Responsible AI

Your questions answered

The power and possibilities of Artificial Intelligence (AI) have come to the fore in 2023. The use of AI tools in daily life – in both personal and work contexts – now forces Australian society to consider the risks, the challenges and the opportunities that they present. How can we encourage the responsible use and development of AI in Australia?

The Australian Academy of Technological Sciences and Engineering (ATSE) and the Australian Institute for Machine Learning (AIML) have collated insights from their expert Fellows, engineers and technologists to explore the role of AI in our modern world. A series of 13 essays cover the current use cases, the discussions that we need to have and the next steps for research, policy, investment and Australian leadership.

Responsible AI has the potential to augment, simplify and improve the way we live our lives and run our workplaces, cities and countries.

WHAT IS RESPONSIBLE AI?

Responsible AI acknowledges the risks from AI use and development and outlines potential mitigations. To curb AI's potential for bias, factual inaccuracies and societal exploitation, strong governance will use rigorous processes to design, develop and monitor AI systems responsibly. This sort of implementation of AI in our society can manage the risks while delivering significant benefits.

SUMMARY OF AUSTRALIA'S NEEDS

Australia is well-placed to take advantage of AI-led innovation, with some clear requirements to reach that point:

- Coordinated, national investment bringing universities and industries together through a national AI initiative.
- Support for STEM education and teachers to prepare our workforce for our AI future.
- Building AI literacy in the community.
- A culture of research, risk-taking and close university-industry relationships to diversify our economy and create a new generation of innovators.

KEY MESSAGES FROM ESSAYS

Together, the essays outline the prevalence of AI in our daily routines, and the way it is already playing a crucial role in responding to challenges including climate threats, protecting ecosystems, accelerating drug design and helping make the management of cities more efficient. The experts make clear that AI can help us solve big problems in new ways.

AI systems have a valuable role to play as tools to assist human decision-making. In this role, we can make them be transparent, accountable and fair in the way they collect and use publicly available data.

There is a growing awareness that AI systems can perpetuate unjust societal norms based on the data they are trained on and the biases of their creators. Similarly, AI outputs are not necessarily guaranteed to be accurate or factual. As such, AI research and regulation needs to consider data inputs, fail-safe mechanisms and verifiable security as core to providing a social license for the use and expansion of such systems into our daily lives.

Image, right: 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
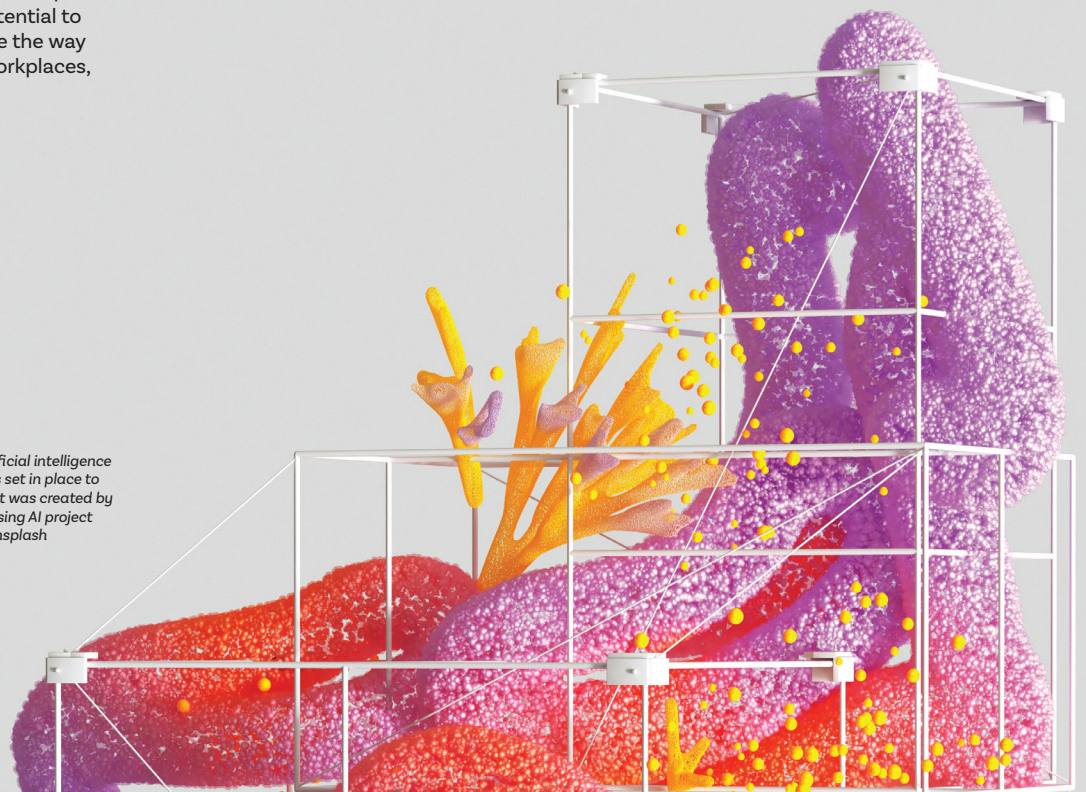
The authors offer some clear recommendations for building Responsible AI in Australia:

- Investing in AI research and coordination between research and industry to foster a culture of research, innovation and risk-taking.

- Building science and technology skills in the Australian workforce through support for STEM education and teacher development.

- Creating literacy about AI impacts and how it works across the wider community.

The current moment is a golden opportunity for Australia to invest in its people and its technology. This will place it in the lead of a global shift that could significantly alter our economic landscape and daily lives. Now is the time. The gap between AI capabilities and public expectations gives ample space for public education, discovery, collaboration, governance and diversification.

Tighter university-industry partnerships will be central to an effective AI sector in the future. Coordination across academia and industry through a national AI initiative will bring research and business investment together.
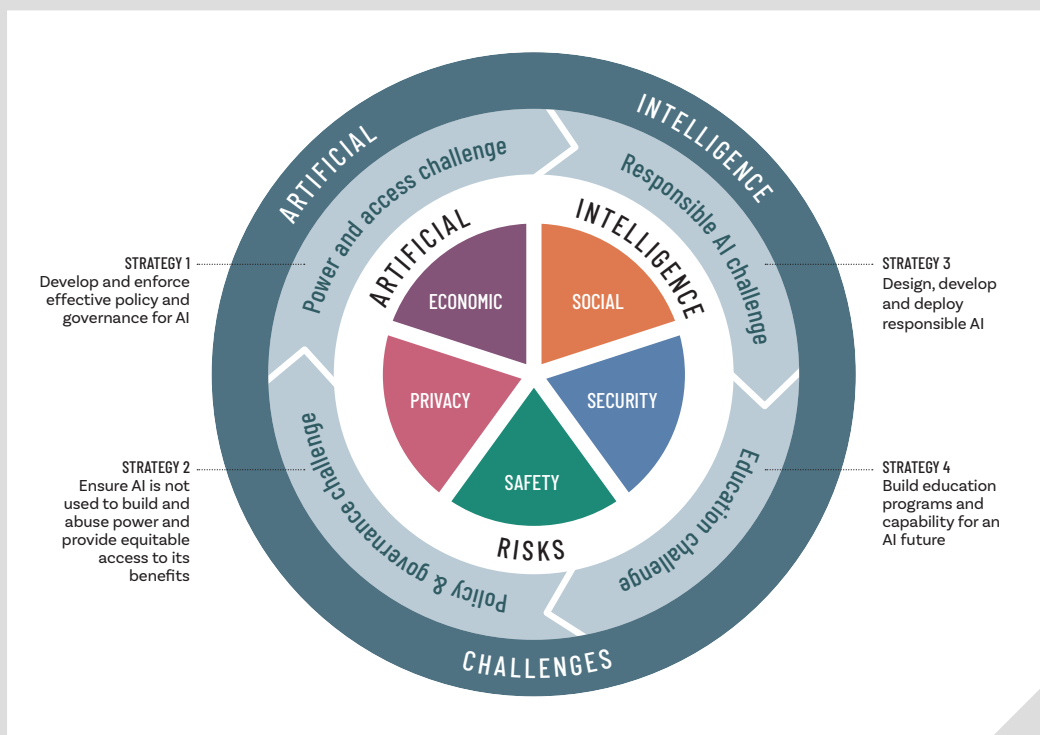
Australia's recognised strengths on the global stage provide the ultimate advantage for it to develop AI technologies. Our democratic principles and institutions, innovation ecosystem and high rate of technology adoption position Australia well to lead in both technical and regulatory innovation.

BACKGROUND

Research in this space has been underway for many years, with leadership from Australia's Learned Academies and expert organisations crystallising over the past decade.

In 2018, the Australian Council of Learned Academies launched a project looking into the Effective and Ethical Development of Artificial Intelligence. AIML itself was formed in 2018, out of an earlier University of Adelaide research centre.

In 2022, ATSE published a vision statement calling for strategic investment in Australia's AI capacity, and in March 2023, ATSE co-led a rapid response report about Generative AI for the National Science and Technology Council. This helped inform a national evidence-based conversation about frameworks for governing use of AI which is being led by the Australian Government.

STRATEGY 1
Develop and enforce effective policy and governance for AI

STRATEGY 2
Ensure AI is not used to build and abuse power and provide equitable access to its benefits

STRATEGY 3
Design, develop and deploy responsible AI

STRATEGY 4
Build education programs and capability for an AI future

Diagram labels: ARTIFICIAL · INTELLIGENCE · RISKS · CHALLENGES · Power and access challenge · Responsible AI challenge · Education challenge · Policy & governance challenge · ECONOMIC · SOCIAL · PRIVACY · SECURITY · SAFETY

Risks, challenges and strategies to put Australia at the forefront of developing and using AI tools and technology. *Source: Professor Mary-Anne Williams FTSE (Michael J Crouch, Chair for Innovation, UNSW Business School) from her essay Australia's unfair advantage in the new global wave of AI innovation*