SECTION 3
WHAT ARE THE NEXT STEPS?

Australia's unfair advantage in the new global wave of AI innovation

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Responsible AI is the commitment to designing, developing, deploying and overseeing AI systems by aligning with ethical principles to prioritise the safety, rights, values, and interests of all stakeholders.

Responsible AI adheres to best practice guidelines, standards, regulations and laws and considers immediate and long-term ecological, social and economic impacts.

It aims to provide technical robustness, making AI systems reliable, secure, resilient and sustainable, and it mandates continuous monitoring, learning and adaptation, proactively addressing biases, adversarial threats and evolving societal needs.

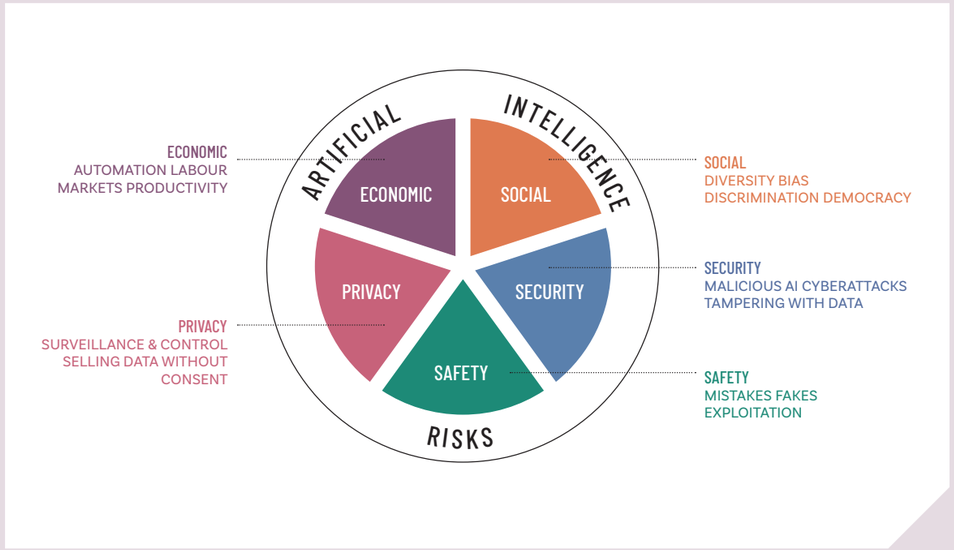

Figure 1: Risks associated with AI tools and technology. *Source: Mary-Anne Williams*

PROFESSOR MARY-ANNE WILLIAMS FTSE is an international authority in artificial intelligence (AI) and human-robot interaction. Her research has changed design paradigms in intelligent systems and significantly advanced decision-making under risk and uncertainty in open, complex and dynamic environments. The results of her work have been adopted by industry, including IBM, Infosys, Boeing and Visual Risk, and leading international research groups at CNRS France, Stanford University and Carnegie-Mellon University. Her high standing both in academia and industry is acknowledged through numerous awards, invitations, and distinguished appointments.

AS ARTIFICIAL INTELLIGENCE (AI) shapes the future, nations worldwide are grappling with significant challenges in seeking to harness its potential and doing so safely and responsibly. Australia has been a leader in AI since the 'expert system revolution' in the 1980s, when banks started to invest in developing smarter financial computer systems. But as other countries have scaled their efforts, Australia has lacked leadership in both the public and private sectors and has fallen way behind.

The recent and continuous release of game-changing generative AI technologies by US companies highlights Australia's lack of capability and capacity to contribute to a world dominated by these technologies. Without a game plan, Australia is at risk of being left even further behind.

Some have argued that Australia is currently in a do-or-die situation and that its lack of focus on the many challenges we need to face is wasting precious time and squandering future opportunities. Focusing on the translation of other nations' AI technologies and 'safe and responsible' AI is not enough; it is critical that we also develop homegrown AI expertise and technologies.

Australia has been lagging in government policy and funding, university research and teaching, business innovation and investment, and industry adoption over the last two decades. This exposes us to problems that can impact our future prosperity making Australia uncompetitive in national and major international markets.

Even worse, Australia's investment in digital transformation — a prerequisite to AI adoption — has paved the way for other countries with AI solutions ready for deployment to swoop in and reap significant rewards. This has been aided and abetted by a vacuum of enabling government policy for domestic AI research and innovation and a lack of university and industry collaboration and investment in deep AI research, innovation and training.

However, Australia is the lucky country, the game is not over, and we can still change our trajectory. Technology adoption takes time; and despite AI's 'magical' powers, its widespread adoption will be no different, largely because of the significant risks AI brings to business, government, individuals and society (see Figure 1).

Australia needs a coordinated and integrated approach that leverages its unfair advantage.

As a nation, we have critically important unfair advantages in the AI space that we could leverage, and if we do it quickly, we can get back in the game and lead.

We need to rapidly identify the gaps in capability and capacity, consolidate our societal values, and develop an ambitious vision and strategies to translate into action.

Australia's unfair advantages relevant to building AI capability

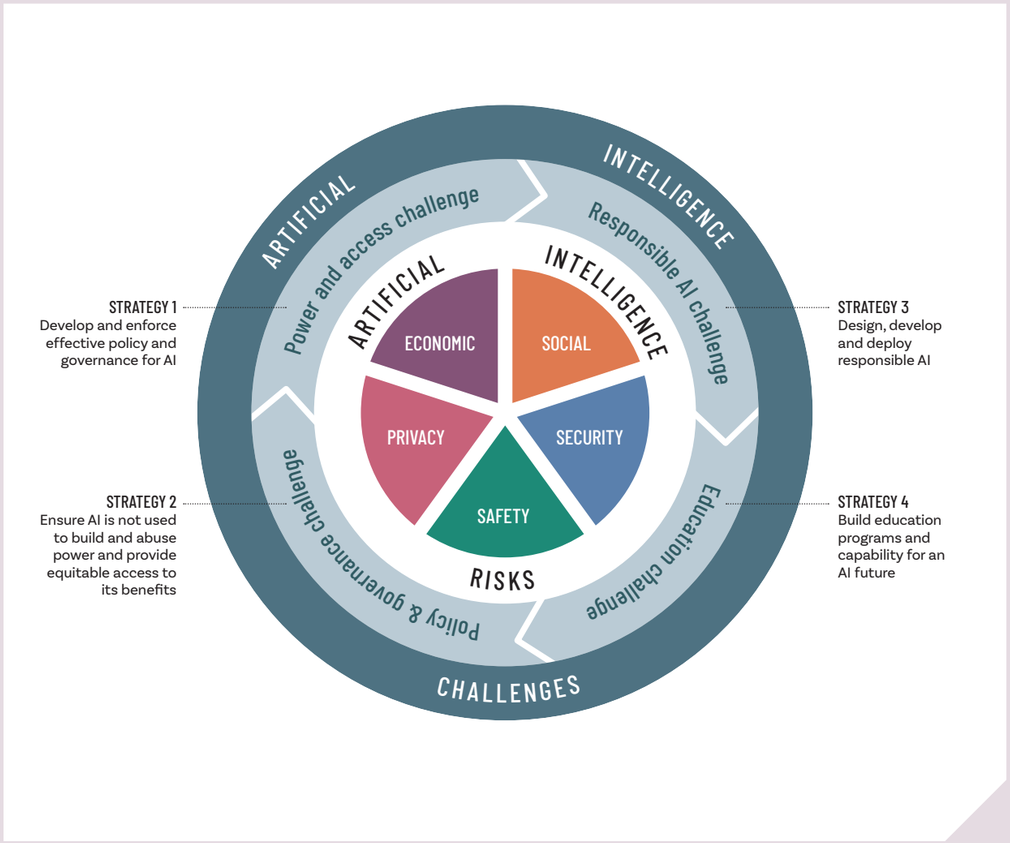

Figure 2: Risks, challenges and strategies to put Australia at the forefront of developing and using AI tools and technology.
Source: Mary-Anne Williams

and capacity lie in our rule of law; laws and governance structures; democratic principles, fairness, equity and societal diversity and inclusion; rapidly growing innovation ecosystem; cultural inclination towards technology adoption; and investment and progress in change and digital transformation. These advantages mean that Australia is well-positioned to embrace and drive AI-led and -enabled innovation. We need to develop integrated strategies that leverage our advantages to address all the risks and challenges simultaneously.

Australia's strong democratic principles represent an unfair advantage when confronting the challenges of governance and policy in relation to AI. Democracies are fundamentally about balancing interests and providing everyone with a voice, making Australia's democratic heritage a solid foundation for navigating policy debates around AI, including questions of privacy, equity and access. Unlike nations, where politics is extremely polarised, or policy may be swayed by a single entity or monopolistic businesses, the Australian approach embodies a wider set of societal perspectives, offering a model for inclusive AI regulation that reflects a broad consensus, which in turn enables rapid innovation.

Australia's existing legal, economic and political infrastructure constitutes an unfair advantage. Australia enjoys a stable political environment and a strong rules-based legal system, both of which are crucial to enforcing AI regulations effectively and maintaining public trust. Our robust economic structure, characterised by a high level of digitalisation and a strong service sector, makes the economy resilient and adaptable to the integration of AI. This strong institutional framework can attract both domestic and international AI stakeholders, providing them with the security and predictability necessary to innovate and invest.

The cultural inclination of Australians towards technology adoption also serves as a critical unfair advantage. Australians are known for their openness to new technologies, with high levels of smartphone usage, internet penetration and digital services adoption. This readiness for technological adoption can speed up the integration of AI across different sectors, making Australia a potentially attractive testing ground for new AI applications. Furthermore, this cultural trait ensures that the development of AI in this country is driven by a population that is both understanding of AI's potential and aware of its ethical implications.

Australia has an exceptional education system, which can be leveraged to develop a new generation of AI capabilities. Australian universities are breeding grounds for innovation, offering the potential to uplift the national workforce to embrace and exploit AI-led innovation. The existing strong ties between academia and industry further facilitate the practical application of AI research, turning theory and insights into tangible benefits. This relationship requires more investment to scale. There also needs to be more experimentation to learn how AI can be used to generate value for business and society.

Australia leads in critical industries where we expect AI to have the biggest impact, in particular, financial services, medicine and health. Australia's rich diversity gives it an unfair advantage in the development of safe and inclusive AI. As one of the most multicultural and harmonious societies globally, Australia can ensure that AI algorithms are trained on diverse datasets, thereby reducing algorithmic bias and improving the fairness of AI systems.

Australia's democratic principles, robust infrastructure, technological readiness, high-quality education system and multiculturalism are not just assets but provide us with significant 'unfair' advantages. Leveraged effectively, these distinctive strengths can enable Australia to overcome the challenges related to AI, and to carve out a global leadership role in AI. This is a path that relies not on matching other countries' stride for stride, but on leveraging Australia's unique strengths to create its way in a world increasingly shaped and influenced by AI.

By leveraging its unfair advantages, Australia can not only gain a leadership position in AI but also hone and strengthen these advantages to create a continuous virtuous cycle that sustains our differentiation and competitiveness.

For example, to help build a brighter future for all, Australia can improve the inclusion of more diverse societal groups like women, people with a disability and First Nations peoples. Similarly, there is considerable scope to improve our education system, not just in computing but also in many other disciplines. Since AI is a transformative technology, every industry will be affected and will require new workforce capabilities that enable people to utilise AI tools to create business and societal value and benefit.

Australia has distinctive strengths that position it uniquely to address the risks and challenges of AI and to lead in the pursuit of opportunity and national prosperity.

Essays

SECTION 1: INTRODUCTION

SECTION 2: WHAT DO WE NEED TO BE TALKING ABOUT?

SECTION 3: WHAT ARE THE NEXT STEPS?

For acronyms, abbreviations and endnotes please see the composite document with all the essays.

Responsible AI

Your questions answered

ACKNOWLEDGEMENTS
The Australian Academy of Technological Sciences and Engineering (ATSE) and the Australian Institute for Machine Learning (AIML) acknowledge the Traditional Owners of the lands on which we meet and work and we pay our respects to Elders past and present. We recognise the deep knowledge and practices embedded in the oldest continuous culture on the planet. Australia's history of engineering, technology and applied science spans more than 60,000 years.

This artefact is produced by ATSE in partnership with AIML. We would like to thank all the experts for their contributions to this edition.

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SUGGESTED CITATION
Responsible AI: Your questions answered. Australian Academy of Technological Sciences and Engineering (ATSE), and the Australian Institute for Machine Learning (AIML) at The University of Adelaide. Canberra, Adelaide 2023

Cover image: An artist's illustration of artificial intelligence (AI). This image represents the boundaries set in place to secure safe, accountable biotechnology. It was created by artist Khyati Trehan as part of the Visualising AI project launched by Google DeepMind. Source: unsplash

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