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Australian Academy of Science submission to the inquiry into the use and governance of artificial intelligence systems by public sector entities

The rapid development of artificial intelligence (AI) offers opportunities for enhancing service delivery within the public sector. To capitalise on these opportunities and guide the responsible adoption of AI, Australia must act swiftly to develop its own sovereign AI capability by expanding its skilled workforce and strengthening onshore AI infrastructure.

The Australian Academy of Science (the Academy) recommends the Government:

- Develop a national plan and investment strategy to secure Australia's sovereign AI capabilities, including the hardware and software needed to create and deploy at scale.
- Responsibly and ethically adopt and develop domestic AI capability to prepare Australia's public sector agencies, including science agencies and the national science system.
- Support development of national AI capability by scaling up investment in fundamental AI science and plan for and build future high-performance computing and data facilities for secure and responsible AI use.
- Implement the UNESCO Recommendation on Open Science to unlock the full potential of Australian data and to develop AI tools for Australian public sector interests.

National AI capability for Australia

Developing sovereign AI capabilities is essential for Australia's public sector to develop and govern AI technologies in line with our national interests. Strengthening our domestic AI capability, infrastructure, knowledge, and workforce ensures greater control over the development, regulation, and adoption of AI systems. This allows for more effective use of AI in policymaking, service delivery, and science in public organisations.

Many AI models currently used in the Australian public sector are subject to international bias, such as the Australian Government's recently completed six-month trial of Microsoft CoPilot. The use of these AI tools needs to balance the benefits to Australia against risks such as international biases, security, privacy, ethics, and accountability.

Australia needs a national plan and investment strategy to build Australia's sovereign AI capability, including scaling up investment in fundamental AI science.

Capacity to develop AI models tailored to Australia's unique needs within and beyond the public sector is constrained by competition for skilled workers locally and internationally.

The government should leverage existing regulatory frameworks to ensure that AI systems are trained and validated on accurate, representative, authenticated, and reliable datasets, tailored to specific public sector use cases. Upskilling the AI science sector will benefit the public sector more broadly and help ensure it has the internal capability to effectively and responsibly adopt and utilise AI.

A national strategy for the uptake of AI in the science sector

Australia's science agencies are already benefiting from the use of AI tools. The rapid uptake of AI by Australia's scientific workforce is transforming the practice of science to enhance efficiency and productivity of scientific research. For example, AI tools can augment and automate literature reviews and perform data acquisition and analysis.

The Australian Government must provide guidance and leadership through a national strategy to prepare our science agencies and the science sector for the uptake of AI.

Publicly funded research organisations in Australia play a pivotal role in leading the adoption of AI, furthering innovative research and development, fostering collaborations between academia and industry, and guiding

policy and ethical framework development. The performance of our national science agencies relies on strong governance so that the use of AI can uplift scientific work and drive future innovation.

Clear guidance that outlines the acceptable use of AI tools, developed directly with Australian researchers, will minimise risk and ensure that Australian science can benefit from AI without compromising the role of expertise, human judgement, and the peer review process.

Enabling infrastructure for improved AI use

Australia needs to invest in technological infrastructure to maintain sovereign capability. Access to high-performance computing and data (HPCD) and software is a critical enabler for the development of AI in Australia. Without sufficient onshore HPCD capabilities and infrastructure, Australia will be dependent on other nations, hindering our ability to tailor AI tools to Australian-specific challenges.

Investing in domestic data storage centres to support Australia's AI development is essential to ensure sovereignty over the control of sensitive data and to enhance the responsible use of AI within the public sector.

The ability to store and manage sensitive data in Australia is an important national security requirement, now and in the future, which needs to be tightly defined and minimised where possible to strike an appropriate balance between national security and open research collaboration.

Australia must develop its national AI capability by scaling up investment in fundamental AI science and planning for and building future high-performance computing and data facilities for secure and responsible AI use.

Open Science can support responsible AI uptake

Australian data are essential in the development of AI tools for Australian public sector interests. However, much of this data is not accessible or interoperable. The quality of an AI model's output is driven by the quality of data. This limits the potential progress that can be achieved across research disciplines and in the development of AI tools themselves.

The FAIR (Findable, Accessible, Interoperable, and Reusable) and CARE (Collective benefit, Authority to Control, Responsibility, Ethics) principles provide a framework for open data and Indigenous Data Governance. Applying open data and FAIR and CARE principles alongside other regulatory frameworks would help support the public sector in maximising the benefits of AI and enhancing transparency and accountability.

The UNESCO Recommendation on Open Science provides a strong foundation for open science policy and practice, enabling Australia's science system and public sector to responsibly maximise the potential of Australian data.

Australia should create, collect, manage, use and maintain authenticated, reliable, accurate and representative datasets, and maintain robust data governance practices that comply with relevant legislation. This can best be achieved through a national open science strategy.

The Australian Government should evaluate how to meet and implement the UNESCO Recommendation on Open Science.

To discuss or clarify any aspect of this submission, please contact Mr Chris Anderson, Director Science Policy at Chris.Anderson@science.org.au.