ATSE

SUBMISSION

Submission to the Senate Select Committee on Adopting Artificial Intelligence

Submission to Adopting Artificial Intelligence (AI)

10 May 2024

AI is transforming society and the economy across industries and sectors. From discovering mineral deposits (McClelland 2024) to counting thousands of sheep bound for export (Zhang et al. 2022) and detecting unscanned items at the supermarket checkout (Meacham 2023), AI is already enhancing productivity and innovation. To strengthen Australians' confidence, a coordinated response is needed to adopt and regulate AI and ensure continued public participation in AI-related decisions.

ATSE calls to the Committee's attention our previous recent submissions on AI:

- Submission to the Supporting Safe and Responsible AI Practices Discussion Paper Consultation (ATSE 2023a)
- Submission to the Inquiry into the Use of Generative Artificial Intelligence in the Australian Education System (ATSE 2023b)
- Submission to the National AI in Schools Framework Consultation (ATSE 2023c)
- Submission to the Inquiry into Artificial Intelligence in South Australia (ATSE 2023d)
- Submission to the Consultation on Assessment Reform for the Age of Artificial Intelligence (ATSE 2023e)
- Submission to the Inquiry into Artificial Intelligence in New South Wales (ATSE 2023f).

With the global AI market worth approximately US $142.3 billion dollars in 2023 (AU ~$221.2 billion) (Mangan 2024), Australia has an opportunity to harness the social and economic benefits of this ever-expanding field. ATSE offers the following recommendations for the Committee's consideration:

Recommendation 1: Prioritise government investment in artificial intelligence in key industries (such as technology, finance, healthcare, education and government).

Recommendation 2: Implement healthcare-specific AI frameworks to facilitate the safe and secure delivery of benefits such as personalised care, early disease detection and remote monitoring capabilities.

Recommendation 3: Implement a risk-based regulatory framework for AI systems, as committed by the Safe and Responsible AI review.

Recommendation 4: Strengthen international engagements to ensure the safe and responsible deployment of AI.

Recommendation 5: Foster an AI-literate workforce by continuing to invest in AI upskilling, encouraging partnerships, and by providing tax incentives for businesses.

Recommendation 6: Consider environmental sustainability in rolling out AI education in schools by investing in long-term and sustainable infrastructure.

Leveraging AI for key industries

AI delivers a return on investment relatively quickly as it does not necessarily require new infrastructure to instigate (although it depends on the availability of hardware and increased energy supply). AI can grow industries to be globally competitive and create new and high-paying jobs. If successfully applied to key Australian industries, Australia has the potential to gain a short-term boost in GDP of over AU $200 billion annually from 2023 to 2030 (Mangan 2024). If Australia fails to introduce AI systems to world standards in key industries, it faces an opportunity cost of 1.4% (or AU $35.7 billion) of gross domestic product (GDP) per year from 2023 to 2027 (Mangan 2024).

Key opportunities for application of AI in Australia include technology, finance, healthcare, education and government services. ATSE recognises the establishment of the AI in Government Taskforce to assist the Australian Public Service in engaging AI and deploying it safely, ethically and responsibly. Applying AI in the Australian Public Service could provide benefits such as cost reduction, new possibilities in public transport, improved sustainability, and strengthened democracy through data-based scrutiny (Tobin 2023). From an industry perspective, the benefits of AI have the potential to reach across almost every sphere of human life— from personally tailoring products, to providing safer cars. The Federal Government, alongside state and territory governments, have an opportunity to continue the momentum of realising the opportunities for this transformative technology by prioritising investment in skills training and infrastructure, and strengthening AI regulation.

Recommendation 1: Prioritise government investment in artificial intelligence in key industries (such as technology, finance, healthcare, education and government).

Utilising AI in Australia's healthcare sector

An article from the Medical Journal of Australia found that Australia has 141,000 diagnostic errors yearly, of which 21,000 are associated with serious harm and 2,000 – 4,000 with death (Scott and Crock 2020; CSIRO 2024a). The primary cause is 'cognitive errors' (Scott and Crock 2020; CSIRO 2024a). Using AI in a healthcare setting could provide extra protection for patients to help clinicians with accurate diagnoses (CSIRO 2024a). Improving the uptake of AI in healthcare not only makes healthcare professionals' lives easier but also empowers patients by providing personalised care, early disease detection and remote monitoring capabilities.

ATSE's report, 'A New Prescription: Preparing for a Healthcare Transformation', calls for a technology-enabled preventative and wellness focus (ATSE 2020). By moving to preventative (rather than reactive) healthcare strategies, the healthcare sector can better address challenges such as incompatible record-keeping systems and poor communication between healthcare professionals.

The opportunities and benefits of AI in the healthcare sector are considerable— automation of repetitive tasks, improving accuracy, reducing labour costs, and enabling new products and services are just some of the benefits of adopting AI. However, the Government must carefully navigate ethical and legal concerns such as the responsible use of patient data and algorithm biases. Appropriate frameworks (including validation, certification, and liability) must be implemented or updated to encourage AI transparency and accountability.

Recommendation 2: Implement healthcare-specific AI frameworks to facilitate the safe and secure delivery of benefits such as personalised care, early disease detection and remote monitoring capabilities.

Increasing coordination to mitigate AI regulatory risks

Several regulatory risks need to be addressed by the Australian Government. These risks can include privacy concerns, threats to democracy, inadvertent discrimination (e.g. where AI inadvertently amplifies social bias), dependence on AI (leading to a loss of creativity), and AI-generated content driving the spread of false information (Tobin 2023).

Content generation, for example, is often approached in addictive ways, exploiting neuroscientific principles of how addiction works in our brains and making young minds particularly vulnerable. Lessons can be learned from regulating the gambling industry and applied to AI regulation. In similar ways, greater regulation of AI can be used to overcome the challenges of gambling-like addictive behaviour, which is used in many social media platforms and enhanced by AI targeting personalisation. Technology users must have a choice around AI, be warned of when they might be vulnerable to AI misinformation, and be educated on how to be aware of potential exploitation.

ATSE recognises and supports the progress made in the Government's interim response to the safe and responsible AI consultation held in 2023 (DISR 2024). The Government can increase business adoption, and public confidence and safety by developing transparent principles and strengthening laws to safeguard citizens.

The Government's interim report highlighted that more needs to be done for preventative interventions (DISR 2024). This includes identifying AI-generated content and potentially banning unacceptable risks (such as behavioural manipulation) (DISR 2024). ATSE notes that the interim report does not discuss AI personalisation risks—this is high risk and should be considered within the framework. To be effective, the framework should protect people's privacy, enforce suitable access to age-restricted material, and protect people's right to choice regarding the use of AI.

As highlighted in the interim report, Australia has the potential to assist nations that are less prepared to cope with AI risks. By coordinating with other countries on AI regulation, Australia can reduce the risk of exploitation and reduce risks to national security. ATSE agrees with the Government's commitment to engaging internationally, including through international forums and international partners, to manage the risks of AI.

Recommendation 3: Implement a risk-based regulatory framework for AI systems, as committed by the Safe and Responsible AI review.

Recommendation 4: Strengthen international engagements to ensure the safe and responsible deployment of AI.

Facilitating AI use in small and medium-sized enterprises to harness near-term benefits

Small and medium-sized enterprises (SMEs) make up over 98% of Australia's economy (CSIRO 2024b), many of which could benefit from AI deployment to enhance operations, services, and market competitiveness. For instance, AI can enable the development of new products and services, boost sales and improve customer service. Currently, only 24% of Australian companies are deploying AI. When compared to AI deployment rates of companies in China (58%), India (57%), Germany (38%), and France (32%) (Mangan 2024), Australia is falling behind. (CSIRO 2024b)

Lacking expertise and an inability to generate independent assessments of AI technology places future productivity at risk. One million 'Introduction to AI' scholarships have been provided by the National AI Centre and coordinated by CSIRO and the Institute of Applied Technology Digital (CSIRO 2024b). These scholarships are a step forward in the right direction for investing in upskilling workers in AI and kickstarting careers in AI. The 2023–24 Budget also promoted $17 million for the AI Adopt program, which supports SMEs in AI training and how to use AI to improve their business. Alongside targeted programs building workers' AI literacy, there is a continued need to invest in developing the future STEM (science, technology, engineering, and mathematics) workforce that will develop and implement AI products. Programs such as ATSE's Elevate program, which provides scholarships to women and non-binary people in STEM, are critical to building a diverse workforce to meet current and future needs.

In partnership with industry, the Australian Government can implement policies and regulations that stimulate AI uptake across the economy. Tax incentives for businesses would drive AI adoption and improve services for customers. Greater investment in industry/university partnerships would also facilitate the commercial transition to adopting AI. Building a pipeline of workers who can increasingly utilise AI promotes innovation and improved productivity within Australia.

Recommendation 5: Foster an AI-literate workforce by continuing to invest in AI upskilling, encouraging partnerships, and by providing tax incentives for businesses.

Embedding AI literacy sustainably into the education system

Australia needs to focus on building a pipeline of AI-literate workers, starting with adequate AI education in schools. Students, from school to higher education, must learn how to engage ethically and constructively with generative AI to navigate the societal and employment landscapes of the future (ATSE 2023b). ATSE, for example, encourages STEM learning from a young age through the STELR (Science and Technology Education Leveraging Relevance) program (ATSE 2024).

In implementing AI literacy in schools, caution is needed to protect student data and mental health in a standardised way that honours age restrictions (ATSE 2023b). Investing in AI literacy for schools would help provide young people with the tools to identify AI-derived misinformation as we move into a technology-centric future. ATSE's submission on AI in Schools has specific recommendations for embedding AI literacy into the education system.

ATSE Australian Academy of Technological Sciences & Engineering

As highlighted in ATSE's [Submission to the National AI in Schools Framework Consultation](#), developing and using generative AI has a significant environmental cost. Power consumption is a key consideration, with training, operating, and maintaining AI applications requiring vast amounts of electricity. AI-associated education frameworks must consider environmental sustainability, guiding education departments to roll out AI technologies with energy efficiency in mind and to minimise electronic waste. This may alter decision-making, such as investing in better-quality infrastructure that will likely have a longer lifespan.

Recommendation 6: Consider environmental sustainability in rolling out AI education in schools by investing in long-term and sustainable infrastructure.

ATSE thanks the Select Committee on Adopting Artificial Intelligence for the opportunity to respond to the inquiry into Adopting Artificial Intelligence. For further information, please contact academypolicyteam@atse.org.au.

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