unveil new roadmap for post-quantum cryptography migration](#), 20 March 2025.

104. European Commission, [EU reinforces its cybersecurity with post-quantum cryptography](#), 23 June 2025.

105. NIST, [NIST Releases First 3 Finalized Post-Quantum Encryption Standards](#), 13 August 2024.

106. Australian Government | Australian Signals Directorate, [Guidelines for cryptography](#), 4 September 2025.

Post-quantum cryptography



Our most sensitive data is protected through encryption, using mathematical models to scramble it so that it can only be unlocked with a unique digital key.¹⁰⁷ However, advancements in quantum computing mean that these encryption methods are at risk of being broken, and new approaches resistant to this threat will need to be developed and adopted.

Post-quantum cryptography (PQC) is one key defence against potential cyberattacks from quantum computers.¹⁰⁸ Q-Day, is considered a one-in-three chance of occurring before 2035,¹⁰⁹ meaning organisations are in a race against time to manage the transition to PQC. As the window to prepare narrows, the PQC market is expected to surge rapidly from US\$1.7 billion (AU\$2.6 billion) in 2025 to US\$30 billion (AU\$46.1 billion) by 2034.¹¹⁰ With so much at stake, guidance from governments and regulators will be crucial in setting clear expectations and timeframes to ensure critical data is protected.

TODAY

Harvest now, decrypt later

The threat of ‘harvest now, decrypt later’ (HNDL) attacks is one of the key reasons organisations must act now to protect their data.¹¹¹ HNDL is a strategy used by adversaries to intercept data today and then decrypt it once quantum computing is advanced enough to do so. Operational technology that underpins essential service networks such as electricity, water, transport, and defence is especially vulnerable because it

relies on long-lived data including configuration files, schematics, and control logic that rarely changes.¹¹² The Australian Signals Directorate has set 2030 as the deadline for all new cryptographic systems to use quantum-resistant algorithms.¹¹³ Organisations that do not do this will risk being locked out of systems and supply chains. Organisations must begin their transition now to ensure that they can get access to the necessary resources to transition.

107. Google Cloud, [What is encryption?](#), accessed 11 September 2025.

108. NIST, [What Is Post-Quantum Cryptography?](#), 11 June 2025.

109. Amit Katwala, [The Quantum Apocalypse Is Coming. Be Very Afraid](#), Wired, 24 March 2025.

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111. NIST, [What Is Post-Quantum Cryptography?](#), 11 June 2025.

112. Jason Van der Schyff, [Decrypting tomorrow's threats: critical infrastructure needs post-quantum protection today](#), Australian Strategic Policy Institute, 24 April 2025.

113. Australian Government | Australian Signals Directorate, [Guidelines for cryptography](#), 4 September 2025.

“The imminent rise of quantum computation demands an urgent review of our operational systems with a transition to post-quantum cryptography. We must act now, to secure tomorrow.”

**– Michael Egan,
Director,
Futures, KPMG Australia**

TOMORROW Developing sovereign capability

Australia is positioning itself at the forefront of quantum technology, recognising its potential to drive economic growth and transform industries through efficiency, cost savings, and security.¹¹⁴ Contributing an estimated AU\$9 billion to GDP and generating an expected 50,000 jobs by 2045,¹¹⁵ Australia's commitment to quantum will also build sovereign capability, enabling the nation to independently develop, control, and sustain this next-generation technology. But the quantum era also poses the threat of continuing the trend of technological

exclusion and inequality in emerging economies. Global powerhouses often impose strict export controls, inadvertently locking out researchers and institutions in developing nations.¹¹⁶ Without fair access to quantum resources, nations risk weakened security, economic losses from missed opportunities, and diminished technological sovereignty as reliance on foreign providers for quantum-resistant systems grows.¹¹⁷ If gatekeeping and siloed innovation persist, the power imbalance between advanced and developing nations will deepen.

FUTURE Quantum internet

The quantum internet holds the promise of enabling secure online communications through a property called entanglement, which creates a shared connection between two parties that cannot be intercepted without detection.¹¹⁸ It would not replace today's internet, but instead complement it by enabling new functionalities such as ultra-secure communication and the networking of quantum devices.¹¹⁹ The quantum internet promises to transform industries by enabling

powerful new applications. Beyond finance and telecoms, it could safeguard sensitive health data transfers, ensure secure biometric authentication for devices, support ultra-reliable connections for BCIs and autonomous vehicles, and provide resilient coordination across smart grids and energy networks. Defence and government agencies would also gain strategic advantages through communications that immediately reveal any attempt at intrusion.

KPMG Quantum Care

Recognising the threat that quantum computing poses to traditional encryption, KPMG's Quantum Care framework provides organisations with clear insights on their encryption landscape, risk posture, and pathway for navigating the transition to PQC.¹²⁰ Quantum Care features five stages that are designed to support organisations with each step of their post-quantum resilience journey, ensuring best practice in a rapidly changing cyber security environment.

Case study

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117. *ibid.*

118. Harun Šiljak, [Quantum internet: the next global network is already being laid](#), The Conversation, 18 February 2020.

119. Andrew Nellis, [The quantum internet, explained](#), UChicago News, accessed 11 September 2025.

120. KPMG Australia, [Navigate the quantum threat with KPMG Quantum Care framework](#).

Trust in AI

Australia is one of the world's most AI-cautious nations, with only 30% of Australians believing the benefits outweigh the risks.¹²¹

Despite existing frameworks, public confidence in AI regulation is low, with 70% of Australians believing current regulations do not make AI use safe,¹²² and 80% viewing the government as the most appropriate regulator.¹²³ While Australia has established a voluntary AI safety standard,¹²⁴ and is considering an AI Act with mandatory requirements for high-risk AI,¹²⁵ debate remains divided between enabling productivity gains and protecting workers, creatives, and the wider public.¹²⁶ The Productivity Commission has cautioned that overly restrictive measures could jeopardise an estimated AU\$116 billion in economic gains over the next decade, as well as productivity growth on par with the internet and mobile phones 20 years ago.¹²⁷ As AI becomes more embedded in society, regulations must find the right balance between safeguarding against known harms and supporting innovation and economic opportunity. Building public understanding of how AI works – including its benefits, risks, and safeguards – will be integral to fostering trust in an increasingly polarised world.¹²⁸

TODAY Driving AI literacy

A global study by the University of Melbourne, supported by KPMG, identified knowledge as one of four pathways to building trust in AI systems.¹²⁹ Given this, AI literacy (the ability to understand, use, and critically engage with AI¹³⁰) will be essential – both for building public confidence as AI becomes more embedded in daily life, and for strengthening employability in a job market that increasingly values these skills.¹³¹ With only 24% of Australians

undertaking formal or informal AI training,¹³² broader national efforts are needed to equip the current and future workforce. Programs such as the University of NSW and Day of AI Australia's collaboration among others, offer free AI literacy courses for students,¹³³ giving the next generation a valuable pathway to develop the critical thinking skills needed to engage with the technology responsibly and establish trust in its use.

121. Nicole Gillespie et al, [Trust, attitudes and use of artificial intelligence](#), University of Melbourne and KPMG, 2025.

122. *ibid.*

123. *ibid.*

124. Australian Government | Department of Industry, Science and Resources, [Voluntary AI Safety Standard](#), 5 September 2024.

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126. Josh Butler, [Everyone in Canberra agrees action is needed on AI. But what to do and how? And at what cost?](#), The Guardian, 1 September 2025.

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128. Nicole Gillespie et al, [Trust, attitudes and use of artificial intelligence](#), University of Melbourne and KPMG, 2025.

129. *ibid.*

130. Natasha Banks et al, [Understanding the basics of AI is a must-have skill for Australian students and their teachers](#), ABC, 4 February 2025.

131. Karin Kimbrough, [AI is shifting the workplace skillset. But human skills still count](#), World Economic Forum, 21 January 2025.

132. Nicole Gillespie et al, [Trust, attitudes and use of artificial intelligence](#), University of Melbourne and KPMG, 2025.

133. Ashleigh Steele, [Boosting AI literacy in schools: UNSW partnership receives big tech backing](#), UNSW Sydney, 10 June 2025.

TOMORROW The battle for the 'truth'

Our understanding of what is true is shaped by the sources of information that we access, and as generative AI tools surge in popularity, countries and corporations are looking to shape our perspectives through influencing model development.

An action plan released by the White House will require AI companies that receive federal contracts to ensure their models are what it defines as 'truth-seeking' and 'ideologically neutral'.¹³⁴ However, what counts as 'neutral' or 'true' is shaped by training data, reinforcement from human feedback, and the user's own interactions, meaning chatbots

mirror and amplify existing biases rather than resolving them.¹³⁵

Major AI developers are working to invest significant effort in building AI tools that reflect their values. For instance, China is looking to embed Chinese values in its LLMs, while Elon Musk-owned Grok has repeatedly faced controversy for supporting extremist ideology. With AI chatbot use rising amid increasingly polarised views,¹³⁶ administrations rewarding or penalising companies based on their models' outputs may create a new form of censorship.¹³⁷

FUTURE Algorithmic governance

As governments rely more on digital infrastructure to deliver services, more activities are turned into data, feeding algorithms that predict, allocate, and control outcomes.¹³⁸ The UK government's development of a 'murder prediction' algorithm, which uses data from thousands of people, including crime victims, to assess the risk of serious violence,¹³⁹ demonstrates the rising stakes of algorithmic governance. Though designed to be impartial, algorithmic systems are vulnerable to mirroring

human biases,¹⁴⁰ amplifying social differences and inequalities, with marginalised groups among the most exposed, particularly when it comes to decisions about education, employment, housing, and criminal justice. The uncomfortable truth is that society is often unfair, and as decision-making shifts from humans to algorithms, the real test will be whether these tools embed biases even further, making them truly systemic.

Denmark's deepfake laws

Denmark has shown how governments can act swiftly in response to AI-driven threats. To protect citizens from deepfakes, the Danish government secured cross-party support to amend copyright law, granting people rights to their own body, facial features, and voice.¹⁴¹ This change will provide people the right to demand online platforms remove such content if shared without their consent.

Case study

134. The White House, [Preventing Woke AI in the Federal Government](#), 23 July 2025.

135. Kevin Roose, [The Chatbot Culture Wars Are Here](#), The New York Times, 23 July 2025.

136. Carl-Johan Karlsson, [Divided we stand: The rise of political animosity](#), Knowable Magazine, 19 August 2024.

137. Raphael Satter, [US scrutinizes Chinese AI for ideological bias, memo shows](#), Reuters, 10 July 2025.

138. Alexandra James et al, [From access and transparency to refusal: Three responses to algorithmic governance](#), Internet Policy Review, Volume 12, Issue 2, 17 May 2023.

139. Vikram Dodd, [UK creating 'murder prediction' tool to identify people most likely to kill](#), The Guardian, 9 April 2025.

140. Mike Zajko, [Artificial intelligence, algorithms, and social inequality: Sociological contributions to contemporary debates](#), Sociology Compass, Volume 16, Issue 3, 2 February 2022.

141. Miranda Bryant, [Denmark to tackle deepfakes by giving people copyright to their own features](#), The Guardian, 27 June 2025.

42%

Of younger Australians (aged 18–34) and families (couples with children at home) are among the most likely to agree that AI will

make life better for most people by 2040

42%

Conversely, just under half of Australians living in regional areas are

significantly more likely to disagree that AI will make life better

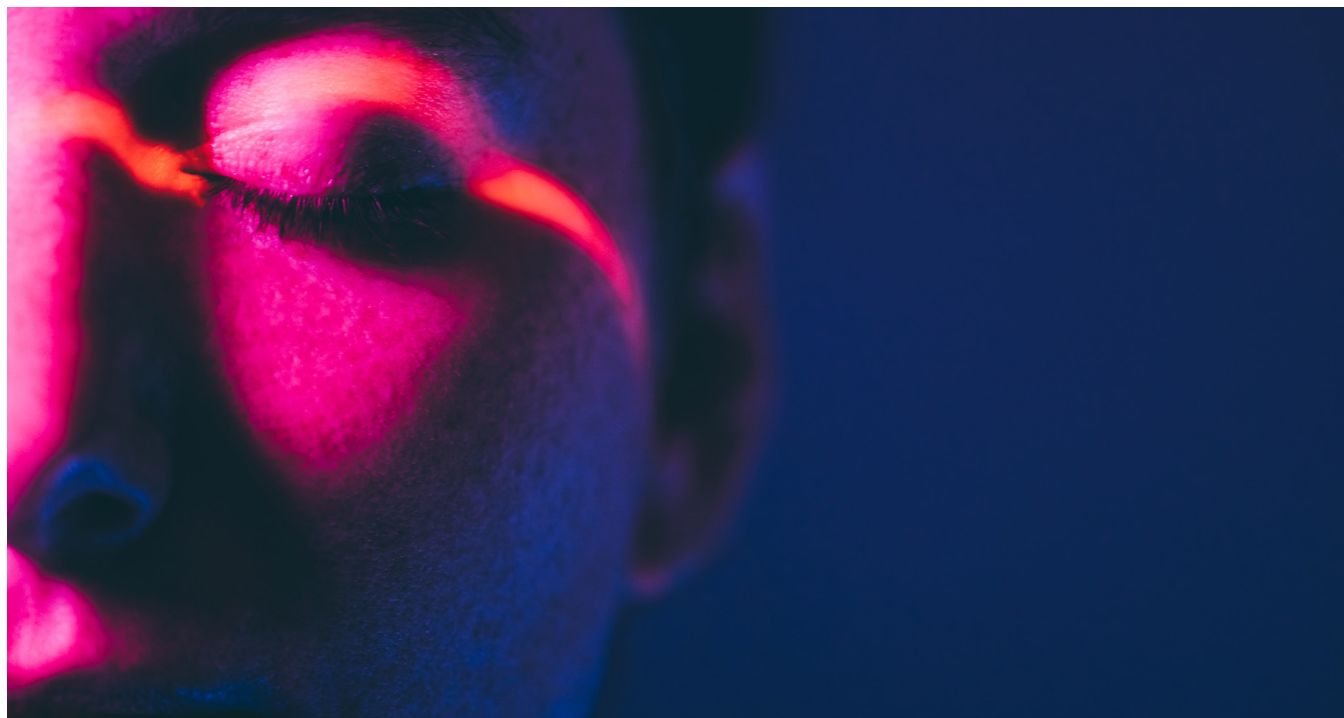
for most people by 2040.¹⁴⁴

Creating Trusted AI

KPMG Australia has developed a Trusted AI Framework,¹⁴² which sets out the firm's approach to designing, building, deploying, and using AI solutions, both internally and for clients. All AI solutions are assessed against this framework to support consistent and transparent use of the technology. The framework includes input from external experts through KPMG's AI governance processes. Oversight is provided by the Trusted AI Council, which meets regularly to review and approve AI initiatives undertaken by the firm. In addition, the KPMG AI Register publicly lists the AI technology systems used in client-facing services.¹⁴³

ISO 42001 is the world's first AI management system standard. Certification demonstrates that an organisation has established processes to support the safe and responsible use of AI in its products and services. After the release of the ISO 42001 standard, KPMG Australia established a team to prepare the firm for certification, which was granted in 2024. The process included an independent audit of the firm's approach to AI, covering governance, project management, and the application of Trusted AI practices in solution development.

ISO standards are designed not only to set minimum requirements but also to encourage a culture of continuous improvement. Certification of KPMG Australia's AI management system reflects the firm's adoption of practices aligned with its Trusted AI framework. It also forms a component of KPMG Australia's AI strategy, which places emphasis on both governance and implementation to support the development of AI solutions in accordance with ISO 42001.



142. KPMG, [KPMG Trusted AI framework](#).

143. KPMG Australia, [AI Register](#).

144. KPMG Future Attitudes Research, KPMG, 2025.

Establishing trust in emerging technologies



Trust plays a critical role in whether new technologies are accepted and used.¹⁴⁵ Higher levels of trust increase the likelihood of adoption, while lower levels have the opposite effect.¹⁴⁶

Technological trust is commonly framed around two elements: whether a system can be relied upon, and whether its design aligns with moral and ethical expectations.¹⁴⁷ But trust also depends on how technologies are applied in practice, and whether they are used responsibly in ways that consider the people affected. The importance of these factors is reaching new heights, as are the stakes, with the data being collected becoming increasingly sensitive and deeply personal. As the next wave of AI technology brings more autonomy in high-risk settings and gains access to greater levels of a person's data, organisations will need to ensure that they build trust in the products and services they build.

TODAY Autonomous vehicles

Driverless taxis have slowly become a staple on the roads in select American cities since Waymo became publicly accessible in 2020.¹⁴⁸ Today, they complete over 250,000 paid rides a week across San Francisco, Los Angeles, Phoenix, Austin, and Atlanta.¹⁴⁹ Waymo's data suggests its vehicles reduce injury-causing collisions by 85%,¹⁵⁰ but technical errors across the industry that jeopardise human safety – like a Cruise robotaxi that struck and dragged a pedestrian 6 metres,¹⁵¹ or a self-driving delivery van filmed dragging a scooter

without realising¹⁵² – suggest our expectation of safety is higher when technology is behind the wheel.¹⁵³ A survey by Swinburne University of Technology found that 62% of participants would feel stressed riding in an autonomous vehicle. Despite evidence that autonomous vehicles are safer, people hold machines to a higher standard, and building trust depends not only on safety metrics but also on our experience and familiarity with technologies, alongside clear, transparent communication about their capabilities and limitations.¹⁵⁴

145. Azamsadat Hosseini Shoabjareh et al, [The role of trust and distrust in technology usage: An in-depth investigation of traffic information apps usage for mandatory and non-mandatory trips](#), *Travel Behaviour and Society*, Volume 37, October 2024.

146. Niklas Luhmann, [Trust and Power](#), Polity, 1979.

147. Azamsadat Hosseini Shoabjareh et al, [The role of trust and distrust in technology usage: An in-depth investigation of traffic information apps usage for mandatory and non-mandatory trips](#), *Travel Behaviour and Society*, Volume 37, October 2024.

148. Harry McCracken, [Hail Waymo: Inside the company leading the robotaxi revolution](#), *Fast Company*, 18 March 2025.

149. Andrew R. Chow, [Waymo's Self-Driving Future Is Here](#), *Time*, 26 June 2025.

150. Waymo, New Study: [Waymo is reducing serious crashes and making streets safer for those most at risk](#), 1 May 2025.

151. Abhirup Roy, [How GM's Cruise robotaxi tech failures led it to drag pedestrian 20 feet](#), *Reuters*, 26 January 2024.

152. James Chung, [Self-driving delivery van filmed dragging scooter](#), *News.com.au*, 11 August 2025.

153. Hussein Dia et al, [Australians are open to self-driving vehicles, but want humans to retain ultimate control](#), *The Conversation*, 8 April 2024.

154. Maria Alonso, [Driving trust: Paving the road for autonomous vehicles](#), *World Economic Forum*, 4 January 2024.

TOMORROW Next-gen wearable devices

Wearable sensors and devices that can monitor a person's physiological information, such as health, fitness, and sleep, are a thriving sector with a market size that is predicted to reach US\$152.8 billion (AU\$234.9 billion) by 2029.¹⁵⁵ As they advance, these devices will transform healthcare by providing real-time monitoring, early warning systems, and personalised health guidance.¹⁵⁶ While the benefits are clear, ensuring trust in both process and privacy, especially with potential implications for insurance policies,

will be essential to unlocking their full value. Wearable devices enable greater accuracy in underwriting, and over half of US consumers say they would share this data with their insurer in exchange for potential cost savings and insights to support healthier choices.¹⁵⁷ However, privacy remains the biggest drawback for consumers, and as wearables capture more personal information, it will be vital to protect data with strong encryption¹⁵⁸ and prevent its exploitation.¹⁵⁹

FUTURE Ensuring cognitive liberty

As BCIs – systems that analyse and convert brain signals into actions on another device – become mainstream, society will need to establish a rights framework to protect mental privacy, identity, and free will.¹⁶⁰ The fusion of tech with the human brain creates an array of new and deeply personal cyberattacks, such as brain tapping (stealing information without consent), misleading stimuli attacks (hijacking signals to influence

behaviour), and adversarial attacks (manipulating the machine learning that interprets brain patterns).¹⁶¹ Recognising these risks, Chile has become the first country to propose neurorights legislation, anticipating the potential impacts of neuro technologies.¹⁶² Yet other existential questions may also emerge, such as how our identity might be altered if difficult or negatively perceived emotions were removed from our daily experience.

75%

Three-quarters of Australians are

concerned about their digital identity being misused or stolen

in the future.¹⁶⁴

Trust me, I'm human

World, a project co-founded by OpenAI CEO Sam Altman, aims to verify that an online user is human rather than an AI agent – a concept based on the belief that this distinction will eventually be impossible to make.¹⁶³ Verification requires an eye scan, after which a unique blockchain identifier is issued. While the idea centres on building a trusted human network, it will first demand trust in the company's handling of biometric data and whether the benefits are truly worthwhile.

Case study

155. Markets and Markets, [Wearable Technology Market Size, Share & Industry 2030](#), February 2025.

156. A. Darzi et al, [The Future State of Health and Healthcare in 2035](#), Imperial Institute of Global Health Innovation, accessed 11 September 2025.

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160. Manar Alohaly, [The brain computer interface market is growing – but what are the risks?](#), World Economic Forum, 14 June 2024.

161. *ibid.*

162. Sergio Ruiz et al, [Neurorights in the Constitution: from neurotechnology to ethics and politics](#), Philosophical Transactions of the Royal Society B, Volume 379, Issue 1915, 21 October 2024.

163. Maxwell Zeff, [Sam Altman's World now wants to link AI agents to your digital identity](#), TechCrunch, 24 January 2025.

164. KPMG Future Attitudes Research, KPMG, 2025.

Frontier today



While AI tends to be touted as the major disruptive force, other technologies that are developing alongside it will accelerate innovation even further. Breakthroughs in quantum and biotechnology are likely to have a longer-term impact and have the potential to completely reshape industries and societies. Like AI, these are underpinning technologies that will have impacts across multiple sectors.

We are heading towards a future where computing gets closer to the body, physically connecting to the brain through BCIs; where living technologies reshape our medicines, food and even computing; while quantum transforms how we optimise our world and develop new chemicals, materials and medicines.

58%

of Australians would be uncomfortable if

BCIs became common in daily life

– only 21% of Australians say they would be very/somewhat comfortable.¹⁶⁵

As organisations prepare for the impact of these transitions, they will need to consider what their risk profile is, and decide what role they want to play in their development. Companies will need to decide if they are willing to seek first-mover advantage or wait until new technologies are further developed and take on more of a fast-follower role. On one hand, first-mover advantage allows leaders to establish brand recognition, customer loyalty, industry standards, and strategic barriers to entry. However, this advantage is not guaranteed and can be offset by high costs and the challenges of developing technology and educating consumers in an entirely new market.

With innovation comes new challenges, and as these technologies mature, there will be a clear need to ensure that there are strong governance structures around them, to ensure that they are worthy of our trust.

At the same time, the transformational scale of change that these new technologies promise will require organisations to revisit processes, propositions and products at a systems level. It will mean reconsidering supply chains and business propositions. For instance, what will building maintenance look like when concrete is a living material that self-heals? How will organisations manage their R&D processes as discoveries accelerate with the development of quantum technologies?

¹⁶⁵. KPMG Future Attitudes Research, KPMG, 2025.

ACTIONS TODAY



Consider the converging opportunities

AI, quantum and biotechnology are individually key to our prosperity and productivity over the next 10–20 years. Alone, any one of these will have a large impact, but together they have the potential to propel and amplify the impact of each other. AI and quantum together will drive new developments in energy and medicine; AI with biotechnology will create living systems, and cyborg-like cybernetic systems. Organisations that choose to invest in AI, quantum or biotechnology will need to keep an eye on developments in the other domains as the potential for convergence is high. A clear strategy that accounts for convergence will be critical to realising ROI and accelerating time to value from innovation activities in these domains.



Take a systems view

Emerging technologies will require organisations to take a holistic view of their potential impacts. Second and third order implications or opportunities may not be immediately obvious but have the potential to have significant effects. Current working and business models may not prove viable as these shifts take place and will require organisations to take a zero-based design approach to avoid disintermediation. Building agility into this through rapid prototyping and experimentation will be key to ensuring that projects don't become too big to begin.



Define risk posture

Decide what role you want to play in the innovation lifecycle and then approach accordingly. For those investing in first-mover advantage, ensure that stakeholders support a longer time to value. Focus on rapid prototyping and experimentation to support quick decision-making, and act based on evidence.



Invest in strategic foresight capabilities

The pace of innovation, combined with the rapid shifts that are taking place across geopolitical, social and environmental factors, means that organisations need to be constantly monitoring for the signals of change and adapting efforts accordingly.

Quantum



Quantum technologies stand at the precipice of a transformative era, promising unprecedented capabilities in computing, sensing, and communication.

The industry achieving its much-promised potential relies on a number of factors, including scaling the number of qubits, improving quantum error correction, and developing robust quantum algorithms. Fostering a skilled workforce, promoting public awareness and securing investment will be necessary for the sector's growth.

Yet there are significant opportunities in the near term, especially in the use of quantum computation as a scientific tool, while other applications may take longer to achieve commercialisation at scale.

Recent innovations have included researchers at Toshiba Europe successfully transmitting quantum-encrypted messages across 254 kilometres of telecom infrastructure in Germany using quantum key distribution over standard optical fibres, marking a practical advance towards quantum-secure communication.¹⁶⁶ NASA was also able to demonstrate an ultra-cool quantum sensor in space, measuring subtle vibrations of the space station with one of the lab's onboard tools.¹⁶⁷

TODAY Quantum exploration

As quantum is still in its nascent stages, now is the time to explore business problems with properties similar to quantum problems, such as rostering, machine scheduling, fraud management and encryption, and what form of quantum or hybrid quantum computing would be the most efficient way to solve the problem, today or into the future. Organisations should consider which real-world use cases would be the best places to pilot and benchmark different approaches.

Examples of this are already emerging in drug development, with Pfizer accelerating research using a hybrid approach.¹⁶⁸ Scientists have

begun using a computer modelling technique called crystal structure prediction (CSP) to predict the behaviour of electrons in a molecule to determine its 3D structure. CSP leverages quantum physics and involves complex mathematical calculations that would take up to four months to solve using classical computing, but can now be completed in just a few days. This process allows scientists to select what they predict will be the optimal molecule, based on theoretical predictions rather than traditional experimental methods, leading to faster, more effective drug development.

166. Toshiba, [Toshiba Breakthrough Brings Quantum Communications to Existing National-scale Telecommunications Infrastructure](#), accessed 11 September 2025.

167. California Institute of Technology | Jet Propulsion Laboratory, [NASA Demonstrates 'Ultra-Cool' Quantum Sensor for First Time in Space](#), 13 August 2024.

168. Pfizer, [How Quantum Physics and AI is Disrupting Drug Discovery & Development](#), accessed 11 September 2025.

“We envision a 2035 where quantum technology is seamlessly intertwined into the fabric of everyday computing – empowering anyone, anywhere to harness its power.

By then, clusters of Compact Quantum Accelerators will operate within data centres worldwide, powering the next generation of quantum-AI systems through massively parallel quantum processing. Countless others will run at the edge – from autonomous vehicles to satellites – enabling smarter, cleaner, and safer technologies across every industry.”

**– Andrea Tabacchini,
VP Quantum Solutions,
Quantum Brilliance**

TOMORROW Quantum-enhanced industries

As innovation in the quantum sector accelerates, organisations will be able to enhance how they do business. For instance, in the mining sector, quantum has the potential to enhance many of the processes the industry undertakes today. Quantum magnetometers, gravimeters, and gradiometers are types of quantum sensing devices that can find ore bodies deeper and more accurately, while quantum-powered

GPS navigation could enhance safety.¹⁶⁹ Many are field-ready and provide advantages compared with classical sensor systems. Quantum annealing computers can optimise mining logistics, making mining operations much more efficient. Modelling using quantum computing can offer advantages such as real-time asset monitoring and management, and the ability to handle and combine large datasets.

FUTURE Fault-tolerant quantum computers

Based on the roadmaps for quantum computation, significant advancements in quantum computing hardware are expected. IBM has publicly issued roadmaps towards fault-tolerant quantum processors,¹⁷⁰ and exceptionally well-funded startups like Pascal, Quantinuum and PsiQuantum will aim to deliver more stable and powerful quantum computers.

While universal, fault-tolerant quantum computers for truly complex problems may still be some years away, the systems of today will continue to improve, moving from POC to industry-specific solutions. By 2035, fault-tolerant quantum computers will be a reality, unlocking breakthroughs in drug discovery, materials science and climate science.

Quantum Brilliance

Case study

Australian startup Quantum Brilliance is working to overcome one of the major challenges faced by quantum computing: miniaturisation at room-temperature operations. The company raised AU\$30 million late last year to establish Australia's first diamond foundry, advancing the design and fabrication of diamond quantum devices. Unlike traditional quantum systems, which require cryogenic cooling or more complicated set-ups, Quantum Brilliance uses synthetic diamonds as a stable medium for quantum computing and sensing. This will significantly lower the bar for entry to quantum computing, making it demonstrably cheaper and more accessible.

169. Australian Government | Australia's Chief Scientist, [Quantum Meets Resources](#), 29 January 2024.

170. Ryan Mandelbaum et al, [How IBM will build the world's first large-scale, fault-tolerant quantum computer](#), IBM, 10 June 2025.

Human-centric computing

The screen's ubiquity is likely to start to wane over the coming decade as computing takes on more ambient and intimate forms. As we move towards 2035, the screen as it stands today is likely to diminish in importance, as more ambient forms of computing such as glasses, embedded wearables, ambient AI devices and BCIs become increasingly integrated into people's lives and bodies.

At the more invasive end of the spectrum are innovations like BCIs, which Neuralink predicts will be worth US\$1 billion (AU\$1.5 billion) by 2031,¹⁷¹ opening new possibilities both for healthcare and performance enhancement.

Researchers working to support and transform the lives of people with disabilities through these technologies are likely to open up innovations for performance across the rest of society. The landscape is diverse as there is also an increase in interest in non-invasive BCIs to help support performance; alongside more ambient and wearable devices, such as Ray-Ban® Meta AI glasses; and AI-enabled devices starting to make their way into the market, emphasised by the collaboration between former Apple designer Jony Ive and OpenAI CEO Sam Altman.¹⁷²

TODAY Re-evaluate AI-enhanced wearables

The first phase of wearable headsets and devices did not gain traction a decade ago, but AI and connectivity have evolved to make this an attractive proposition again. Tech companies are already partnering with glasses brands, such as Meta with Ray-Ban, and Google investing US\$100 million (AU\$152.4 million) in Gentle Monster.¹⁷³ As generative AI tools become deeply

integrated into devices, expect to see deeper contextual awareness, and actions undertaken off the back of this awareness. Expect also to see other new innovations around how we interact with the digital world, for instance, Meta releasing its EMG wristband, which allows users to control their recently-released Meta Ray-Ban Display headsets using hand gestures.¹⁷⁴

171. Ike Swetlitz, [Neuralink Sees \\$1 Billion of Revenue by 2031 in Vast Expansion](#), Bloomberg, 24 July 2025.

172. OpenAI, [A letter from Sam & Jony](#), accessed 11 September 2025.

173. PRNewswire, [Google Announces Partnership with Gentle Monster as a First Partner for AI Smart Eyewear with Android XR](#), 21 May 2025.

174. Meta, [The next-gen way to control your devices](#), accessed 11 September 2025.

TOMORROW Normalising neurofeedback

There is the potential that non-invasive brain–computer interfaces will become increasingly popular for wellbeing but also cognitive monitoring. Today, non-invasive Electroencephalography (EEG) interfaces are large, and difficult to use outside of a research context. However, by 2030 they may be small enough to fit into headphones, headbands or glasses. In professional and educational contexts, organisations will be able to monitor and manage cognitive load to ensure adaptive learning or manage stress levels and attention,

or for individuals to take control of their own performance and personal growth. Individuals may also be able to use these tools to help manage disorders like ADHD, which scientists do today through neurofeedback attention training while wearing EEG caps. Through measuring EEG brainwaves and providing real-time visual or auditory feedback, often through a game, it helps the brain learn to regulate patterns associated with attention and calm, potentially improving attention and reducing inattention and impulsivity symptoms.

FUTURE Invasive brain–computer interfaces

By 2035, it's likely that brain–computer interfaces will be a commonly used therapeutic tool for people with neuromuscular disorders, spinal injuries, as well as helping to restore speech. This year, UC Davis researchers created a real-time digital voice for an motor neurone disease patient. Four speech-area brain implants captured neural signals and AI algorithms and translated them into audible words with virtually no latency.¹⁷⁵ The patient could modulate intonation, ask questions, interrupt conversations and even sing, restoring flowing communication. BCIs are also helping restore movements to

people who have been paralysed. Chinese researchers have been focusing on developing a minimally invasive BCI – implanted via blood vessels (endovascular BCI) rather than open brain surgery – to restore movement in a stroke patient.¹⁷⁶ The BCI, combined with functional electrical stimulation of the patient's muscles helped them to regain voluntary movement in the affected hand. As researchers continue to develop these technologies, finding ways of achieving less invasive BCI implantation will drive use for those with injury or illness, while potentially making BCIs more attractive for people seeking performance enhancements.

Synchron

Melbourne-founded, brain–computer interface company Synchron has developed technology that supports Apple devices, allowing people to control iPhones, iPads and the Apple Vision Pro with their thoughts. The two companies are working to develop a new standard for the technology specifically for Apple devices. Neural signals captured by implanted devices can be translated into screen inputs, significantly aiding users with severe physical disabilities such as motor neurone disease and spinal cord injuries.

Case study

175. UC Davis Health, [First-of-its-kind technology helps man with ALS 'speak' in real time](#), 11 June 2025.

176. Xinhua, [China Focus: Chinese research team launches clinical trial for invasive brain-computer interface](#), 14 June 2025.

Ambient intelligence and ambient surveillance

As computing gets closer to the body, and more of our daily experience is mediated by AI tools through ambient listening devices, augmented eyewear, through to BCI, a number of new considerations will emerge. When we seek information today, we are often called upon to evaluate multiple options using search engines. But as tools become increasingly integrated and we move beyond recommendation to orchestration, consider the ramifications of these transitions. Will a person receiving information on my company receive the correct information? What AI optimisation efforts do you need to undertake to ensure that you appear in context-aware search and personalised suggestions for the user?

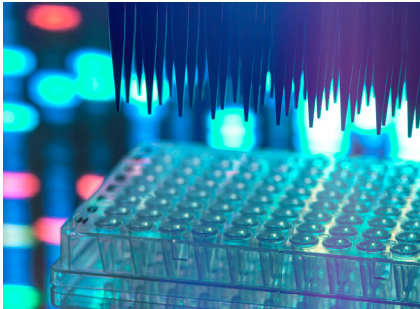
This shift will also require an increased acceptance of ambient surveillance; a step beyond today's voice-activated devices like Amazon's Alexa or Google Home that can be activated using a wake word or phrase.

As these technologies continue to emerge, questions will arise around who owns the data from these devices, and what are we likely to trade in return for enhanced performance. Can you envision a future where an hour of focused attention from your BCI requires you to integrate an advertising message?

Organisations will need to decide where there will be an expectation of privacy, and what kinds of policies will need to be developed to ensure they're used responsibly in the workplace.



Biotechnology



Converging advances in biology, AI and sensors is leading to a potential future where many structures become living, evolving things. Many elements of the material world have the potential to be transformed through this transition, leading to innovations in agriculture, nutrition, health and construction.

This has the potential to result in living systems that have the capacity to self-repair, or contribute to the repair of their surrounding ecosystems, supporting better sustainability outcomes, and the ability to adapt as requirements change. In some instances, this is leading to bio-integrated AI, where technology is being embedded within biological contexts to achieve more organic, life-like intelligence. In others, technology is being used to innovate with the creation of genetically edited substances that behave in innovative ways.

TODAY Genetically edited microbes

Pivot Bio has developed nitrogen-producing microbes that deliver a usable form of nitrogen to the roots of crops, reducing the amount of fertiliser farmers need to use – and the pollution that comes with it. Farmers can replace up to a quarter of the traditional total nitrogen that they would use with Pivot Bio's product. Traditional synthetic nitrogen fertiliser production accounts for approximately 2%

of global energy consumption and contributes significantly to greenhouse gas emissions through both manufacturing processes and field application.¹⁷⁷ Pivot Bio's approach offers a permanent decarbonisation solution by replacing synthetic inputs with naturally occurring biological processes that capture atmospheric nitrogen and deliver it directly to crop roots.

177. PR Newswire, [LexisNexis Recognizes Pivot Bio as One of the World's Ten Most Innovative Biotech Startups](#), 5 August 2025.

TOMORROW Self-healing materials

Concrete is the world's most used building material, and its production accounts for 7% of global CO₂ emissions.¹⁷⁸ In Australia, cracks in reinforced concrete structures cost an estimated AU\$8 billion each year to repair.¹⁷⁹ A technology showing both environmental and financial benefits is self-healing concrete. While there are multiple methods currently being explored to determine the most effective

way to harness its potential, embedding microcapsules filled with healing agents directly into the mix is showing great promise.¹⁸⁰ When cracks form, these capsules rupture and release the agents, sealing the damage. Early research and pilot projects suggest this method could significantly extend a structure's lifespan, reduce maintenance costs, and lower its environmental footprint.

FUTURE The printed body

3D bioprinting, the layer-by-layer fabrication of living tissue using cell-laden 'bioinks', is likely to revolutionise healthcare and biotechnology.¹⁸¹ By 2035, bioprinted organs are likely to start to achieve clinical approvals and rollout, particularly in simple organs such as partial livers. In Australia, Sydney-based Inventia Life Science has developed the LIGÖ, a 3D

bioprinter being used to treat soft tissue damage such as burns, with printed skin at Concord Hospital.¹⁸² The process means that patients no longer need stitches or skin grafts to heal burns, as the device places nano-sized droplets of bioink into a wound to support the regrowth of new skin layers that mimic naturally occurring skin tissue in the body.

Bioengineered intelligence

Melbourne-based startup Cortical Labs has been a pioneer in the organoid intelligence space, which involves building computers using lab-grown neural cells. The company has released its first brain-computer operating system, which is being used primarily in neuroscience research. It is also working to innovate around ways of approaching the development of synthetic biological intelligence for broader uses in the future. Where the trend for researchers in this space has been on generating computers based on the shape and structure of brains, bioengineered intelligence is inspired by collections of cells processing information in circuits. This, researchers say, offers advantages for the development of the sector, as the deliberate design of topologies allows for consistency and reproducibility. It also allows for modular design, which means it can scale for larger applications, and helps to create increased distance from ethical concerns, as the structures use brain cells but are not brain-like.

Case study

178. Aaliyah Pollock, [Building a sustainable future: the incredible potential of self-healing concrete](#), RICS, 25 January 2024.

179. RMIT University, [Carpet fibers stop concrete cracking](#), ScienceDaily, 11 November 2024.

180. Lu Jiang et al, [State-of-the-Art Review of Microcapsule Self-Repairing Concrete: Principles, Applications, Test Methods, Prospects](#), Polymers, Volume 16, Issue 22, 13 November 2024.

181. NSW Government | NSW Health and Medical Research, [Novel 3D bioprinting device 'prints' skin-growing ink from patient cells in world-first clinical trials](#), accessed 11 September 2025.

182. *ibid.*

The future is unfolding. Are you ready?

Powerful external forces shape the world, causing broad shifts that impact industries, economies, and societies over time. These forces originate from geopolitics, economic changes, technological breakthroughs, environmental developments, and evolving societal expectations. By staying attuned to these dynamics, organisations can anticipate potential disruptions and opportunities, enabling them to proactively adapt rather than simply reacting to change after it occurs.

At KPMG, we help bridge this gap. Our diverse teams comprise strategic thinkers, scientists, technologists, designers, and analysts who utilise cutting-edge technologies and innovative approaches to solve these problems.

This helps unlock new value, transform ideas into actionable strategies, and achieve measurable outcomes for our firm and clients.

Please let us know how we can help. Contact any of our KPMG subject matter experts for a discussion on how we can support your journey forward. Let's lead this transformation together.

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