ATSE

SUBMISSION

Submission to the New South Wales Legislative Council Portfolio Committee No. 1 – Premier and Finance

Submission to the inquiry into artificial intelligence in New South Wales

20 October 2023

New South Wales (NSW) leads the nation in developing and applying artificial intelligence (AI) – 45% of all AI businesses in Australia are in NSW (Investment NSW, 2022). This puts NSW in an enviable position to become an international AI hub – bringing together the best of Australia's and the world's AI experts. Australians are supportive of the potential of AI, with 69% believing that AI will have a net positive impact on the nation (Selwyn et al., 2020). Unlike many traditional industries, AI development requires comparatively lower upfront capital and is less constrained by geographical factors (e.g. the location of resources), allowing the sector to quickly move and adapt to ever changing market conditions. The NSW Government must ensure that it can maintain a strong AI ecosystem and talent pool to retain NSW's competitive and innovative edge.

AI systems, like all new technologies, also present challenges. A lack of user familiarity with AI systems and AI's overconfidence in its answers risks users relying too heavily on AI decision making, without appropriate checks and oversight. Biases in training data and violations of intellectual property rights are emerging issues that must be managed. In some instances, AI raises issues around privacy and civil liberties that must be acknowledged and potentially regulated. In a responsible democracy, users should be aware of these risks and understand how to use AI ethically to ensure they mitigated. AI should only be used to provide and support government services when its use meets community expectations, has demonstrable value and provides fair and equitable outcomes.

In 2022 ATSE released its vision for AI technology in Australia which calls for comprehensive investment in fundamental AI research along with ongoing investment implementable AI technologies. This work has underpinned ATSE's work with the Australian Government through the National Science and Technology Council on a rapid report on generative AI and has provided submissions to the Australian Government on generative AI in the Australian education system, safe and responsible AI use and the National Robotics Strategy. ATSE makes the following recommendations for the NSW Government's approach to AI which will encourage development of these technologies in areas of strategic importance for the state:

Recommendation 1: Invest in AI research and development for critical New South Wales industries, including financial services, manufacturing, health and agriculture.

Recommendation 2: Provide professional development opportunities, supported by professional development leave, to teach existing educators how to engage with AI both inside and outside the classroom.

Recommendation 3: Support investment in cost-effective and clinically meaningful AI and robotics for state operated or managed hospitals and licenced health care providers.

Recommendation 4: Amend the Artificial Intelligence Ethical Policy Statement to require ethics training for all members of the New South Wales public service who interact with AI systems that support decision making.

Recommendation 5: Require regular reporting and monitoring of AI-supported decisions made by government.

Investing in AI powered industries

NSW is uniquely positioned to make the most of an AI revolution. NSW's economy is dominated by the services sector, which accounts for more than 75% of economic activity and 90% of employment (NSW Treasury, 2023). Of this, business services, including financial services, make up 30% of Gross State Product. AI systems will help the financial services industry in NSW to meet compliance requirements, identify vulnerable customers and better assess credit risk (van Niekerk & Subramanian, 2022). The NSW manufacturing sector, which accounts for a third of national manufacturing, can use AI to reduce waste, improve quality control and monitor equipment. Similarly, the NSW creative industry, which accounts for 70% of Australia's creative exports, can benefit from using generative AI systems responsibly. AI can be used to improve player interactions with non-player characters in Australian-made video games, or to speed up editing and sound mixing in post-production for films and television. From a government perspective, health spending accounts for more than 30% of the state budget. AI has the potential to improve models of care and health outcomes for patients, while reducing costs. Each industry will have unique needs – for example, the financial services and health sectors will require high levels of cybersecurity and failsafe procedures – meaning that bespoke industry-specific AI applications will need to be developed.

To lead these emerging AI-enabled sectors, industry in NSW must embrace AI and invest in staying at the forefront of its development. Targeted investment across the research and development pipeline is required

to support this transition to AI-enabled industry. This will support NSW AI experts to develop next generation AI systems and bring them to market. By focusing investment in areas crucial to the NSW economy, the state can benefit through both the development and application of AI systems. Support for AI-enabled sectors will need to have a long-term focus. The relatively low level of required capital investment in AI technologies means that industry will be highly responsive to changing market conditions and incentives and will move to make the most of new opportunities. As other jurisdictions bring in programs to entice AI industry, NSW will risk losing its position as Australia's leader. A long-term industry investment plan will help to incentivise AI developers to set up, and remain, in NSW – helping to safeguard NSW's status as the nation leader in AI. This investment plan will need to cover computational infrastructure, as well as skills development to ensure a pipeline of a highly skilled AI workforce.

Recommendation 1: Invest in AI research and development for critical New South Wales industries, including financial services, manufacturing, health and agriculture.

Training the next generation to use artificial intelligence

To position NSW to take the best advantage of AI technologies, the state's workforce will need to include both people who are trained to use AI systems, and those who can develop the next generation of AI systems to meet changing needs and adapt to evolving technologies. ATSE applauds the New South Wales Government for leading the National AI in Schools Framework and agreeing to reverse bans on generative AI in public schools. AI is emerging as the next big technological leap forward, changing the way we live and work on a level on par with that of the internet. It is essential that students are comfortable using AI systems ethically, to fully participate in the workforce of tomorrow and enable productivity gains for the NSW economy into the future. Crucially, the curriculum needs to be flexible to account for rapid change in AI technology and ensure students develop the skills needed to become AI innovators. The NSW Department of Education should explore acquiring institutional licences for educationally relevant AI systems that can enable an equality of access for their students, regardless of parental income or location.

Current content on programming and coding within the Australian Curriculum needs to be supplemented with specific AI education. To ensure that these educational opportunities can be seized, educators and administrators should be supported through professional development (and the time to attend it) to feel confident in employing this technology in their classrooms. For the near future, ongoing professional development will be required each year to ensure educators are able to adapt their teaching practice to the changing technology as it matures. Teachers can also work with programs like Grok Academy, which is already working to integrate digital and AI skills into classrooms and provides free support for Australian teachers with teaching digital technologies.

Recommendation 2: Provide professional development opportunities, supported by professional development leave, to teach existing educators how to engage with AI both inside and outside the classroom.

Using AI to reduce health disparities

AI has a major role to play in the future of healthcare. Robotics surgery and AI-assisted diagnosis have already demonstrated superior outcomes compared to traditional medical practices (He et al., 2019; Hussain et al., 2014). By late 2021, there were already around 350 AI medical devices approved for use by the US Food and Drug Administration – a number likely to only continue to grow (Badal et al., 2023). It is essential that these tools are used to alleviate health disparities and reduce over diagnosis/treatment and to eliminate high cost, low value health interventions.

A funding deficit exists for these kinds of technology-assisted medical practices. Robotic surgeries have been found to have a funding deficit of around $4000 per case in Australia (McBride et al., 2021), which may result in procedures being limited to those with the means to access private healthcare. The New South Wales Government must ensure that that all patients have access to these technologies when they need them. Investment is needed to adopt these emerging systems within the public healthcare network and ensure appropriate training for healthcare workers. Funding must cover the true cost of procedures to ensure that other services are not impacted, or public patients are not left covering the difference. Training medical professionals to use these tools effectively will take time and require strategic deployment of these resources where they can have the most positive impact. This should be balanced against other needs of

the sector and focused on the most cost-effective and clinically meaningful systems to ensure the New South Wales public gets the greatest possible benefit.

Recommendation 3: Support investment in cost-effective and clinically meaningful AI and robotics for state operated or managed hospitals and licenced health care providers.

Ensuring ethical use of artificial intelligence in decision making

In addition to improving the efficiency and quality of decision making, AI tools present an opportunity to help break down a range of social inequalities and reduce bias by reducing the impact of human-centred unconscious bias, but only with the right safeguards in place (OECD AI Policy Observatory, 2022). Inequalities produced by AI systems are easier to identify and correct than biases in human decision making (Kleinberg et al., 2019). However, the impacts of AI are not always evenly felt, and AI systems have the potential to unintentionally reinforce and amplify existing societal disadvantage (including racial and gender biases) without proper safeguards (O'Connor & Liu, 2023; Zapata, 2021) Beyond overt bias, models trained on aggregated data may result in homogenised outputs that fail to consider biological, cultural or religious differences and erase cultural identities of already marginalised groups (Aquino, 2023). For example, AI healthcare models that lack sufficient data on Aboriginal and Torres Strait Islander populations may misdiagnose these patients or suggest inappropriate care options. The New South Wales Government must ensure that AI systems used in decision making are subject to human oversight by those trained in the ethical use of AI systems. This will include public servants, as well as teachers, doctors and other service providers. A single set of AI use standards across the NSW public service should be developed, and all staff interacting with AI systems that support decision making or content creation should receive appropriate training in the ethical use of AI.

AI use standards should also require transparency and accessibility for the public to be informed and aware where decisions are AI assisted and have a right to access information about how an AI-assisted decision was made, where that decision affects them. While feedback on individual decisions is essential to build trust in the use of AI systems but may not fully highlight systemic bias in an AI system. While individualised reports can be valuable, users must be able to trust that they are an accurate reflection of a process that occurs in a 'black box' that makes it impossible to verify the rationale behind outputs. Individual reports may also disguise systemic effects, particularly where these reports are generated by the AI system itself. It is therefore necessary that all government uses of AI are subject to requirements to continually report aggregated outcomes. There must be clear protocols to make this information available for publicly funded research to ensure independent verification. Producing usage-wide reports will help identify systemic issues and support individuals who wish to contest decisions where systemic bias has affected decisions. Crucially, this data should form the first step of a clear and transparent process to challenge AI-supported decisions, particularly where they affect government service delivery or are linked to human rights protections. This should be supported by public outreach to ensure people are aware of their rights and remedies. Where possible, these protocols should be aligned with national frameworks (such as the proposed Commonwealth safe and responsible AI regulatory framework).

The growing likelihood of AI-assisted decision making as part of government services also raises concerns around data privacy. These concerns include privacy of the underlying data upon which AI applications are trained, but also concerns around the use of information entered into these systems during the course of their usage, particularly for AI systems that could help the public service make important decisions that utilise sensitive information (e.g., medical records). Data privacy regulation is likely to be addressed by the ongoing [consultation on safe and responsible AI](#) being conducted by the Australian Department of Industry, Science and Resources.

Recommendation 4: Amend the Artificial Intelligence Ethical Policy Statement to require ethics training for all members of the New South Wales public service who interact with AI systems that support decision making.

Recommendation 5: Require regular reporting and monitoring of AI-supported decisions made by government.

ATSE thanks the New South Wales Legislative Council Portfolio Committee No. 1 – Premier and Finance for the opportunity to respond to the inquiry into AI in New South Wales. For further information, please contact academypolicyteam@atse.org.au.

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Level 2, 28 National Circuit
Forrest ACT 2603
Australia

PO Box 4776
Kingston ACT 2604
Australia

+61 2 6185 3240
info@atse.org.au
atse.org.au

ABN 58 008 520 394
ACN 008 520 394

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Australian Academy of
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& Engineering