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4 October 2024



**Australian Academy of Science submission on the  
*Proposals Paper for Introducing Mandatory Guardrails for AI in High-Risk Settings***

The Australian Academy of Science (the Academy) supports the urgent need for mandatory guardrails for artificial intelligence (AI) in high-risk settings. The guardrails must avoid unnecessary and disproportionate burdens on the research and development sector and balance innovation and competition with community safeguards.

AI development will not pause while a policy framework is established. To seize the opportunities presented by AI, Australia must act quickly to build its sovereign AI capability and guide its adoption responsibly. Responsible and ethical adoption and development of AI is essential to prepare Australia's scientific workforce and the science system.

The Academy recommends the government:

- Opt for a whole-of-economy approach by producing a new cross-economy AI-specific Act, as detailed in Option 3 in the Proposals Paper.
- Develop a national plan and investment strategy to secure Australia's sovereign AI capabilities, including training, workforce, and high-performance computing.
- Establish a national strategy for the uptake of AI in the science sector, including scaling up investment in fundamental AI science.
- Implement the UNESCO Recommendation on Open Science to unlock the full potential of Australian data to power research and innovation.

**A cross-economy AI Act is necessary, but time is of the essence**

The challenge faced by AI legislators is designing clear policy and regulation with enough flexibility to advance novel technologies for scientific, economic, and social gains while understanding and managing risks.

The Australian science sector requires a strong policy framework to ensure it is prepared for AI. This framework is needed to guide the development of the necessary infrastructure, ethical guidelines, and educational programs for Australian researchers to harness AI's potential responsibly and effectively.

**This framework is best provided by urgently introducing the proposed mandatory guardrails as part of an economy-wide Australian AI Act, as proposed by Option 3 in the Proposals Paper.**

An Australian AI Act, informed by a similar legislative framework introduced by Canada and the European Union, provides necessary consistency across the economy - key for Australian AI developers.

Consistency would be aided by the proposed establishment of an independent AI regulator, which would also help delineate differences across various sectors of the economy. With technological advances expanding at a rate that exceeds the capacity of current policy and legislation to adapt and anticipate, the new regulatory environment needs to be adaptable and capable of pivoting in response to the rapidly evolving AI technologies that will be developed. This is best achieved following Option 3 as outlined in the Proposals Paper.

An economy-wide AI Act, however, will also require the most time to implement. This is a substantial risk as these guardrails are urgently required, and any delay in their introduction jeopardises Australia's ability to responsibly adopt and develop its AI capabilities. The usefulness and importance of the proposed guardrails are directly related to how rapidly they can be introduced.

**The mandatory guardrails must be implemented carefully and urgently if Australia is to realise the transformative opportunities AI presents.**

**Guardrails must be future proof.**

There is a risk that the Proposals Paper's focus on a set of narrow and specific consequences of current AI technologies does not adequately prepare the guardrails to account for future advances and developments. A

more broad and general framing of the potential consequences of AI in high-risk settings could assist in future proofing the proposed guardrails.

The importance of the explainability of AI tools is alluded to throughout the Proposals Paper but is not explicitly referenced in the key principles of the mandatory guardrails. **Explainability is a key component of transparency in developing AI tools and should be explicitly referenced in the key principles listed on page 30 of the Proposals Paper.** This will allow adopters of AI to better understand the range and application of AI tools and will help them assess the impact of such tools.

### National AI capability is a necessity.

Sovereign AI capability is critical to ensure that Australia has the domestic ability to manage the development, regulation, and adoption of AI in our national interest. This capability includes the infrastructure, scientific knowledge, and skilled workforce required to participate in AI research and development to boost economic productivity and innovation.

Australia needs a national plan and investment strategy to build this sovereign AI capability, including scaling up investment in fundamental AI science. This should include developing a complementary national high-performance computing and data (HPCD) strategy to ensure we have the required onshore computing power to develop and adopt AI.

Access to HPCD and software is a critical enabler for developing and adopting AI tools and underpins advances in AI and science. Without sufficient onshore HPCD capabilities and infrastructure, Australia's AI capability will be dependent on other nations, hindering scientific progress and our ability to tailor AI tools to Australian-specific challenges.

This plan must also account for the predicted shortage of AI skilled workers, which will continue to be amplified by severe competition for local and international talent in the near future.

**Australia must urgently 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.**

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

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

**The Australian Government must provide guidance through a national strategy to prepare our science system for the uptake of AI.**

Clear guidance that outlines the acceptable use of AI tools, developed 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.

### Open Science can support responsible AI uptake.

Australian data are essential in the development of AI tools for Australian interests. However, much of these data are not accessible or interoperable. This limits the potential progress that can be achieved across research disciplines that use AI tools and in developing 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 support the science system to maximise the benefits of AI and enhance transparency and accountability.

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

**Australia requires an open science strategy to fully realise the potential of Australian data and should evaluate how to meet 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](mailto:Chris.Anderson@science.org.au).