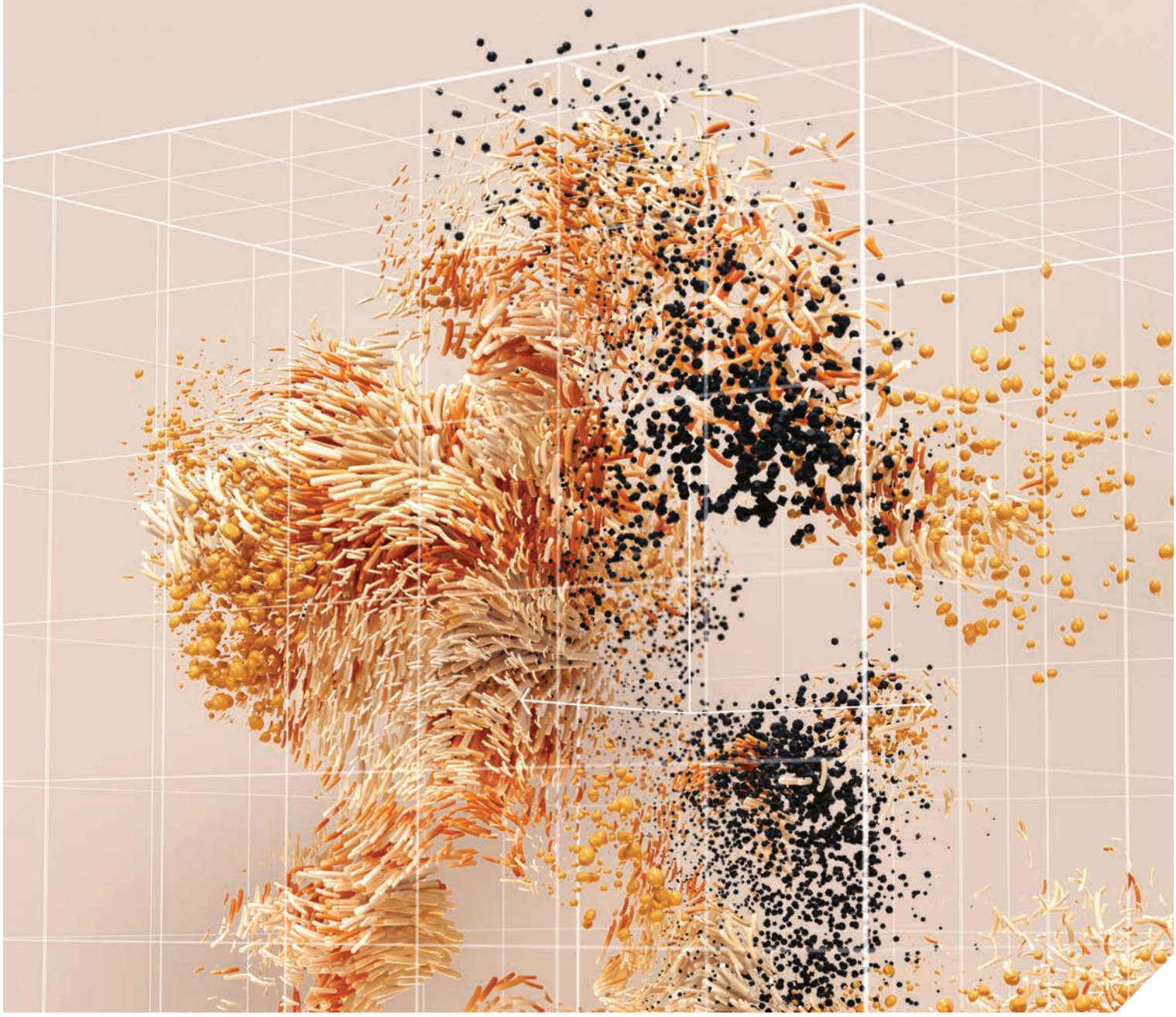
Australian Academy of Technological Sciences & Engineering

KEARNEY



NOVEMBER 2025

Unleashing growth

Australia's AI investment blueprint

Australian Academy of Technological Sciences & Engineering

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Cover image: An artist's illustration of artificial intelligence (AI). This image explores machine learning as a human-machine system, where AI has a symbiotic relationship with humans. It was created by Aurora Mititelu as part of the Visualising AI project launched by Google DeepMind.

Executive summary

Artificial intelligence (AI) is swiftly establishing itself as the engine of a new industrial revolution, reshaping economies, industries and societies worldwide. Global investment in AI is accelerating toward AU$3 trillion by 2026. Australia has invested just over AU$300 million over the last five years, while other governments have invested more than 10 times the amount.

Global investment in AI is accelerating toward AU$3 trillion by 2026, paced by major initiatives such as the AU$760 billion Stargate AI infrastructure program in the United States. Australia has invested just over AU$300 million over the last five years.

AI is now a source of national competitiveness. A few countries are racing ahead and shaping the global economy, while those that lag risk becoming dependent on foreign technology — undermining their future prosperity, security and cultural identity.

AI contributes to the growth of gross domestic product (GDP) in two distinct but interconnected parts of the economy. The first is through increased productivity in what we refer to as "the existing economy"— that is, products and services that are already in place.

The second is through the creation of new products and services that would not have been conceivable without AI, such as applications, AI models, data centres and AI-specific chips, which together form what we call "the new AI economy" creating new economic value.

The key to spurring either kind of growth is more government investments in sovereign AI, which means AI capabilities developed, owned, operated, and controlled by a country, including both public and private companies. The establishment of a sufficiently robust sovereign AI is crucial for realising AI's economic potential, decreasing dependency on foreign entities, and ensuring that a nation successfully captures whatever AI value it generates rather than sending it abroad.

Leading economies have invested over ten times more per capita in the enablers of AI sovereignty than Australia has. The public investments in these AI enablers typically cover large-scale talent programs, dedicated funding for fundamental AI research, the development of sovereign AI compute and data assets, and the establishment of regulatory and investment structures.

To capture the AI opportunity, the Australian government should focus on six priority AI ENABLERS that will drive the biggest economic impact:

National AI talent pipeline

–Build a national AI talent pipeline to expand the number of engineers, data scientists, and researchers who will develop Australia's future AI models and domain applications.

Population-scale AI training–

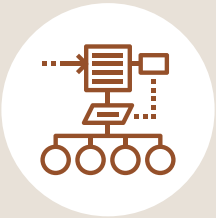
Deliver population-scale AI training, ensuring workers, particularly in small and medium-sized enterprises gain the skills to use AI productively and safely.

Purpose-built AI compute facilities–

Establish purpose-built AI compute facilities, powered by affordable renewable energy, to support research, startups and national AI models.

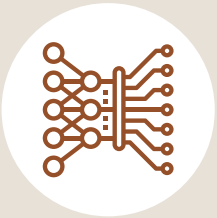
Specialised AI models and national datasets–

–Develop specialised AI models and national datasets covering Australia-specific use cases in national-priority fields such as geoscience and health, and in heavily regulated industries such as banking.



AI standards and regulations–

–Introduce clear AI standards and regulations, including practical support of businesses to better navigate the regulatory landscape.



Regional AI factories

–Create a network of regional AI factories (AI hubs) to connect talent, research, industry, investors and government. This is the most important AI enabler as it is the centrepiece of the strategy and ensures the realisation of economic value from all other enablers.

With the initiatives proposed in this report, AI could lift Australia's GDP by 6% to 8% over the next decade, **adding up to AU$160 billion to AU$235 billion to the economy in 2034**, with the potential of a substantial additional upside if AI unlocks breakthrough innovations in areas such as healthcare, biotechnology, or robotics.

Around three-quarters of this uplift would come from AI adoption within the existing economy, with small and medium-sized enterprises (SMEs) contributing more than half. ATSE's proposed incremental AU$5 billion government investment has the potential to attract an additional AU$27 billion to AU$49 billion in private capital. However, without decisive government action, the GDP impact could be limited to around AU$85 billion, leaving up to AU$150 billion of potential value unrealised.

Of course, AI comes with risks. These include insufficient compute capacity linked to a potential lack of affordable energy, a slow labour market transition, a lack of AI skills and public trust, the challenge of striking the right regulatory balances, and the potential of AI to be misused by bad actors and impact national security. Addressing these proactively will be vital to ensure inclusive and secure AI adoption.

Through strategic government investment, Australia has a unique opportunity to unlock significant economic benefits, proactively manage AI risks, and ensure Australians remain in control of their own AI destiny.

Introduction

In one sector after another, AI is transforming how we live, work, and interact. At the core of this transformation are algorithms that can match human ability across a growing number of functions while delivering machine-level efficiency.[1]

AI is widely predicted to generate significant economic value in the future and has already driven unprecedented levels of investment. Gartner predicts global AI investment will reach AU$2.3 trillion in 2025 and surpass AU$3 trillion in 2026. Examples of big-ticket investments so far include initiatives such as the US Stargate program, which aims to build new AI infrastructure worth over AU$760 billion; similar Stargate investments are also planned in Norway and the United Arab Emirates, while the European Union is undertaking a AU$360 billion initiative known as InvestAI.

To ensure that their countries retain the highest degree of agency in negotiating this technological transformation, governments are increasingly seeking to maximise what is referred to as sovereign AI: the AI capabilities developed, owned, operated and controlled by a country and powered by national talent, including both public and private companies incorporated in a jurisdiction.

The stakes are increasingly clear: Countries without a strategy for investing in sovereign AI capabilities risk becoming dependent on foreign technology providers that will have their own commercial and national interests.

Establishing sovereign AI capabilities provides significant economic benefits since it protects countries from sending the value of their AI innovations abroad. It also expands control over crucial AI applications, bolsters the security of sensitive data, and ensures that AI models are trained on national data and customised for a nation's particular demographic and economic profile, which can be especially important in such fundamental areas as healthcare and agriculture.

Sovereign AI models do not require the multibillion-dollar development funding of the kind received by such AI titans as OpenAI, Google or Anthropic. Switzerland has built an open-source AI model—trained across more than 1,000 languages, including several that are normally not featured in AI models, such as Swiss German—on infrastructure costing a relatively modest AU$70 million annually.[2] In Australia, Sovereign Australia AI is aiming to build an AI model trained on Australia-specific data for under AU$100 million, and Maincode, another Australian startup, is pursuing a similar objective.

Government investments are essential in establishing sovereign-AI capability and helping a country capture a higher share of its potential AI value. This report lays out the case for such investments, building upon the Australian Academy of Technological Sciences and Engineering (ATSE) vision statement from earlier this year, 'Made in Australia: Our AI Opportunity', which proposed a proactive, mission-based government approach towards AI.

The ATSE vision statement outlined the case for sovereign AI and for a government expenditure of up to AU$5 billion over the next five years. This report expands upon that argument, exploring how other governments are investing in AI, how Australia compares, and the potential impacts of making such an investment in sovereign AI — or failing to do so.

1. The World Economic Forum identifies AI as a key driver of the next industrial revolution based on technology across industries and scientific disciplines.
2. Switzerland invested in the Alps supercomputer (SWI), which has been used to train the Apertus fully open-source models with 8 billion and 70 billion parameters (ETH Zurich) comparable to models such as GPT-4o-mini and GPT-4o with 8 and 200 billion parameters respectively (Microsoft study).

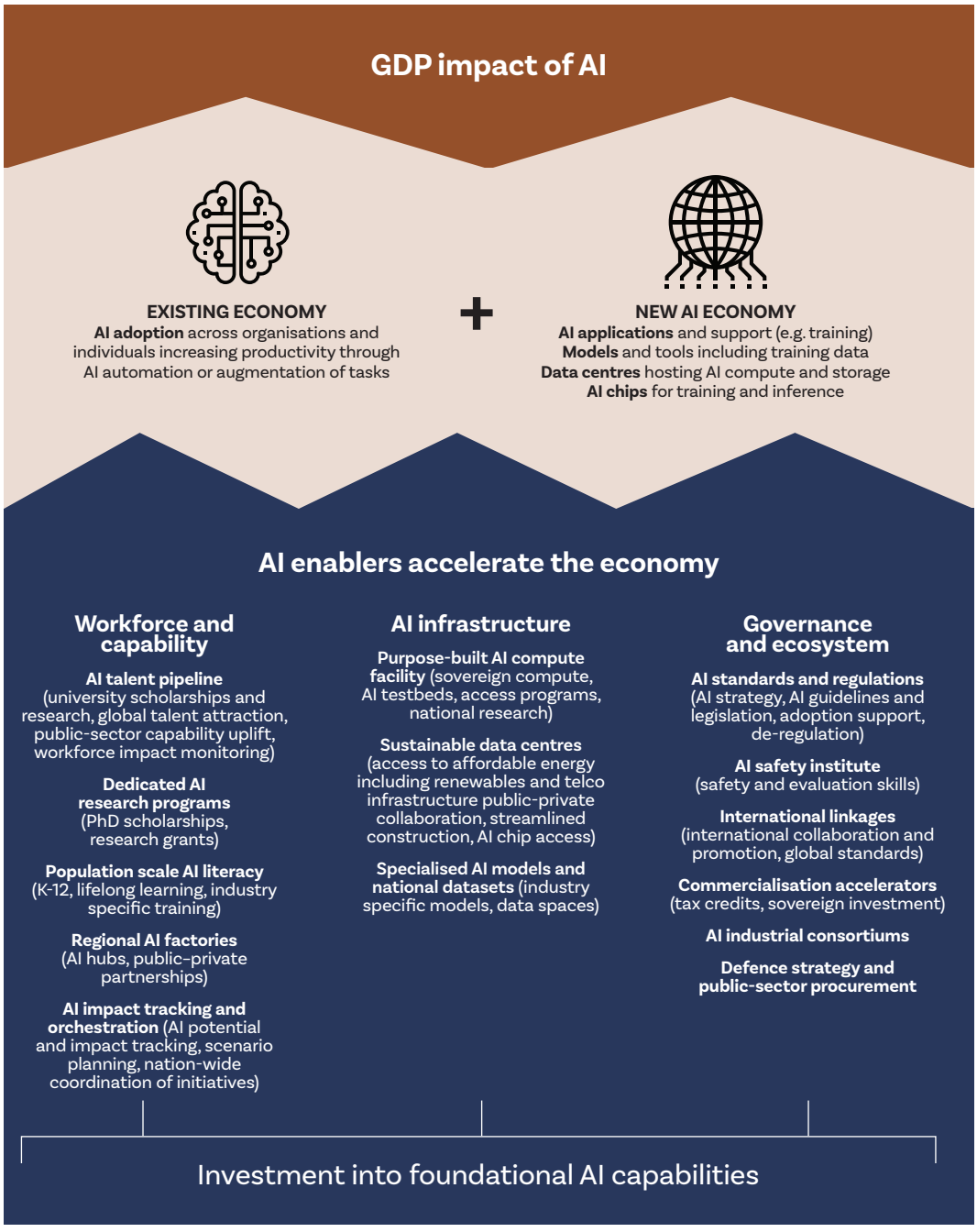
AI value equation

In this report, we assess the impact of AI by looking at two distinct but interconnected parts of the economy.

The first is what we refer to as the EXISTING ECONOMY, in which AI is deployed to improve productivity in the creation of currently available products and services by transforming how people and organisations operate. Through AI adoption, workers and businesses automate tasks, enhance decision-making, and unlock higher-value activities.

The second layer is the new AI ECONOMY, in which AI generates products or services that would likely be unachievable without this technology. This includes development of AI applications and models, the build of AI data centres, and the manufacturing of AI-specific chips. All of this activity, in turn, stands to generate entirely new industries, revenue streams, and export opportunities.

THE AI VALUE EQUATION



As the previous graphic illustrates, both levels of the economy rely on the development of fourteen AI enablers organised into three groups: workforce and capability, infrastructure, and governance and ecosystem. Government policy defines the public investment in AI enablers which drive a higher AI adoption in the existing economy and more investment in the new AI economy resulting in higher GDP.

The first group of AI enablers addresses the **workforce and capability** within a country. Expanding the AI talent pipeline through supporting higher education or attracting global talent will improve both the quality and the quantity of AI engineers, data scientists, and researchers (e.g., through PhD scholarships and research programs). This is essential for AI adoption, given companies' acute need for skilled teams to design, build, configure, and run AI applications. Dedicated AI research programs lay the foundation for a stronger AI start-up and innovation ecosystem through PhD scholarships and research grants.

But this need for AI skills is not limited to a few tech firms or government agencies. There is also a need to cultivate AI literacy among the general population. One objective here is to foster a broad-based understanding of how to work with AI, make the most of its opportunities, and manage its attendant risks. Regional AI factories would connect universities, AI professionals and the general public, investors, enterprises, and startups with the compute capacity, talent, training and capital required to support commercial application and broader uptake. AI impact tracking and orchestration capability measures the changes in the workforce, runs simulations to understand research or workforce impacts and oportunities, and coordinates workforce and capability initiatives across government entities, industry bodies, universities and businesses.

The second group is **AI infrastructure**, which provides the computational backbone of the AI economy. Purpose-built AI compute facilities built as part of publicly funded infrastructure provide sovereign-AI capability for startups and universities to translate research into commercial opportunities. Sustainable data centres are enabled through government and private-sector collaboration, streamlined approvals, and access to utilities (such as affordable green energy), all of which make the scaling of capacity more viable and attractive as a business proposition. Specialised AI models and national datasets ensure that AI reflects a country's specific demographic and geographic conditions and aligns with relevant national regulations.

Finally, the third group is the establishment of AI **governance and ecosystem**. AI standards and regulation should provide clear guardrails for safe AI adoption and include such supportive measures as sector-specific guidelines, assessment tools, and expert technical support in contending with particularly novel or difficult issues. This calls for the development of an AI safety institute that focuses on researching those risks and supporting legislators and businesses on topics ranging from model security to AI-driven criminal activity.

Additionally, international linkages help create cross-border collaboration covering research, talent development, investment, and international distribution of AI products and services. Commercialisation accelerators can fast-track innovation through tax credits and sovereign investment into AI initiatives, while AI industrial consortiums can focus on solving sector-specific challenges such as responsible AI use, the enhancement of AI models, or advanced research. Defence strategy and public sector procurement define the overall role of AI within national security and set guidelines for government institutions to adopt AI in a safe and consistent manner.

International lessons from public investment in AI

With regard to the AI enablers, Australia can benefit from the examples and lessons of other nations that have taken purposeful steps to bolster their own AI sovereignty. Leading governments have a clearly articulated AI strategy and share several common practices. They have taken a proactive role in defining the national AI agenda across all AI enablers backed by significant public and private funding. These nations have shown a clear understanding that governments can play a decisive role since they can directly influence education and research initiatives, invest in AI infrastructure, and develop regulation.

These AI-trailblazer nations have been identified based on Stanford's AI Index,[3] augmented by our research to reflect investments over the past two years, given that the AI Index is based largely on data from 2023. For Australia, comparable model countries include Singapore (second in the AI Index after Luxembourg) and the United Kingdom, with the US, EU, United Arab Emirates, and Saudi Arabia providing additional best practice examples. The below analysis provides a summary of best practices and lessons that can be applied to Australia.

Workforce and capability

Leading governments are proactively narrowing the AI skills gap. Key initiatives include expanding the number of qualified AI workers and enabling AI users through nationwide upskilling and reskilling programs, orchestrating collaboration across universities, and local and global training providers and tech companies.

AI talent pipeline
Initiatives are typically focused on one of three objectives: increasing the number of AI graduates, reskilling technology professionals to work with AI, and boosting the number of AI researchers. Singapore—a leader across a wide variety of AI fields—has launched several programs, including the TechSkills Accelerator, which so far has supported 340,000 technology professionals in their transitions into AI work. This initiative is supported by scholarships and dedicated research programs and funding such as the AI Accelerated Master's Program to support the development of AI models.

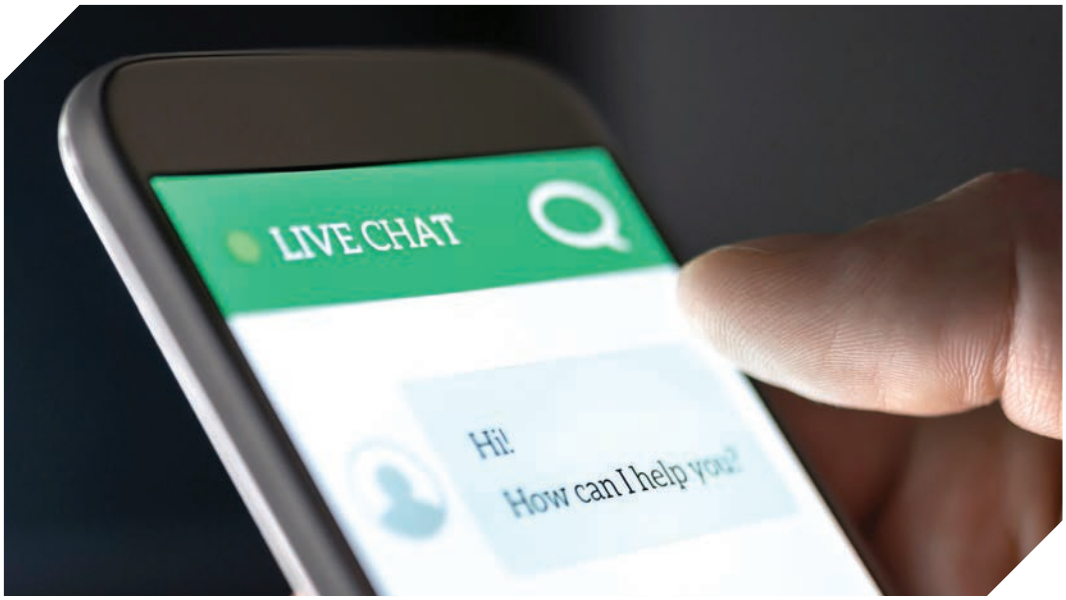
Dedicated AI research programs
Singaporean and European programs are investing both the workforce and the development of foundation models and other AI technologies, growing the talent pool and the local capacity for innovative AI contributions at the same time.

Population-scale AI literacy
Leading governments play a strong orchestration role across universities and tech partners and ensure that training is sector and use-case specific. Singapore has spent AU$1 billion per year in the past on its Skills Future initiative, which has already trained more than 1 million Singaporeans—37% of the total national workforce—through tech-focused courses in such areas as AI, cybersecurity, and digital marketing. The British government has partnered with leading companies such as Google, Microsoft, and Salesforce to provide free training to 7.5 million workers (20% of the national workforce) and is planning to set up monitoring, and governance mechanisms to assess and improve outcomes.

Regional AI factories
These are AI hubs that accelerate new AI businesses by connecting data, compute capacity, and talent with universities, businesses, and investors. The EU has announced AI factories as part of a broader InvestAI initiative, supported by a AU$360 billion public-private investment that has attracted Airbus, Volkswagen, and Siemens as major partners. The EU plays a strong orchestration role to ensure the optimisation of resourcing, which is articulated through the AI Continental Action Plan. According to the BBC, similar plans are underway in Saudi Arabia and the UAE.

AI impact tracking and orchestration
Project Iceberg, run by the Massachusetts Institute of Technology, measures the impact of Agentic AI on the economy through a data-driven analysis. This includes a simulation of the US AI agent workforce to help understand the impact on the human workforce and prioritise investments. The data is used by multiple US states and governments.

3. Stanford's AI Index is recognised globally as one of the most credible and authoritative sources for data and insights on artificial intelligence and provides a comprehensive ranking of countries from 2017 to 2023.



AI infrastructure

Governments worldwide are investing heavily in AI infrastructure, primarily to ensure independence and national security. They are building sovereign-AI compute capability, accelerating data centre construction, and developing AI-specific models and data-sharing infrastructure. This is often combined with private investments in infrastructure and models to ensure focus on areas of national interest, as seen in Norway's public investments in support of the Stargate Norway data centre initiative.

Purpose-built AI compute facility
This includes development of sovereign AI compute to support the development of locally customised AI models and provide startup access to compute. The US has announced joint investments with NVIDIA and AMD to build several new supercomputers with the Department of Energy exceeding 2,000 exaFLOPS capacity (more than 100,000 times bigger compute compared to Australia's NCI supercomputer).[4] The government of the United Kingdom has committed over AU$4 billion for AI, including compute infrastructure to perform AI-model research in areas of particular national concern, including health care and British languages. Norway has committed over AU$330 million to build its own supercomputer and fund the development of AI models.[5] The Korean government has recently announced the planned acquisition of 260,000 GPUs from NVIDIA. The Ministry of Science and ICT are buying 50,000 of these to develop independent AI foundation models and build a national AI computing centre.[6]

Sustainable data centres
The United States is orchestrating the largest privately funded global data centre initiative, the AU$760 billion Project Stargate. In addition, a US executive order for federal agencies aims to expedite permitting for large AI data centres. According to the World Nuclear Association, China has more nuclear power plants under construction than the rest of the world combined, which will be essential for meeting future data centre demands.

Specialised AI models and national datasets
National governments often fund labs to build frontier models, such as Sweden's GPT-SW3, Singapore's SEA-LION, Spain's Salamandra, or the EU's many pan-European research consortia, in order to reflect local languages, ensure transparency, and advance other national priorities.[7] In regard to data sharing, the EU has emerged as a front-runner with its Gaia-X and Common European data spaces initiatives. Gaia-X created a federated, open, and sovereign cloud infrastructure, while the data spaces allow industry participants to find, share, and reuse data in a trusted way to fuel innovation, improve efficiency, and develop new business models.

4. Australia's leading supercomputer operated by NCI has more than 10 petaFLOPS computing power (NCI).
5. Norway has announced its NOK 1 billion AI strategy in 2023 and further committed an additional NOK 1 billion in 2025. (The Research Council of Norway)
6. South Korea's National AI Computing Center is to become a core platform for AI models, services, and advanced semiconductors.
7. Many governments have started initiatives to build their own national LLMs mainly focusing on reflecting local languages. (Lawfare)

Governance and ecosystem

Key governance and ecosystem enablers include supporting adoption of regulation and setting up public-private partnerships to fuel investments through incubation hubs supported by R&D incentives and direct investments.

AI standards and regulation
The EU, having pioneered the world's first comprehensive AI law, is now shifting focus to enablement. This includes the definition of industry guidelines and the establishment of an AI Service Desk to provide free, customised tools and advice. Similarly, the Singapore AI Verify initiative developed SME-friendly AI tools to support adoption, including AI-model assessments available through GitHub.

AI safety institute
Britain's AI Security Institute focuses on conducting rigorous technical research on AI cyberattacks and criminal misuse, and on minimising business and consumer risks.

International linkages
These ties are strengthened by government sponsorship of global AI events, formal international partnerships or Memoranda of Understanding, and direct promotion (e.g., using trade and diplomacy to support US companies overseas). Under America's AI Action Plan, the US plans to promote the export of AI technologies to allies, counter adversaries by limiting access to advanced chips, and shape global AI norms through the National Institutes of Standards and Technology (NIST) AI Risk Management Framework.

Commercialisation accelerators
These are often used by governments to boost AI either through direct investment, sovereign funds or R&D credits. As an example, the United States has taken a 10% share in Intel to support semiconductor R&D and production in the US. Saudi Arabia has set up a sovereign-AI fund worth AU$60 billion, and Singapore uses its Temasek fund to invest in AI accelerating both AI infrastructure and startups.

AI industrial consortiums
These are often used to promote AI innovation within a specific sector. SCALE.AI is Canada's AI innovation cluster focusing on supply chains across the manufacturing, retail, transport, and tech sectors. By pooling funding, expertise, and data, SCALE.AI lowers the barriers for entry, especially for SMEs.

Defence strategy and public sector procurement
Governments have recognised AI capabilities as increasingly important contributors to national security. The UK government has established a Defence AI Centre, and launched a national Defence AI Strategy and AI Defence Playbook to accelerate the adoption of AI across its armed forces. The primary objectives of this transition include enhanced decision-making, operational tempo, and network resilience as well as improved military effectiveness, streamlined support functions, and better personnel protection through the automation of hazardous tasks.

In the field of public-sector procurement, the US is streamlining its acquisition of AI systems, eliminating red tape, and reducing vendor lock-in as described in America's AI Action Plan. The EU has published a roadmap on open-source software, recommending a public procurement policy that systematically favours European open-source solutions, the creation of a dedicated funding mechanism for crucial projects, and the enforcement of genuinely open standards to counter lock-in.

Some governments have already committed to specific technology partnerships: Germany has launched a sovereign-AI partnership with OpenAI and SAP to provide AI services for all government agencies, following strict data-sovereignty rules.

Australia today

Where does Australia stand with regard to the investment in AI enablers? Compared to its affluent-nation peers, it is clear that the nation generally lags in both the quantity and scope of its AI investment so far.

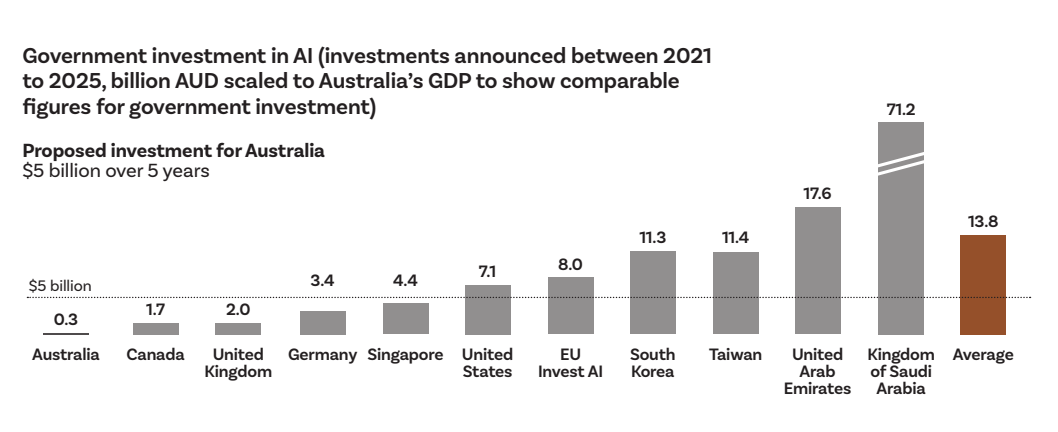
If we look at metrics related to the strength of the AI economy, such as private-investment share, the number of newly funded companies, or the awarding of AI patents, several countries show significantly higher performance than Australia.

As shown in the chart below, AI-forward nations—a group consisting of relatively high-income countries of varying population size—have announced or implemented governmental AI investments amounting to, on average, close to AU$14 billion during the past five years (scaled to Australia's GDP),[8] while Australia invested just over AU$300 million over that period.

Overview of selected metrics

AI enablers and AI economy

AI enabler metrics

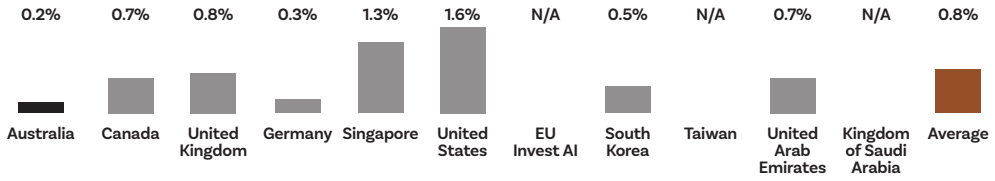


Comparison of select countries and their investments in AI. For investment number sources see Appendix A.
Investment figures standardised to Australian GDP figures for ease of comparison.
All other data sourced from Stanford AI index report (2024).

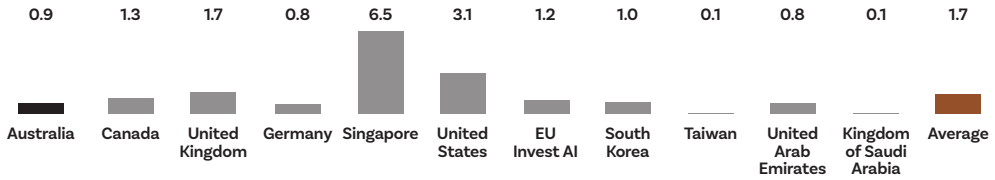
8. Investment figures have been GDP-adjusted to Australia's economic scale. This adjustment rescales each country's AI investment in proportion to the ratio of Australia's GDP to that country's GDP, providing a like-for-like comparison of relative investment intensity.

AI economy metrics (continued)

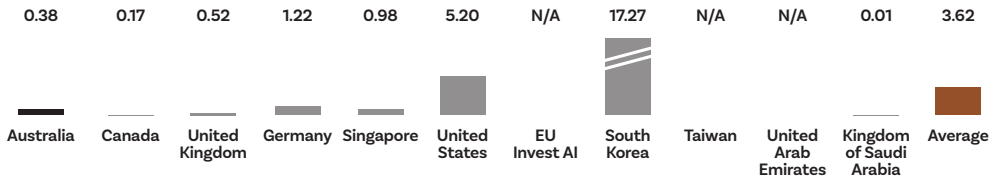
Private investments in AI from 2013 to 2024 as a share of GDP



Number of newly funded AI companies per 1 million inhabitants, 2024, Stanford AI index



Granted AI patents (per 100,000 inhabitants) in 2023, Stanford AI index



Comparison of select countries and their investments in AI across multiple metrics: private investment as share of GDP, newly funded companies, and AI patents granted. For investment number sources see Appendix A. Investment figures standardised to Australian GDP figures for ease of comparison. All other data sourced from Stanford AI index report (2024).

Artificial intelligence has been a growing focus of the Australian government over the past decade, and it has rolled out initiatives addressing most AI enablers. Notable efforts include the 2021 AI Action Plan and initiatives such as the Next Generation Graduates Program and National AI Centre. (For more information on the various inputs into the public-investment analysis, see Appendix A: Government investment in AI.)

We have identified some of the biggest investments the Australian government has made so far across AI enablers and now turn to a brief discussion of each of them.

Workforce and capability

Australia has laid some early foundations in AI talent development, such as with the Next Generation Graduates Program, which funds up to 500 AI scholarships. The government has provided ATSE initial investment to establish the well-regarded Elevate: Boosting Diversity in STEM program, which provides scholarships for women and under-represented groups to study disciplines where there's a strong workforce need, including AI-supporting disciplines: this could be extended and expanded with a specific AI remit. In addition, the government has established visa pathways to expand the AI talent pool. However, there is still significant opportunity to do more to deepen the talent pool and nurture cutting-edge capabilities, such as through expanded university programs and the establishment of research hubs.

Early moves to expand AI literacy, such as a free Technical and Further Education (TAFE) course, show some promise but remain limited in scale compared to similar projects in other countries. While several university institutes are advancing research in safe and responsible AI and work closely with the Department of Industry, Australia has yet to establish a national AI safety institute, a critical gap if it is to meet international obligations and provide sufficient oversight of AI risks.

AI infrastructure

Australia possesses several high-performance compute assets, including the Pawsey Supercomputer Research Centre, the National Computational Infrastructure facility (NCI), and a defence-focused supercomputer, along with some impressive university assets. However, global competitiveness requires far greater compute capacity, with the ATSE analysis highlighting the absence of a plan for exascale[9] compute to train and run AI.

There has been some meaningful activity at the state-government level. Tasmania has established an AI factory zone to support initiatives like Firmus's Project Southgate, which seeks to invest AU$4.5 billion in data centre infrastructure in Tasmania and Melbourne, with a potential total investment of up to AU$73 billion. At the same time, structural barriers, such as electricity-supply constraints, strict foreign investment rules, and lengthy approval processes for data centres can slow down the construction of compute capacity.[10] According to World Bank analysis, it takes an average of 120 days to get a construction permit in Australia, compared to 35 days or less in Singapore and South Korea. Some state programs like the New South Wales Investment Delivery Authority and Victoria's Development Facilitation Program aim at fast-tracking construction approvals, but they don't provide consistent and comprehensive national coverage.

Government efforts to encourage more open data-sharing are freeing up access across agencies and universities. These include such initiatives as metadata.NSW, Australian Dataspaces, and the national My Health Record. The engagement with international data-sharing ecosystems like Europe's Gaia-X will be critical to Australian exporters who supply the European market, notably medical-equipment companies. A significant opportunity remains to focus on the development of specialised AI models for Australia in areas such as national security, climate resilience, regulated industries, and health care.

Governance and ecosystem

Australia has set AI-governance baselines through its AI ethics principles and voluntary guardrails as well as the establishment of the National AI Centre, but progress towards enforceable regulation of high-risk AI remains incomplete.[11]

With regard to the development of a true AI-investment ecosystem, there has been some positive activity at both the federal and state levels, including the establishment of the Queensland AI Hub, the introduction of R&D tax incentives, and the emergence of large investment vehicles such as the National Reconstruction Fund and Breakthrough Victoria. In addition, the Australian Defence Strategy emphasises the role of advanced capabilities, though there remains a significant need to sharpen the focus on AI in that critical sector.

To match the efforts of its peers, Australia should consider a coordinated national network of AI factories dedicated to the development of Australia-specific AI models supported by public–private partnerships to accelerate commercialisation. Public-procurement programs such as the GovAI trial are a step in the right direction, but require further attention to be anywhere close to par with the initiatives of countries such as the United States or Germany. While the Australian Defence Strategy emphasises the role of advanced capabilities, there are additional opportunities to expand the focus on AI.

9. Exascale computers have performance greater than 1 exaFLOPS. FLOPS is a unit of measurement (floating-point operations per second), with petaFLOPS and exaFLOPS denoting a quadrillion and a quintillion of operations per second (1 exaFLOPS equals 1000 petaFLOPS).
10. A July 2025 KWM Data Centres report highlighted several challenges, including power-supply constraints, foreign-investment controls, a lack of incentives, and burdensome regulatory requirements. Specifically, energy-supply challenges are driven by an impending shutdown of major coal-power stations, as well as high levels of network demand. These conditions pose some risk for the further build-out of AI data centres.
11. The International Association of Privacy Professionals has highlighted the lack of enforceable AI regulations and highlights the risk of not achieving the regulatory cohesion and effectiveness currently aspired to by government, if AI obligations are not made legally binding.

Paths forward

If pursued properly, a heightened AI sovereignty can redefine Australia's competitiveness, productivity, and security for decades to come. It can fuel national competitiveness by attracting global capital, nurturing top talent, and building a strong AI economy. Strategic investment in AI would enable Australian businesses to compete at the technological frontier and export advanced capabilities.

Beyond competitiveness, AI offers a pathway to improve productivity. By embedding automation, data-driven decision-making, and intelligent systems across the economy, AI can unlock efficiency, fuel higher-value production, and expand the nation's economic base.

From a national-security perspective, AI will enhance cyber resilience, accelerate threat detection, and strengthen autonomous defence systems—ensuring Australia can defend its interests in a rapidly evolving environment. Building domestic AI capacity, rather than relying on foreign systems, is essential to maintain operational sovereignty.

It also allows for Australia to act proactively on protecting its cultural identity. Building its own systems reflective of the local culture and norms is of national importance, rather than relying on input into the Australian culture being trained and developed based on the data, interests and perspectives of foreign developers.

However, the cost of inaction is equally stark. Without decisive investment, Australia risks falling behind peer economies. If continued, this trend will manifest in slower productivity growth, diminished competitiveness, and a loss of talent to more dynamic economies abroad. All together, these reflect an existential risk for Australia in losing further control over its economy and national conversation.

Such underinvestment would also leave Australia dependent on foreign technologies and limit its ability to defend its interests or protect its critical industries against any hostile forces.

Next, we outline the six AI enablers that we have determined are essential to achieving Australian AI sovereignty. Drawn from the AI enablers discussed earlier, these enablers represent our assessment of where Australia's AI-investment priorities should lie over the coming years.

Six priority AI enablers to drive economic value

Out of the 13 AI enablers, we have identified six priority AI enablers for supporting Australia's AI sovereignty and delivering the economic impact. This has been based on Australia's progress to date, global best practices, and the initiatives highlighted in the previous ATSE vision statement.

AI talent pipeline
Scale up education programs to expand the number of highly qualified AI workers to help large enterprises and SMEs adopt sophisticated AI solutions. This should focus on increasing the number of graduates in AI-related fields and retraining more experienced tech professionals to empower them to meaningfully participate in AI work. These training programs should cover the development of Australia-specific AI models and applications.

Population-scale AI literacy
Develop and subsidise industry-specific trainings focusing on mid-career workers to ensure they are not left behind. Set up a design, oversight, and orchestration capability to coordinate and monitor progress and impact across technology and agency partners.

Purpose-built AI compute facilities
Strengthen the sovereign-AI compute capability by building exascale capacity, integrated with the supercomputers at Pawsey, NCI, and other locations. Design an access program to allow universities, startups, and enterprises to leverage this capability and integrate with regional AI facilities.

Specialised AI models and national datasets
Develop specialised AI models and national datasets covering Australia-specific applications in geoscience, health, and other priority areas, including heavily regulated, strategically sensitive industries such as banking. This should include the creation of secure national datasets for these crucial sectors. This will support the new AI economy as well as the existing economy by providing better-tailored solutions for Australian industries.

AI standards and regulations
Expedite the existing AI regulatory reviews, and address open questions such as the nature and extent of enforceable obligations for AI systems. Build on current regulatory-enablement initiatives, such as the National AI Centre, to provide industry-specific advice and tools, with a primary focus on small and medium-sized enterprises similar to the AusCyber initiative.

Regional AI factories
Set up five to seven government-owned AI hubs as the centrepiece of the government strategy. These AI factories would connect researchers, manufacturers, SMEs, startups, investors, and government agencies. The integration of these facilities into sector-specific, national, and international collaborations will support alignment with other initiatives. Establishing an AI-investment fund through public–private partnership with enterprises, venture-capital funds, and other investors would accelerate the commercialisation and growth of startups.

Where Australia should compete in the AI economy

To maximise the impact of these six AI enablers, Australia should carefully evaluate which industries in the existing economy and what parts of the new AI economy to focus on. But there is another preliminary question to consider: Which entities are best positioned to define Australia's overall AI-sovereignty strategy?

Broadly speaking, there is a need for the federal government to set a strong direction and help orchestrate efforts across all AI enablers. State and territory governments can build on their existing initiatives—such as digital innovation precincts—and take ownership of the execution process, especially in such areas as workforce preparation and AI infrastructure.

Inevitably, the private sector will take an enormous role in shaping Australia's AI future. But this begs the question of which parts of the economy should be targeted for the greatest potential gains. As shown in the graphic below, our analysis of Australia's comparative advantages indicates that governmental support of AI should focus on three priority areas: AI adoption, AI applications and support, and data centres with potential niche focus on Australia specific AI models. While there will be a need to secure AI chips for Australian data centres, the feasibility of manufacturing them at scale in Australia remains low given the specific expertise required.

Comparative advantages of Australia

EXISTING ECONOMY	NEW AI ECONOMY			
AI adoption across organisations and individuals	**Applications & support**	**Models & tools**	**Data centres**	**AI chips**
◑	◕	◔	◑	○
Significant investment and active AI adoption across large enterprises Tech partnerships with global tech companies and service providers Lower maturity outside of large enterprises	Existing tech domain expertise (several globally successful software companies) Strong start-up performance (MiningTech, FinTech, HealthTech)	Strong research foundation and emerging model start-ups Limited experience in building and training frontier models and supporting tooling	High potential for green energy Vast land resources Power supply constraints and potential burdensome approval requirements	Lack of experience in high-precision manufacturing and chip making Limited chip research and supplier ecosystem

ATSE'S TECHNOLOGY READINESS ASSESSMENT METHODOLOGY					
KEY	**Not ready**	**Substantial work required**	**Moderate work required**	**Minimal work required**	**Ready**
	○	◔	◑	◕	●

All three of these priority areas could vastly expand the global market for Australia's digital exports and assets, from AI applications to data centre capacity. In addition, while supporters such as the Tech Council of Australia have highlighted the opportunity of exporting compute capacity, this needs to be further evaluated in light of domestic demand and the significant compute-capacity expansion that is occurring across Asia.[12]

12. The chair of the Tech Council of Australia has articulated the vision for Australia to host data centres for the entire Southeast Asia region, including digital embassies — secure, sovereign cloud vaults that host countries' most important data, operating under the laws of that country (Scott Farquhar, National Press Club Address). Other Asian countries, however, also have significant ambitions. Data centre capacity in ASEAN nations is predicted to increase more than fourfold, from 1.7 GW in early 2024 to 7.6 GW by 2028 (CGS International).

AI impact on GDP

Now that we have established the priority enablers of sovereign AI, and identified Australia's specific areas of comparative advantage, we will turn to concrete economic justifications for a substantial increase in the level of national investment in AI enablers.

Earlier in this report, we defined two distinct but conjoined parts of the AI economy: "the existing economy" of currently available products and services that are made more productive by the introduction of AI; and "the new AI economy," consisting of novel products and services directly attributable to the emergence of AI and related technologies.

In this section of the report, we will look at AI's economic impact (as measured by GDP), first on the existing economy, and then on the new AI economy. Within each of these two parts, we will consider the economic impact under three potential scenarios:

Base scenario
Estimates the potential impact of AI on the GDP assuming current levels of government investment and regulatory enablement.

Conservative scenario
Assumes limited government action with regard to AI investment, and on policy innovation in areas such as re-skilling, AI infrastructure, and startup incentives.

Increased-investment scenario
Estimates the potential GDP impact of a proposed AU$5 billion government investment in AI. This reflects the causal relationship between government policy and public investment in AI enablers, driving an increase in AI adoption within the existing economy, as well increased investment in the new AI economy.

For our analysis, we have used Australia's 2024 GDP of AU$2.8 trillion, which grew by 19% over the preceding 10 years. Based on our analysis, we project the impact of AI on the Australian economy under the base scenario to be anywhere from AU$135 billion to AU$190 billion in 2034 (increased annual GDP between 2024 and 2034 excluding inflation), which would represent 5% to 7% growth over the coming decade—about 0.6% to 0.7% annually.

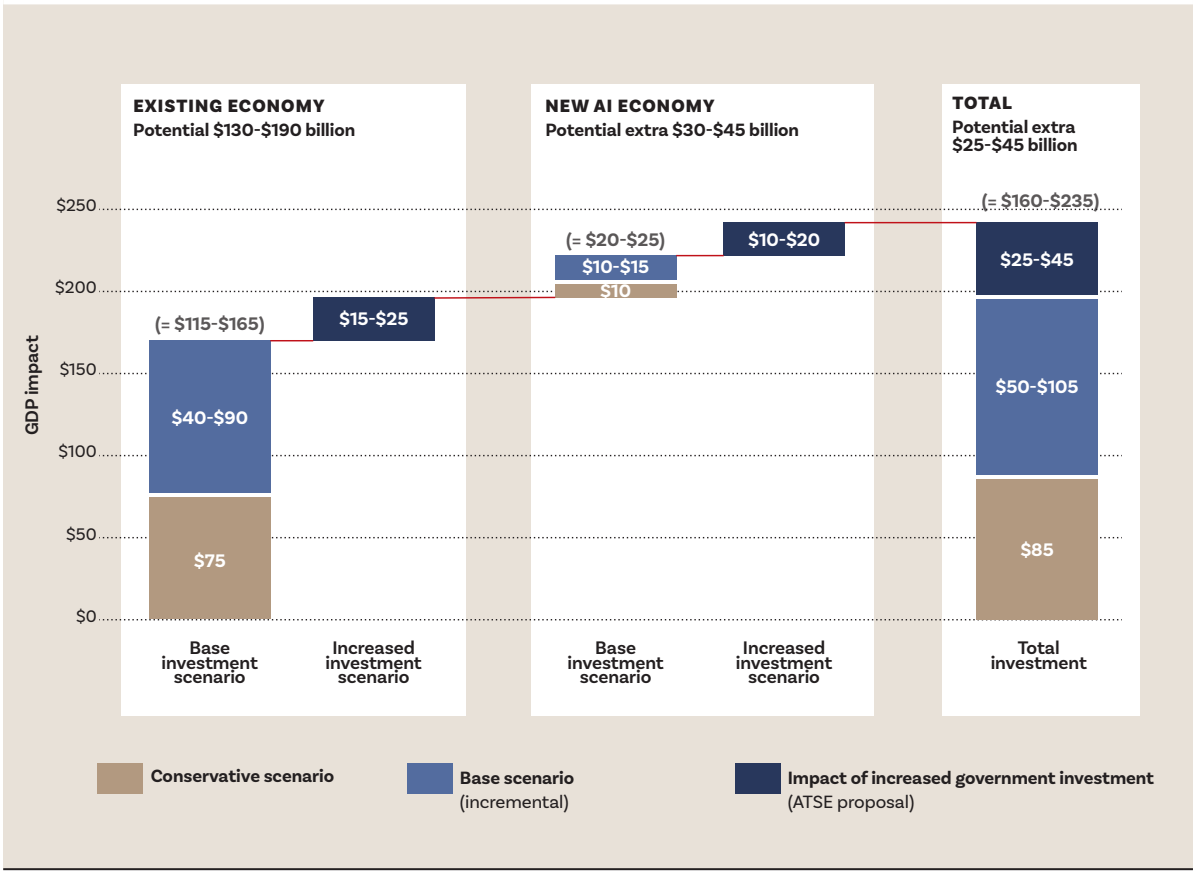
Under the conservative scenario, with government support of AI limited to a relatively minimal level, the GDP impact of AI would be only AU$85 billion in 2034.

By contrast, in the increased-investment scenario, the proposed investment of AU$5 billion could expand GDP by another AU$25 billion to AU$45 billion over and above the base scenario, leading to overall AI-related growth of between AU$160 billion and AU$235 billion annual growth in 2034, or 6% to 8% growth over 10 years (0.7% to 0.8% annually). What's more, we estimate that the initial AU$5 billion public investment could attract an estimated AU$27 billion to AU$49 billion in private capital during this period.

The above estimates align with comparable global studies, which have estimated an annual AI labour-productivity increase ranging between just shy of 0.5% to almost 3.5%.[13] There are valid arguments for either end of this range. Slow business AI adoption and an inability to generate additional revenue could result in a lower outcome, while the potential of AI to revolutionise research and innovation in areas such as health care, biotech, or software development could tip the outcome to the higher end of the range.

13. A 2024 OECD paper has compared the estimated GDP impact across several global studies.

AI impact on GDP (AU$ billions, GDP impact in 2034, figures have been rounded)



Graph showing the different possibilities of potential growth in Australia's GDP by 2034 under different AI investment scenarios across existing and new parts of the economy. This shows a further increase in GDP of $25-45 billion is possible if the proposed $5 billion investment is implemented.

To compare these projections with actual economic outcomes, we have looked at the US economy, which grew by 3.1% from the 4th quarter of 2024 to the 2nd quarter of 2025. During this period, investment in information-processing equipment and software accounted for 92% of the total growth, equating all by itself to 2.9% growth in the economy over this span.[14]

This level of growth is likely driven by the extraordinary investments made by large technology companies—estimated to be in the range of AU$600 billion just in 2025.[15] While sustained growth would require a further increase in this level of investment (which is unlikely to continue at the current pace), it does not capture AI product and service revenue, or the productivity uplift that could be expected to gradually grow with increasing adoption.

Next, we explore the scenarios, beginning with projections for the existing economy and then shifting to those for the new AI economy. More details and analysis can be found in Appendix B: AI impact on GDP – key metrics and assumptions.

14. The 3.1% GDP increase is based on seasonally adjusted real GDP growth adjusted for inflation (chained 2017 dollars) reported by the BEA.
15. The Wall Street Journal has estimated that the leading Silicon Valley tech companies will invest US$400 billion into artificial intelligence.

Existing economy: Base and conservative scenarios

The GDP value of AI adoption in the existing economy is driven by the increased automation and augmentation of tasks, which can be broken down into three factors, as illustrated in the graphic below:

Existing economy conservative and base scenarios — methodology and assumptions							
Base scenario	16% full AI potential to increase productivity (weighted average)	×	31-43% adoption rate in 2034	×	**Labour transition rate** 38% in year 1 82-99% in year 2-5 100% in year 6-0	=	AU$115–165 billion GDP impact in 2034 (rounded)
Conservative scenario	16% full AI potential to increase productivity (weighted average)	×	21% adoption rate in 2034	×	**Labour transition rate** 38% in year 1 82% in year 2 93% in year 3-10	=	AU$75 billion GDP impact in 2034 (rounded)

We will now define and explore each of these three factors in turn.

Full AI potential

This describes the share of tasks that can be automated or augmented given current AI capabilities. The model is based on OECD analysis applied to the Australian economic value added by industry. The analysis includes only the impact of AI automation and the augmentation of knowledge work, as in generative and agentic AI. We have not included the impact of robotics due to the high uncertainty of its impact, timeline, and the level of investment required for adoption beyond the current possibilities of robotic automation.

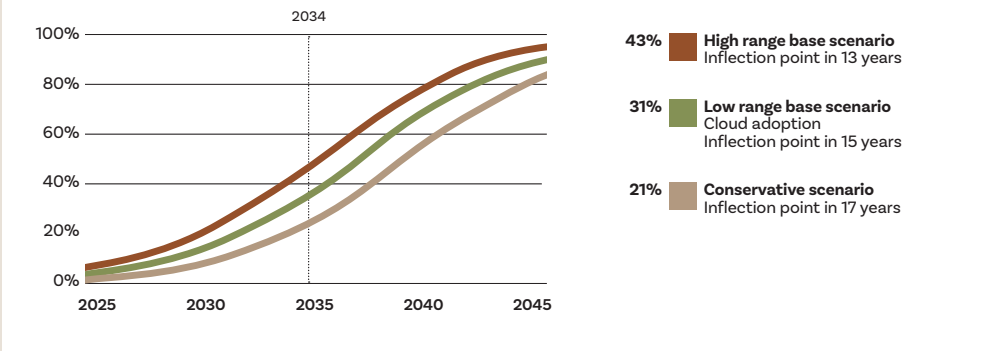
The assumed total productivity gain for the Australian economy is 16%, which reflects a weighted average across all industries based on Australian Small Business and Family Enterprise Ombudsman (ASBFEO) industry value add. This is calculated based on AI exposure defined as the proportion of tasks that can be automated or augmented. The weighted average AI exposure is 45%, which is multiplied by a projected productivity gain of 35%, a figure based on a range of studies. The full AI potential amounts to AU$450 billion based on 2024 GDP figures (not adjusted for inflation).

Adoption rate

This describes how quickly organisations and individuals integrate AI into their operations and can achieve automation or augmentation of relevant tasks. The model uses historical cloud-computing adoption rates to estimate the adoption curve for AI, as cloud and AI share several common traits, such as a need for large investments in infrastructure, and for complete redesigns of core processes (application architecture in the case of cloud, and business models in the case of AI).

Cloud-adoption rates have been measured by the Australian Bureau of Statistics and also reported on more recently by Innovation Australia. Based partially on this data, we have assumed adoption rates of 31% to 43% for the base scenario and 21% for the conservative scenario by 2034. These figures are based on an assumed similarity to the cloud-adoption curve, with an inflection point in year 15 for the base scenario – low range and year 13 inflection point for the base scenario – high range and year 17 inflection point for the conservative scenario. All ranges assume a starting point in 2023. The following graphic illustrates the dynamics of this adoption curve.

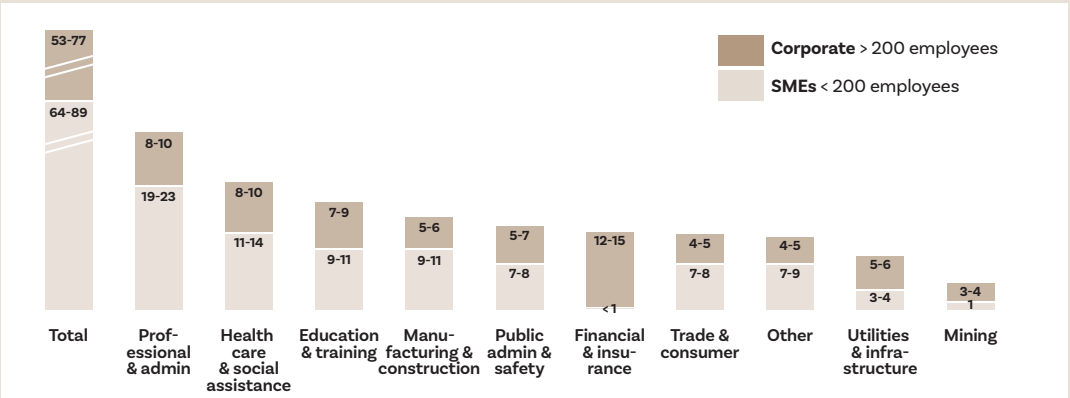
Productivity uplift adoption curve % adoption



Labour-transition rate
This describes how quickly the increased productivity can be converted into additional economic value, capturing how fast workers who lose their jobs can start contributing in new roles within their existing organisations, or find new jobs elsewhere. In the model, historical Australian long-term re-employment rates reported by the Reserve Bank of Australia have been used as a proxy, with the following value-capture profile by year for the base scenario: 38% of economic value captured in year 1; 83% in year 2; and over 90% in the following years, reaching full economic-value realisation in year six. The conservative scenario uses similar rates in years one and two but assumes that we will be able to transition only 93% of these laid-off workers in subsequent years, based on a Goldman Sachs analysis suggesting potential 7% job displacement in the US workforce.

The above assumptions lead to an estimated AU$115 billion to AU$165 billion GDP productivity uplift in the base scenario and AU$75 billion in the conservative scenario in 2034. The industries with the greatest opportunity are professional and administrative services (AU$27 billion), health care and social assistance (AU$20 billion), and education and training (AU$16 billion). These figures are based upon the industry size and the varying AI potential by industry.

AI potential by industry GDP impact (AU$ billions 2034. Figures have been rounded)



	Total	Prof-essional & admin	Health care & social assistance	Education & training	Manu-facturing & construction	Public admin & safety	Financial & insu-rance	Trade & consumer	Other	Utilities & infra-structure	Mining
Cumulative impact (AUD$ billions)	$115-165	$27-33	$19-24	$16-20	$14-17	$13-15	$12-15	$11-13	$11-14	$8-10	$4-5
SMEs % of uplift potential	55%	66%	60%	56%	67%	56%	<1%	61%	64%	59%	27%
Productivity increase by 2034	6-7%	8-10%	6-7%	6-8%	4-5%	5-6%	10-12%	4-5%	6-7%	5-6%	4-5%

Chart showing the potential GDP impact of productivity increases in various sectors of the economy by 2034, with the possible uplift greatest for small and medium enterprises covering 55% of the total GDP growth of $115-165 billion.

As indicated in the graphic, around 55% of the impact is expected to be driven by small and medium-sized enterprises (companies with 200 employees or less). SMEs are at risk of falling behind large corporations, which can deploy significant capital and resourcing for AI initiatives. Government support is thus necessary to level the playing field and help SMEs integrate AI into their business models.

Existing economy: Increased-investment scenario

The main AI value driver for the existing economy is the availability of skilled AI labour across two broad categories: **AI builders** (the technology personnel who create AI products and services) and **AI users** (workers who use AI to augment their productivity in some fashion). Government investment in labour and capability expand the adoption of AI across businesses leading to higher productivity and increased GDP.

Our analysis is based on the estimated funding, driving the number of trained workers, which is then multiplied by the assumed economic impact of AI adoption per worker to estimate the overall GDP impact. We have also modelled the sensitivity of AI adoption and GDP impact based on the number of trained workers.

Existing economy increased investment scenario — methodology and assumptions							
Increased investment scenario	**AU$1 billion** of government investment driving AU$3-4 billion private investment	→	**400-600k trained workers** 100k 'AI builders' 300-500k 'AI users'	×	**Economic impact per worker** (from AI adoption) AU$75,000 per 'AI builder' AU$30,000 per 'AI user'	=	**AU$15-25 billion** GDP impact in 2034 (rounded)

We have estimated the total government investment in workforce and capability build to be AU$1 billion over five years (or 20% of the proposed AU$5 billion investment). For comparison the TAFE fee-free program is worth AU$1.5 billion in government funding between 2023 and 2026.

This funding would provide scholarships for 100,000 new AI builders (50% of Tech Council of Australia estimate of 200,000 new AI builders by 2030) and 300,000 to 500,000 AI users. This is based on assumed government funding of AU$6,000 for AI builders (measured by value of scholarship with total cost of an AI undergraduate degree of AU$30,000) and AU$800 to AU$1,200 for AI users (derived from an average total cost per course of AU$2,000).[16]

The economic impact per trained worker has been assumed at around AU$75,000 for an AI builder (difference between annualised median weekly full-time earnings of AU$1,697 and AI engineer annual salary of AU$165,000). For AI users, we have used the per-worker impact of the full AI potential of AU$450 billion defined earlier, and a total Australian workforce of 14.6 million.

This results in an estimated GDP impact of AU$15 billion to AU$25 billion in 2034 assuming an AU$3 billion to AU$4 billion private investment, leading to a total education and training cost of AU$4 billion to AU$5 billion. This is broadly aligned with studies on the economic impact of education that estimate the return on investment at four to 10 times.[17]

To assess how variations in workforce training affect AI adoption and the resulting GDP impact, we developed a sensitivity model using the OECD elasticity between technology training and technology adoption. The approach estimates how incremental increases in the number of trained workers influence the overall rate of AI adoption in 2034. Given limited empirical evidence in this area, the parameters have been calibrated using available OECD data and the above-described methodology in the increased-investment scenario.

The model applies a simplified sensitivity equation:

$$\text{Increase in AI adoption} = \text{change in z-score} \times \text{OECD elasticity}$$

The technology adoption elasticity reflects the relationship between the proportion of the workforce trained and the resulting growth in technology adoption. Based on OECD findings, we assume a high-range elasticity of 7 percentage points and a low-range elasticity of 4.7 percentage points for every one standard deviation increase in the share of trained workers.[18]

16. For simplicity, we have modelled the impact of undergraduate degrees, but in reality, the government support would address undergraduate and graduate degrees including PhDs, which could drive even more value in the economy.
17. Impact of education of the economy has been heavily researched. We have considered technology and digital specific studies like the UK Centre for Economics and Business Research and RMIT online report.
18. These elasticity figures are based on a 2018 OECD study focused on CRM and cloud adoption, and will require recalibration as more AI-specific empirical data becomes available. The study showed an average 2.3 to 3 percentage point tech adoption from increasing the training for high and low skilled workers by one standard deviation with the maximum impact of 7 percentage points. Given we have seen a fast AI adoption, we assume the range of 4.7 to 7 percentage point increase (midpoint between lower range average and maximum and the maximum).

The change in z-score is derived as a difference between the corresponding z-score of currently trained workforce and the z-score of the target trained workforce in 2034 (assuming a normal distribution for AI adoption). The analysis assumes a total addressable workforce of 6.6 million, estimated as 45% of total Australian workforce (share of AI exposed tasks of 45% used as a proxy). We have assumed 17% of the current workforce trained[19] with additional trained workers due to government subsidy ranging from 120,000 to 1,080,000. AI builders account for 20% of the AI users. To capture diffusion effects, a multiplier is applied—each trained AI user is assumed to support adoption by two additional workers, while each AI builder supports five AI users. These multipliers will also need to be tested and refined as empirical evidence becomes available.

Overall, the sensitivity analysis demonstrates a strong, approximately linear relationship between the number of trained workers and national AI adoption rates, underscoring the importance of early and sustained investment in AI education and workforce upskilling.

Existing economy increased investment scenario — sensitivity analysis (AU$ billions in 2034)

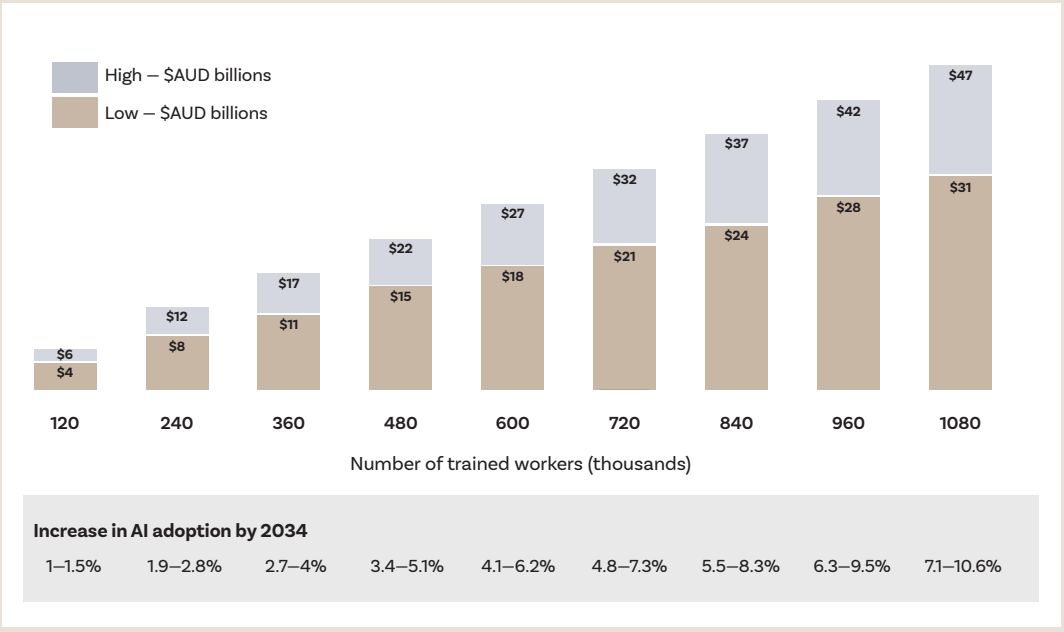


Chart showing the potential further increase in GDP given additional trained AI workers. Training 1 million workers through to 2034 could generate between $31 and $47 billion of growth, due to increased AI adoption of between 7 and 11%.

19. According to Security Brief, a Dayforce survey found that only 17% of organisations in Australia and New Zealand are actively reskilling staff, with the majority having no programme in place for employees affected by AI automation.

New AI economy

Conservative and base scenario

We shift now from the existing economy to the new AI economy. To estimate the value of AI products and services, we use as a proxy the global AI software market, which is expected to grow 21% annually from almost AU$330 billion in 2024 to AU$1.9 trillion in 2034.

To identify the GDP impact for Australia, we scale the global impact based on the share of Australian large tech companies. In the base scenario, we have assumed a range of 2.3% to 3.5%, with the lower range representing the share of large Australian tech companies (defined as those with valuation over AU$1 billion), as identified by the Tech Council of Australia.

The higher range has been increased by 50% based on the share of Australian companies among tech startups worldwide—a share calculated at 4% based on recent research conducted by Microsoft. The conservative scenario is based on Australia's share of total global GDP: 1.6%.

Current growth of the number of startups has been about 19% per year over the past 10 years,[20] which is consistent with the assumption in the conservative scenario. For the base scenario, we are assuming 23% to 28% annual growth in the number and revenue of startups.

Using a 42% value-added ratio to convert industry revenue into economic impact (based on Australian Bureau of Statistics figures), we estimate an AU$20 billion to AU$25 billion GDP impact in the base scenario and AU$10 billion in the conservative scenario in 2034.

New AI economy conservative and base scenarios — methodology and assumptions							
Base scenario	**AU$1.9 trillion global AI software market** size in 2034	×	**2.3-3.5% share** of Australia's AI software market	×	**42% industry value-added ratio** (to convert revenue into economic impact)	=	**AU$20–25 billion** GDP impact in 2034 (rounded)
Conservative scenario	**AU$1.9 trillion global AI software market** size in 2034	×	**1.6% share** of Australia's AI software market	×	**42% industry value-added ratio** (to convert revenue into economic impact)	=	**AU$10 billion** GDP impact in 2034 (rounded)

Increased-investment scenario

Investing in key AI enablers, such as sovereign compute infrastructure and supportive regulation, will enhance Australia's attractiveness to private investors. Greater private-sector confidence will, in turn, stimulate funding for new AI ventures, driving innovation, business formation, and higher economic value across the broader economy.

To calculate overall GDP impact, we have assumed that the AU$4 billion government investment[21] will attract additional private capital (as majority will go towards AI factories and sovereign AI compute supporting research and startups). If we use the EU's InvestAI and America's Project Stargate as potential benchmarks and adjust for Australia's GDP, we could expect AU$25 billion to AU$45 billion additional investment.

Using typical venture-capital return rates of 12% to 17% per annum[22] over a conservative average six-year investment period, we can calculate the resulting 2034 valuations, which can be converted into revenue and then into industry value-added.[23] This approach estimates an additional GDP impact of AU$10 billion to AU$20 billion in 2034.

20. This is based on a CSIRO report assuming roughly 92 startups in 2013 and 544 startups in 2023.
21. The AU$ 4 billion is based on the proposed AU$5 billion less AU$1 billion invested in workforce and capability.
22. Venture capital annual-return rates are based on a combination of CIC analysis figures and local Australian AI-fund performance (Titanium Ventures).
23. The robotics and AI revenue to valuation multiple of 2.5 for Q1 2025 has been used based on valuation multiples tracking provided by Finerva.

AI products and services 'increased investment scenario' — methodology and assumptions					
Increased investment scenario	AU$28-49 billion of public-private investment (AU$4 billion public investment) x 12-17% average annual return rate on investment (for 6 years) 2.5x revenue multiple (to convert valuation in to revenue)	x	42% industry value-added ratio (to convert revenue into economic impact)	=	AU$10-20 billion GDP impact in 2034 (rounded)

Risks and mitigations

While the opportunities are substantial, Australia faces several significant AI risks that can be proactively mitigated by targeted government investment into the AI enablers. As shown in the graphic below, the risks can be split into three areas: technology, workforce, and policy and market concerns.

Overview of key AI risks and mitigations

Key risks			Mitigations (AI enablers)
Technology	Energy and infrastructure	Insufficient electricity availability and high unit-cost (including renewables), together with slow construction approvals can slow-down data centre build	Sustainable data centres Purpose-built AI compute facility
	Security and resilience	Data breaches, bad actor interference, or cyber vulnerabilities can compromise national security	Defence and public sector procurement strategy Sovereign AI compute facility AI standards and regulations
	Model integrity	Bias, lack of transparency, loss of control and unpredictability can seriously impact critical infrastructure	AI safety institute Specialised AI models and national datasets
Workforce	Job displacement	Potential rise in unemployment due to slow transition of workers into new roles	AI talent pipeline Population-scale AI literacy
	Trust and capability	Low public trust and shortage of AI talent can slow down adoption	Population-scale AI literacy AI standards and regulations
Policy & market	Complex regulation	Overlapping, unclear or incomplete regulation can hinder adoption and decrease the pace of innovation	AI standards and regulations International linkages
	Value transfer abroad	Overreliance on foreign AI companies can shift economic value overseas negatively impacting GDP	Specialised AI models and national datasets Purpose-built AI compute facility Regional AI factories
	Power concentration	Value captured primarily by large enterprises and investors can limit value distributed to for workers	Commercialisation accelerators Industrial consortiums

Technology risks

These are the risks related to AI technology itself, and they take myriad forms.

Energy and infrastructure
One risk to the full realisation of the economic value of AI is the prospect that data centre demand will outstrip available supply. CBRE predicts an estimated data centre gap of between 0.7 GW and 1.7 GW by 2028 based on predicted capacity of 1.8 GW. The main risk driver is insufficient electricity-generation capacity and high unit costs, which can significantly diminish the appeal of building new data centres.

Additional factors such as access to telco infrastructure, the availability of water for cooling, and the speed of construction approvals can also make it more difficult to attain sufficient data centre capacity. While some necessary actions, such as adding new energy-generation capacity or grid upgrades, may require a longer runway, others—such as the streamlining of approval processes—can be achieved in the short term. It is also vital that data centres are not seen as competing with local communities and other critical industries for space and resources.

Security and resilience
AI compounds the risk of data breaches and other cybersecurity vulnerabilities. These weaknesses could compromise privacy, erode consumer trust, or even jeopardise national security. Strengthening resilience can include building sovereign AI capabilities and instituting closer monitoring of system vulnerabilities, as well as ensuring that the existing cybersecurity initiatives cover AI-related threats.

Model integrity
AI systems carry risks of bias, lack of transparency, loss of control, and unpredictable outputs, all of which can cause direct harm and undermine trust among users. They can also impede adoption, particularly in high-stakes sectors such as health, finance, and government services.

Mitigation efforts should include the development of transparent Australian AI model alternatives, to reduce dependency on foreign models. In addition, they should include the institution of safety guardrails, regular stress testing, and robust evaluation frameworks with independent oversight bodies, such as the proposed AI Safety Institute.

Workforce risks

As noted earlier, there is a very real chance that AI will result in at least a temporary loss of jobs for many workers—a development that could further compromise public trust in the technology and thereby slow overall adoption.

Job displacement
The impact of AI on employment remains highly uncertain, as global studies project both net new job creation and net job loss.

For instance, the January 2025 World Economic Forum Future of Jobs report suggests a total impact ranging from 2% net job loss to 6% net job gains, with AI the primary driver in either direction. Research by Jobs and Skills Australia could also point to a lower impact in Australia due to a high share of tasks being augmented (55%) as compared to the tasks that are being automated (13%). This suggests that a high proportion of existing jobs and skills will remain relevant in the future. In addition, companies may retain workers to take on new roles that would have been previously deprioritised while workers were engaged in important but less productive tasks.

While the future overall level of job displacement remains uncertain, proactive monitoring of labour-market impacts will be important for the government to quickly react and help shape potential reskilling programs.

Trust and capability
Low public trust in AI, a shortage of skilled AI builders, and a lack of literate users can slow down AI adoption. Misuse or misunderstanding of AI applications could reduce efficiency rather than enhance it. To overcome all of this, targeted training and education programs are required.

Policy and market risks

This category of risk relates to the governmental and financial frameworks required to nurture and sustain a technology as complex, expensive, and transformative as AI has already proved to be.

Complex regulation
Overlapping, incomplete, or contradictory regulatory frameworks can create uncertainty for businesses, particularly SMEs, raising compliance costs and delaying adoption. A strong focus on addressing open regulatory questions and providing clear guidance will help mitigate the risk.

Value transfer abroad
An overreliance on foreign AI companies and their intellectual property could lead to economic value being transferred abroad, diminishing domestic GDP. To mitigate this risk, Australia can support the buildout of its own AI models, AI products, and data centre capacity.

Power concentration
The rapid development of AI could lead to the overconcentration of value within a small number of large companies and investors. This concentration can reduce incentives for innovation, diminish healthy market competition, and limit the distribution of AI benefits to workers. Mitigation strategies include building public AI infrastructure, strengthening SME participation, supporting startups, and broadening workforce training to expand participation in the AI economy.

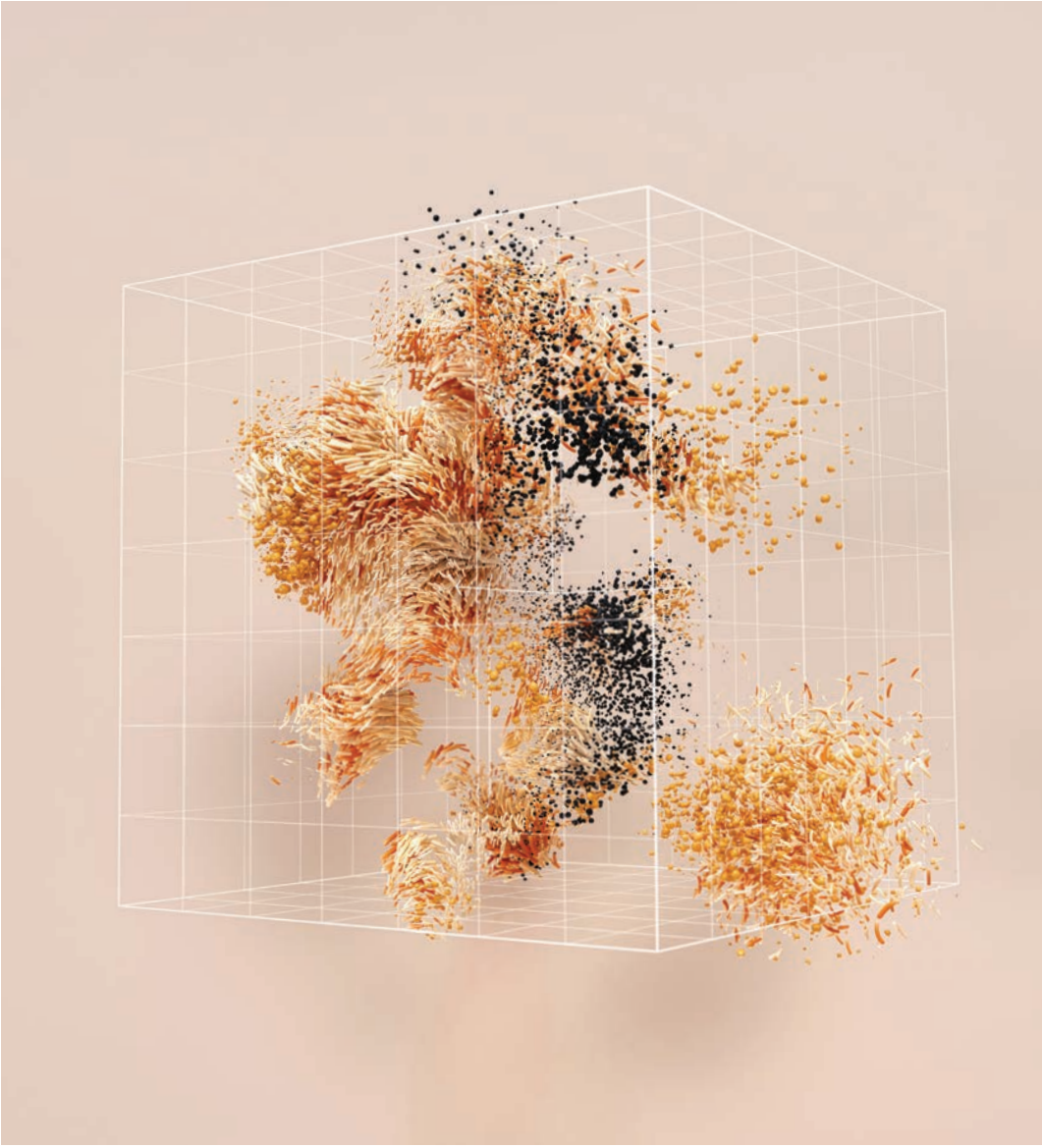
Conclusion

The Australian government has a unique opportunity to act as a catalyst for the AI transition. By doing so, it can accelerate and expand the economic benefits of AI, while also alleviating risks. An assessment of leading AI nations confirms Australia's need for both a comprehensive plan and a significant increase in investment addressing all AI enablers of sovereign AI — workforce and capability, infrastructure, and governance and ecosystem.

Assessing all 13 AI enablers, we have identified six that should be prioritised to boost economic value: AI talent pipeline, population-scale AI literacy, purpose-built AI compute facilities, specialised AI models and national datasets, regulation and standards, and regional AI factories.

Through the proposed investment, Australia will support national competitiveness, tackle its productivity challenge, support national security and preserve our cultural identity. This level of public investment in AI could significantly accelerate AI adoption, cultivate an "Asia-Pacific startup capital" in Australia, and strengthen the nation's position as a leading data centre hub with sufficient capacity to meet growing demand in the local region.

In short, this investment in Australia's AI future would allow our country to effectively navigate the AI revolution, and thus capture the full scale of the economic benefits of this transformative technology.



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The opinions expressed herein are attributed to ATSE and may not reflect the views of supporting organisations.

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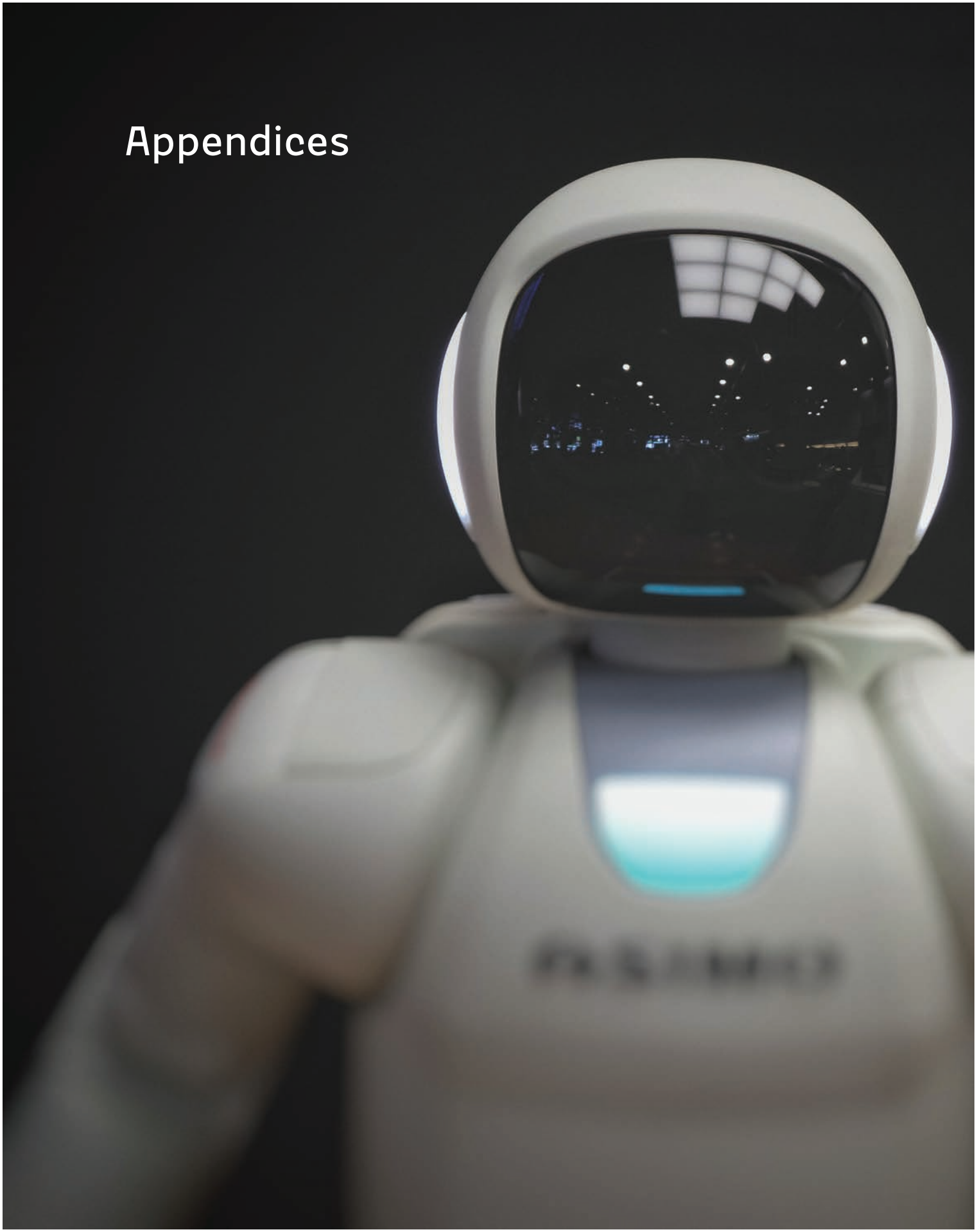
Appendices



Appendix A

Government investment in AI

Government investment in AI research methodology and overview

The research has focused on government investments announced in the period from 2021 to 2025, including both realised and planned government AI initiatives. The scope of the research covers the following types of government investment:

- Workforce and capability investment covering dedicated reskilling and upskilling programs and university programs (PhDs, research, scholarships, etc.)
- Infrastructure such as sovereign compute, power and associated support costs, including any data-sharing infrastructure
- Government investment, including enabling bodies such as AI institutions and the cost of implementing national AI strategies not covered in other points, as well as direct AI R&D government investment
- Development of ecosystems such as AI hubs and partnerships, including direct investments into private companies

The following types of spending have not been included in the analysis:

- Investment in energy, telco, and other utility infrastructure required to support AI
- Value of AI services procured for government use, including defence AI spending
- Relevant AI tax incentives, as these are typically not reported
- General AI grants and research investment, where the invested value can't be clearly attributed to AI
- Investment into adjacent innovative technologies such as quantum computing

Research overview — global government investment

Country	Description	Amount (local currency)	Total investment (AU$ billion)	Total normalised investment (scaled to Australian GDP, AU$ billion)	Announcement date or relevant period	Relevant links
United States of America	Federal Budget for AI R&D - includes investment across various agencies	US$14.7bn	118.3	7.10	2021-2025	US federal budget for AI R&D
	CHIPS and Science Act (this includes direct investment of $8.9bn into Intel and National Institute of Standards and Technology funding)	US$63 bn			2022	Stanford AI Index
Singapore	S$1 billion for AI strategy	S$1bn	1.4	4.44	2024	MAS
	Monetary Authority of Singapore — Quantum and Artificial Intelligence capabilities (assumes 50% of total investment of $S100 million allocated to AI)	S$0.05 bn				
	AI for science program	S$0.12bn				
South Korea	10.1 trillion won ($7.26 billion) in AI as part of its 2026 budget plan	WON 10.1tn	11.1	11.31	2025	Korea JoonAng Daily
United Kingdom	£2 billion to deliver the AI Opportunities Action Plan	£2 bn	4.1	1.98	2025	UK Government
Canada	Up to $700mn to grow Canadian AI champions; Up to $1 bn to build public compute infrastructure; Up to $300mn to provide affordable compute to SMEs	CAD 2bn	2.2	1.72	2024	Canadian Government
United Arab Emirates	AED 13bn to build robust digital infrastructure, creating a flexible and scalable AI foundation	AED 13bn	0.3	0.35	2025	Government of Abu Dhabi
Taiwan	'AI New Ten Major Construction' project focusing on initiatives such as building a trillion-dollar AI software industry, enterprise AI adoption, smart robotics, sovereign AI and smart governance.	NT$100bn	5.4	17.60	2025	Taipei Times
Kingdom of Saudi Arabia	Humain has announced $23 billion for strategic AI technology partnerships and a $10 billion AI venture fund.	USD 33bn	5.2	11.35	2025	CNBC
Germany	Increase in planned expenditure of EUR 3bn for the promotion of AI by an additional EUR 2bn, resulting in a total of EUR 5bn by 2025	€ 5bn	50.3	71.16	2025	European Commission
European Union	€50 billion commitment for the initiative, with the remaining funding coming from private investors and industry partners	€50 bn	8.9	3.35	2025	ACM

Research overview — Australian government investment

Category / State	Description	Investment (AU$ million)	Date (announced)	Source
Federal	AI Action Plan (including Next Generation AI Graduates Program and National Artificial Intelligence Centre)	124.1	Jun 2021	Department of Industry, Science and Resources
	National Reconstruction Fund — Critical technologies (Harrison.ai is the only AI investment)	32.0	Jan 2025	National Reconstruction Fund - Harrison.ai
	AI & Quantum Adoption Program (2023 Budget) — excludes Quantum funding	58.2	May 2023	Department of Industry, Science and Resources
	Safe and Responsible AI Package (2024 Budget)	39.9	May 2024	Australian Computer Association
New South Wales	Tech Central & Innovation Blueprint (assumed 25% of $80 million funding directed towards AI as initiative has broad mandate)	20.0	Sep 2025	NSW Government
Victoria	Boab AI Scale-Up Program (LaunchVic)	1.5	Jan 2022	Invest Victoria
	Australian Centre for Artificial Intelligence in Medical Innovation	10.0	Sep 2024	La Trobe University
	Cremorne Digital Hub	10.0	Nov 2023	Premier of Victoria
South Australia	University of Adelaide's Responsible AI Research Centre	20.0	Dec 2024	Government of South Australia
	AI Capability Fund (SA Budget 2025-26)	28.0	July 2025	Government of South Australia
Western Australia	Future Health Research and Innovation fund	2.0	Feb 2025	Future Health Research and Innovation Fund
Total		**345.7**		

Appendix B

AI impact on GDP – key metrics and assumptions

Overview of scenarios and key metrics

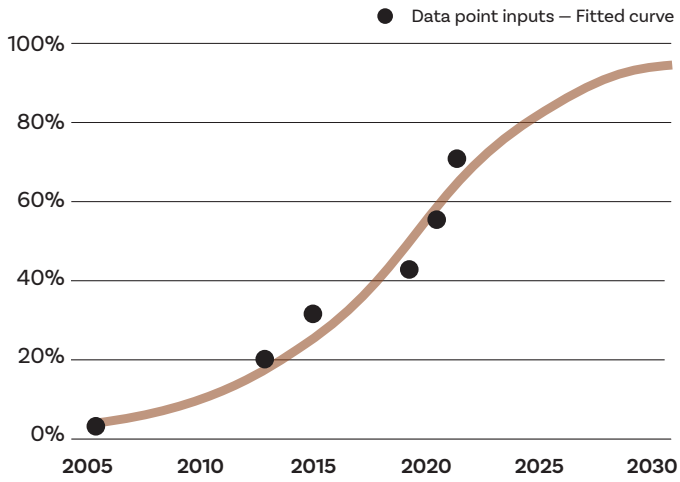
Area	Key metrics	Metric definition	**Conservative scenario** Limited government action (lack of re-skilling, infrastructure support, incentives and regulation)	**Base scenario** Current levels of government investment and continued focus on regulatory enablement	**Increased investment scenario** Impact of proposed additional AU$5 billion government investment in AI
Existing economy	Full AI potential	Productivity increase coming from tasks that can be automated or augmented with AI	16% (based on average 45% of tasks exposed to AI and 35% performance gain)	16% (based on average 45% of tasks exposed to AI and 35% performance gain)	16% (based on average 45% of tasks exposed to AI and 35% performance gain)
	Adoption of AI (in 2034)	Share of tasks that have been augmented or automated	21%	31-43%	35-49% (increase driven through training of 400-600k workers)
	Labor transition rate	% of freed-up labour capacity re-integrated into the workforce within given year from adoption	38% in year 1 82% in year 2 93% in year 3-10	38% in year 1 82% in year 2 100% in year 6-10	38% in year 1 82% in year 2 100% in year 6-10
New AI economy	Global AI software market (in 2034)	Global AI software market in 2034	AU$1.9 trillion	AU$1.9 trillion	AU$1.9 trillion
	Australian share	Share of Australian AI business revenue compared to global market	1.6%	2.3-3.5%	3.5-6.2% (increase driven by additional public-private investment of AU$28-49 billion over 5 years)

Full AI potential by industry

ANZSIC industry	**AI exposure** % of tasks that can be automated or augmented by AI, OECD, ASBFEO	**Productivity increase** (OECD)	**Full AI potential** Potential productivity uplift, calculated
Accommodation and food services	23%		8%
Agriculture, forestry and fishing	24%		8%
Retail trade	26%		9%
Construction	30%		11%
Mining	35%		12%
Manufacturing	38%		13%
Transport, postal and warehousing	38%		13%
Electricity, gas, water and waste services	39%		14%
Administrative and support services	42%		15%
Public administration and safety	42%	35%	15%
Arts and recreation services	43%		15%
Other services	44%		15%
Health care and social assistance	46%		16%
Wholesale trade	48%		17%
Education and training	53%		19%
Rental, hiring and real estate services	54%		19%
Information Media & telecommunications	70%		24%
Professional, scientific and technical services	74%		26%
Financial and insurance services	78%		27%
Weighted average	**45%**	**35%**	**16%**

Sources: OECD, ASBFEO

Adoption curve — Commercial cloud adoption in Australia



Sources: 2006 adoption assumed as 1% (AWS started offering commercial cloud services in 2005 based on Global Data research). Other data points based on Australian Bureau of Statistics survey and Innovation Australia.

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We acknowledge Traditional Owners of Country across Australia and recognise their continuing connection to land, water and community. We pay respect to Aboriginal and Torres Strait Islander culture, and Elders past and present.

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