The Senate

Select Committee on Adopting Artificial Intelligence

Select Committee on Adopting Artificial Intelligence (AI)

November 2024

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Contents

Acronyms and abbreviations

2023 AI discussion paper	Australian government's 2023 Safe and responsible AI in Australia discussion paper
AAVA	Australian Association of Voice Actors
ABC	Australian Broadcasting Commission
ACC	Australian Copyright Council
ACCI	Australian Chamber of Commerce and Industry
ACHEEV	Australian Centre for Health Engagement, Evidence and Values
ACOSS	Australian Council of Social Service
ACTU	Australian Council of Trade Unions
ADM	Automated Decision Making
ADM+S	The ARC Centre of Excellence on Automated Decision-Making and Society
AEC	Australian Electoral Commission
AEMO	Australian Energy Market Operator
AGD	The Attorney-General's Department
AGI	Artificial General Intelligence
AGI	Artificial General Intelligence
AHRC	Australian Human Rights Commission
AHRC	Australian Human Rights Commission
AI	Artificial Intelligence
AI Assurance Framework	National framework for the assurance of artificial intelligence in government
AIDA	*Artificial Intelligence and Data Act 2023* (CA)
AIEI Act	*Artificial Intelligence Environmental Impacts Act of 2024* (US)
AIRR	AI Research Resource
AIVF	AI Verify Foundation
ANMF	Australian Nursing and Midwifery Federation
ANU	Australian National University
ANZSA	Australia New Zealand Screen Association
API	application programming interface

APRA AMCOS	Australasian Performing Right Association and Australasian Mechanical Copyright Owners Society
APS	Australian Public Service
ARC Centre	ARC Centre of Excellence on Automated Decision-Making and Society
ARIA	Australian Recording Industry Association
ASA	Australian Society of Authors
CAG	Copyright Advisory Group
CAIRG	Copyright and Artificial Intelligence Reference Group
CETas	Centre for Emerging Technology and Security
CHF	Consumers Health Forum
CPSU	Community and Public Sector Union
CREATE AI Act	*Creating Resources for Every American To Experiment with Artificial Intelligence Act 2024* (US)
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DHA	Department of Home Affairs
DIGI	Digital Industry Group Incorporated
DISR	Department of Industry, Science and Resources
DLS	Deakin Law School
DOH	Department of Health
DRW	Digital Rights Watch
DTA	The Digital Transformation Agency
ECI	Electoral Commission of India
EMB	electoral management body
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
ERO	Existential Risk Observatory
ESG	environmental, social and governance
ESP policy	Environmentally Sustainable Procurement policy
EU	European Union
EU AI Act	*European Union Artificial Intelligence Act 2024* (EU)
FIMI	foreign information manipulation and interference

FSO	Future Skills Organisation
FSUA	Finance Sector Union of Australia
GDPR	European Union General Data Protection Regulation
GHG	greenhouse gas
GIA	Governance Institute of Australia
GPU	graphics processing unit
HPU	high performance computing
HRLC	Human Rights Law Centre
HTI	Human Technology Institute
ICT	Information and communications technology
IEEE	Institute of Electrical and Electronics Engineers
ILO	International Labour Organisation
IMAI	Internet and Mobile Association of India
International IDEA	International Institute for Democracy and Electoral Assistance
IP	Intellectual Property
IT	Information Technology
KAI	Kingston AI group
LCA	Law Council of Australia
LGBTQI	lesbian, gay, bisexual, transgender, queer and intersex
LLM	Large Language Models
MEAA	Media, Entertainment & Arts Alliance
ML	machine learning
NAIC	The National Artificial Intelligence Centre
NAIRR	National Artificial Intelligence Research Resource
NAVA	National Association for the Visual Arts
NDIS	National Disability Insurance Scheme
NIST	National Institute of Standards and Technology
NSW	New South Wales
NSW CCL	New South Wales Council for Civil Liberties
NSW framework	New South Wales Government AI Assurance Framework, March 2022
OECD	Organisation for Economic Co-operation and Development

OH&S	occupational health and safety
PC	Productivity Commission
PIPA	*Personal Information Protection Act 2023* (KOR)
PSRC	Pawsey Supercomputing Research Centre
QNMU	Queensland Nurses and Midwives' Union
RAIN	Responsible AI Network
RANZCR	Royal Australian and New Zealand College of Radiologists
SBS	Special Broadcasting Service
SDA	Shop, Distributive and Allied Employees Association
SMER	Direction – Social Democracy
SMEs	Small to Medium Enterprises
SPA	Screen Producers Australia
TCA	Tech Council of Australia
TDM	Text and Data Mining
the consultation	Australian Government consultation on safe and responsible AI in Australia
the declaration	Bletchley Declaration
the ethics framework	The AI Ethics Framework
UK	United Kingdom
UNESCO	United Nations Educational, Scientific, and Cultural Organisation
US	United States
UTS	University of Technology Sydney
VFX	visual effects
VTHC	Victorian Trades Hall Council
WHS	Workplace Health and Safety

Terms of reference

That a select committee, to be known as the Select Committee on Adopting Artificial Intelligence (AI), be established to inquire into and report on the opportunities and impacts for Australia arising out of the uptake of AI technologies in Australia, including consideration of:

(a) recent trends and opportunities in the development and adoption of AI technologies in Australia and overseas, in particular regarding generative AI;

(b) risks and harms arising from the adoption of AI technologies, including bias, discrimination and error;

(c) emerging international approaches to mitigating AI risks;

(d) opportunities to adopt AI in ways that benefit citizens, the environment and/or economic growth, for example in health and climate management;

(e) opportunities to foster a responsible AI industry in Australia;

(f) potential threats to democracy and trust in institutions from generative AI; and

(g) environmental impacts of AI technologies and opportunities for limiting and mitigating impacts.

List of recommendations

Recommendation 1

2.172 That the Australian Government introduce new, whole-of-economy, dedicated legislation to regulate high-risk uses of AI, in line with Option 3 presented in the government's Introducing mandatory guardrails for AI in high-risk settings: proposals paper.

Recommendation 2

2.174 That, as part of the dedicated AI legislation, the Australian Government adopt a principles-based approach to defining high-risk AI uses, supplemented by a non-exhaustive list of explicitly defined high-risk AI uses.

Recommendation 3

2.178 That the Australian Government ensure the non-exhaustive list of high-risk AI uses explicitly includes general-purpose AI models, such as large language models (LLMs).

Recommendation 4

3.68 That the Australian Government continue to increase the financial and non-financial support it provides in support of sovereign AI capability in Australia, focusing on Australia's existing areas of comparative advantage and unique First Nations perspectives.

Recommendation 5

4.186 That the Australian Government ensure that the final definition of high-risk AI clearly includes the use of AI that impacts on the rights of people at work, regardless of whether a principles-based or list-based approach to the definition is adopted.

Recommendation 6

4.189 That the Australian Government extend and apply the existing work health and safety legislative framework to the workplace risks posed by the adoption of AI.

Recommendation 7

4.192 That the Australian Government ensure that workers, worker organisations, employers and employer organisations are thoroughly consulted on the need for, and best approach to, further regulatory responses to address the impact of AI on work and workplaces.

Recommendation 8

4.197 That the Australian Government continue to consult with creative workers, rightsholders and their representative organisations through the CAIRG on appropriate solutions to the unprecedented theft of their work by multinational tech companies operating within Australia.

Recommendation 9

4.198 That the Australian Government require the developers of AI products to be transparent about the use of copyrighted works in their training datasets, and that the use of such works is appropriately licenced and paid for.

Recommendation 10

4.199 That the Australian Government urgently undertake further consultation with the creative industry to consider an appropriate mechanism to ensure fair remuneration is paid to creators for commercial AI-generated outputs based on copyrighted material used to train AI systems.

Recommendation 11

5.127 That the Australian Government implement the recommendations pertaining to automated decision-making in the review of the Privacy Act, including Proposal 19.3 to introduce a right for individuals to request meaningful information about how substantially automated decisions with legal or similarly significant effect are made.

Recommendation 12

5.130 That the Australian Government implement recommendations 17.1 and 17.2 of the Robodebt Royal Commission pertaining to the establishment of a consistent legal framework covering ADM in government services and a body to monitor such decisions. This process should be informed by the consultation process currently being led by the Attorney-General's Department and be harmonious with the guardrails for high-risk uses of AI being developed by the Department of Industry, Science and Resources.

Recommendation 13

6.107 That the Australian Government take a coordinated, holistic approach to managing the growth of AI infrastructure in Australia to ensure that growth is sustainable, delivers value for Australians and is in the national interest.

Chapter 1
Introduction and background

Introduction

1.1   On 26 March 2024, the Senate resolved that a select committee, to be known as the Select Committee on Adopting Artificial Intelligence (AI), be established to inquire into and report on the opportunities and impacts for Australia arising out of the uptake of AI technologies in Australia, including consideration of:

(a) recent trends and opportunities in the development and adoption of AI technologies in Australia and overseas, in particular regarding generative AI;

(b) risks and harms arising from the adoption of AI technologies, including bias, discrimination and error;

(c) emerging international approaches to mitigating AI risks;

(d) opportunities to adopt AI in ways that benefit citizens, the environment and/or economic growth, for example in health and climate management;

(e) opportunities to foster a responsible AI industry in Australia;

(f) potential threats to democracy and trust in institutions from generative AI; and

(g) environmental impacts of AI technologies and opportunities for limiting and mitigating impacts.[1]

1.2   The committee was required to report on or before 19 September 2024.[2]

Extension of the inquiry and interim report

1.3   However, on 17 September 2024, the Senate agreed to extend the committee's reporting date to 26 November 2024 to allow the inquiry to consider any impacts of generative AI on the federal election in the United States (US). The US election was subsequently held on Tuesday, 5 November 2024.

1.4   On 10 October 2023, the committee tabled an interim report setting out the evidence received by the inquiry regarding:

• the potential for AI technology, and particularly generative AI, to influence electoral processes and undermine public trust and confidence in Australian democracy more generally; and

• policy options for mitigating the risks of AI technology in relation to electoral and democratic processes.

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[1]   *Journals of the Senate*, No.107, 26 March 2024, pp 3208-3209.

[2]   *Journals of the Senate*, No.107, 26 March 2024, p. 3209.

1.5   The committee's majority interim report made five recommendations relating to the use of AI in electoral and political contexts.[3]

Impact of AI on US election

1.6   Following the US election, the committee notes that AI appears not to have had a significant impact on the course or outcome of the electoral contest, and there were relatively few reports of the use of deepfakes or other AI-generated content designed to sow political disinformation or influence the minds of voters.

1.7   However, the committee notes that there were significant instances of disinformation employed in the US election, including content identified as emanating from Russia as part of a concerted effort continuing that country's attempts to disrupt and influence foreign elections.

1.8   While some of the more notable incidents—including fake videos circulated on social media platforms purporting to show ballot fraud and hoax bomb threats called into polling places—did not involve AI-generated content, they nevertheless demonstrate that the use of disinformation in electoral and political contexts remains a significant concern.

1.9   Further, the committee considers it critical that Australia continue to monitor the use and impact of AI-generated deepfakes and content on elections to identify policy and legislative responses that can maintain and bolster trust in democratic processes and institutions, while protecting free speech. In this regard, the committee re-endorses the recommendations of its interim report as practical steps for the government to undertake to address the risks posed by AI to democracy.

1.10   Further, given the likelihood that such efforts to promote widespread disinformation in the context of electoral contests will continue, the committee emphasises the importance of ensuring that social media platforms are held accountable for the content that they publish.

Conduct of the inquiry

1.11   Details of the inquiry were made available on the committee's webpage, and organisations, key stakeholders and individuals were invited to provide submissions.

1.12   The committee received 245 public submissions, which are listed in Appendix 1 of this report, and held the following public hearings:

- 20 May 2024, in Canberra;
- 21 May 2024, in Sydney;
- 16 July 2024, in Canberra;
- 17 July 2024, in Canberra;

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3   The committee's interim report is available at: <u>Interim Report – Parliament of Australia</u>.

- 16 August 2024, in Canberra; and
- 11 September 2024, in Canberra.

1.13 A list of the organisations and individuals who attended as witnesses at these public hearings is in Appendix 2. Public submissions, additional information received by the committee and Hansard transcripts are all available on the committee's website.[4]

Acknowledgements

1.14 The committee thanks all individuals and organisations who have contributed to the inquiry by making written submissions, providing additional information, and appearing at public hearings.

Notes on references

1.15 References to the Committee Hansard may be references to a proof transcript. Page numbers may differ between proof and official transcripts.

1.16 Citations have been omitted from material quoted throughout the report.

Report structure

1.17 This report is structured as follows:

- Chapter 1 – Introduction and background;
- Chapter 2 – Regulating the AI Industry in Australia;
- Chapter 3 – Developing the AI industry in Australia;
- Chapter 4 – Impacts of AI on industry, business and workers;
- Chapter 5 – Automated decision-making; and
- Chapter 6 – Impacts of AI on the environment.

Definitions

1.18 This section describes some of the concepts and definitions used in this report.

1.19 The term 'artificial intelligence' or 'AI' is a broad term that has expanded to cover a diverse range of technologies. The submission of Xaana.Ai noted:

> ...the term "artificial intelligence" (AI) has become a buzzword, encompassing a vast and often ambiguous range of technologies. What was once described as "big data" or "predictive analytics" can now be readily rebranded as AI, b[l]urring the lines between distinct concepts. Additionally, confusion arises from the tendency to conflate AI with automation.[5]

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[4] The website for the Select Committee on Adopting Artificial Intelligence (AI) is available at: https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Adopting_Artificial_Intelligence_AI.

[5] Xaana.Ai, *Submission 167*, p. 5.

1.20   This report uses the following definitions:[6]

AI Technologies

1.21   **Artificial intelligence (AI):** an engineered system that generates predictive outputs such as content, forecasts, recommendations or decisions for a given set of human-defined objectives or parameters without explicit programming. AI systems are designed to operate with varying levels of automation, and include many relatively commonplace systems that may not have been previously widely recognised as employing AI, including:

- computer vision (where computers are able to identify and understand objects and people in images or videos);
- computer voice recognition using machine learning;
- aircraft and vehicle autopilot;
- weather forecasting;
- Netflix recommendations;
- Google and social media advertising algorithms;
- game systems that play, for example, chess or Alpha Go; and
- surgery robots.[7]

1.22   Amazon Web Services describes AI as 'a computer science discipline that enables software to solve novel and difficult tasks with human-level performance'.[8]

1.23   **Artificial General Intelligence (AGI):** a field of AI research that attempts to create systems with human-like intelligence and the ability to self-teach. AGI systems are intended to perform tasks without being trained by humans, and would be recognised in popular culture as the types of AI portrayed in movies such as *The Terminator* or *I, Robot*. Amazon Web Services describes AGI as a system that:

> …can solve problems in various domains, like a human being, without manual intervention. Instead of being limited to a specific scope, AGI can self-teach and solve problems it was never trained for. AGI is thus a

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[6]   The following definitions are largely based on those used in the Australian Government, Department of Industry, Science and Resources (DISR), *Safe and responsible AI in Australia*, Discussion Paper, Figure 1.1, June 2023.

[7]   Yorick Wilks, *Artificial Intelligence: Modern magic or dangerous future?*, 2023, UniPress Ltd, London, pp 11, 50 and 128; IMB, 'Understanding the different types of artificial intelligence', October 2023, https://www.ibm.com/think/topics/artificial-intelligence-types (accessed 13 August 2024); Google Deepmind, 'GraphCast: AI model for faster and more accurate global weather forecasting', November 2023, GraphCast: AI model for faster and more accurate global weather forecasting - Google DeepMind (accessed 13 August 2024).

[8]   Amazon Web Services, *What is AGI (Artificial General Intelligence)?* https://aws.amazon.com/what-is/artificial-general-intelligence/#aws-page-content-main (accessed 28 July 2024).

theoretical representation of a complete artificial intelligence that solves complex tasks with generalized human cognitive abilities.[9]

1.24 **General purpose AI systems (aka foundation models):** AI systems that have a wide range of possible uses, both intended and unintended by the developers. General-purpose AIs are increasingly commercially useful as they can be applied to tasks in various fields, often without substantial modification and fine-tuning. They are also referred to as **foundation models** due to their widespread use as pre-trained models for other, more specialised, AI systems. For example, a single general purpose AI system for language processing can be used as the foundation for chatbots, ad generation, decision assistants or translation systems. Examples of general purpose AI systems include AlphaStar, Chinchilla, Codex, DALL-E 2, Gopher and ChatGPT-4.[10]

1.25 **Frontier AI models:** general purpose AI systems with capabilities that could severely threaten public safety and global security. For example, AI systems that could be used for designing chemical weapons, exploiting vulnerabilities in safety-critical software systems, synthesising persuasive disinformation at scale, or evading human control.[11]

1.26 **AI tech stack:** the infrastructure and technologies or building blocks that comprise an AI system including the telecommunications industry and networks; computing and storage infrastructure; technology; and applications and interfaces that deliver AI services or products to a consumer (for example, ChatGPT-4).[12]

Applications

1.27 **Machine learning:** patterns derived from training data using machine learning algorithms which AI systems can apply to new data for prediction or decision-making purposes.

1.28 **Generative AI:** AI models that generate novel content such as text, images, audio and code in response to prompts. ChatGPT-4 is an example of generative AI.[13] Generative AI technologies are built on large language models (see following definition) trained on large amounts of data to provide outputs that

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[9] Amazon Web Services, *What is AGI (Artificial General Intelligence)?* https://aws.amazon.com/what-is/artificial-general-intelligence/#aws-page-content-main (accessed 28 July 2024).

[10] Future of Life Institute, *General Purpose AI and the AI Act*, May 2022, p. 3.

[11] Future of Life Institute, *General Purpose AI and the AI Act*, May 2022, p. 3.

[12] Professor Genevieve Bell, AO, Vice-Chancellor and President, Australian National University; Founder and Inaugural Director, School of Cybernetics, Australian National University, *Committee Hansard*, 20 May 2024, p. 34.

[13] Law Council of Australia, *Submission 152*, p. 7.

can be human-like. Generative AI is increasingly user-friendly and able to automate various tasks quickly to generate content.[14]

1.29 **Large language model (LLM):** a type of AI program that, using machine learning techniques applied to large sets of data, specialises in the recognition and generation of human-like text.

1.30 **Multimodal foundation model (MfM):** a type of generative AI that can process and output multiple data types (for example, text, images and audio).

1.31 **Automated decision making (ADM):** the application of automated systems in any part of a decision-making process. ADM includes using automated systems to:

- make the final decision;
- make an interim assessment or decision leading up to the final decision;
- recommend a decision to a human decision-maker;
- guide a human decision-maker through relevant facts, legislation or policy; and
- automate aspects of the fact-finding process which may influence an interim decision or the final decision.

1.32 While ADM systems may or may not employ AI, for the purposes of this report ADM is broadly understood as engaging the inquiry's terms of reference. As noted in the Australian government's June 2023 AI discussion paper, even where ADM 'does not use AI technologies, [the] risks and challenges associated with ADM may also be mitigated by' policies in relation to AI.[15]

AI models

1.33 Some examples of AI models currently available for public use are listed below.

1.34 **ChatGPT-4:** a generative AI model that can be described as an AI chatbot. ChatGPT-4's developers describe it as employing a dialogue format to answer questions and interact in a 'conversational way'.[16] Outputs from ChatGPT-4 can be used for writing tasks such as writing emails, essays and computer code.

1.35 **Gemini**: a multimodal generative AI model developed by Google capable of text, audio, image and video outputs. Google has implemented forms of Gemini across its products including Pixel phone and Google search and Chrome.[17]

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[14] Law Council of Australia, *Submission 152*, p. 7

[15] DISR, *Safe and responsible AI in Australia*, Discussion Paper, June 2023, p. 6.

[16] Open AI, 'Introducing ChatGPT', 30 November 2023, https://openai.com/index/chatgpt/?_sm_vck=sPsPsj6FH6Jq5WSFrN5wtn52BPHn76QTQ5tS632nMQrMj3T77Bn2 (accessed 30 August 2024.

[17] Google, 'Introducing Gemini: our largest and most capable AI model', 6 December 2023, https://blog.google/technology/ai/google-gemini-ai/#sundar-note (accessed 5 September 2024).

1.36 **Claude**: a generative AI model developed by Anthropic using constitutional AI, which embeds a list of human values in its parameters. Claude is marketed as an AI assistant.[18]

1.37 **Meta AI**: a generative AI model built using Meta Llama 3, an open-source large language model. Meta AI presents as an assistant and is integrated through Meta products such as Facebook, Instagram and Messenger.

Key characteristics of AI

1.38 AI shares many similarities with other new technologies. However, the current state of AI technology has distinct characteristics that create both the opportunities for its widespread adoption and the inherent risks that are, together, the central focus of the committee's inquiry into the adoption of AI.[19] The submission of the Department of Industry, Science and Resources identified the following key characteristics of AI:

- **Adaptability and learning:** AI systems can improve their performance over time and adapt by learning from data. As AI has become capable of generating data and even programming code, it has also become a creator of information, technology and imagery;
- **Autonomy:** AI systems can be designed to make decisions autonomously (without human intervention);
- **Speed and scale:** AI has an unparalleled capacity to analyse massive amounts of data in a highly efficient and scalable manner. It also allows for real-time decision-making at a scale that can surpass the capabilities of traditional technologies;
- **Opacity:** Decisions made by AI systems are not always traceable, and humans cannot always obtain insights into the inner workings of algorithms;
- **High realism:** The advancement of AI and particularly generative AI has reached a point where AI can emulate human-like behaviours in some tasks; and create such realistic outputs that end-users find it difficult to identify whether they are interacting with AI or a human, or whether outputs are AI- or human-generated;
- **Versatility:** AI models are a multipurpose technology that can perform tasks beyond their intended uses, even when deployed for a general or specific purpose; and

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[18] Claude, 'Meet Claude', 2024, https://claude.ai/login?returnTo=%2F%3F (accessed 5 September 2024).

[19] DISR, *Submission 160*, pp 3-4.

- **Ubiquity:** AI, particularly generative AI, has become a readily accessible and increasingly dominant part of our everyday lives and continues to be developed and adopted at an unprecedented rate.[20]

Use of AI in Australia

1.39 The committee's inquiry occurs in a context of heightened public interest in AI technology, much of which followed the release in November 2022 of ChaptGPT. However, despite the relatively recent interest in more widely accessible generative AI models, AI has been employed over recent years in various aspects of the Australian society and economy to deliver significant benefits. This includes, for example:

- using AI to consolidate large amounts of patient data to support diagnosis and early detection of health conditions;
- AI tools to help evaluate and optimise engineering designs to improve building safety;
- using AI to expedite travel at airports through the use of SmartGates;
- using AI to support personalised learning and teaching in remote areas; and
- AI-enabling improvements and cost savings in the provision of legal services.[21]

1.40 The submission from the Department of Home Affairs (DHA) noted that 'products and services that utilise AI are already broadly in use across the Australian economy', and summarised these as being generally in relation to:

- decision making (ADM): machine-based systems that make predictions, recommendations or decisions based on a given set of human defined objectives (see above definition);
- content curation or recommendations: systems that prioritise content or make personalised content suggestions to users of online services; and
- generative AI: sophisticated machine learning algorithms used to predict an output, such as images or words, based on a prompt (see above definition).[22]

1.41 The Digital Transformation Agency (DTA) observed that past uses of AI by government have typically been 'in the form of narrow applications that perform specific tasks within defined domains', with the technical expertise and costs of deploying and operating AI forming a 'natural barrier to adoption for many agencies.'[23] More recently, however, there has been a rapid development driven by generative and general purpose AI:

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[20] DISR, *Submission 160*, pp 3-4.

[21] Australian Government, DISR, *Safe and responsible AI in Australia*, Discussion Paper, June 2023, pp 3 and 7.

[22] Department of Home Affairs, *Submission 55*, p. 2.

[23] Digital Transformation Agency (DTA), *Submission 53*, p. 2.

> Generative AI has changed this and brought AI to the masses with large language models such as ChatGPT being widely accessible, easy to use and interact with, while also delivering outputs that often require no technical expertise.[24]

1.42 The DHA submission noted that the development of AI products and services in Australia is 'rapidly accelerating' and that 'significant investment by industry and governments is driving unprecedented advancements in AI'.[25]

1.43 However, the Australian government's June 2023 AI discussion paper observed that, relative to other countries, adoption rates of AI across Australia remain relatively low', due in part to low levels of public trust and confidence of Australians in AI technologies and systems.'[26] It concluded:

> Building public trust and confidence in the community will involve a consideration of whether further regulatory and governance responses are required to ensure appropriate safeguards are in place. A starting point for considering any response is an understanding of the extent to which our existing regulatory frameworks provide these safeguards. These existing regulations include our consumer, corporate, criminal, online safety, administrative, copyright, intellectual property and privacy laws.[27]

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24 DTA, *Submission 53*, p. 3.

25 DOH, *Submission 55*, p. 3.

26 Australian Government, DISR, *Safe and responsible AI in Australia*, Discussion Paper, June 2023, p. 3.

27 Australian Government, DISR, *Safe and responsible AI in Australia*, Discussion Paper, June 2023, p. 3.

Chapter 2
Regulating the AI industry in Australia

2.1　This chapter considers the evidence received by the inquiry in relation to regulating the Artificial Intelligence (AI) industry in Australia, including:

- the risks of AI technologies;
- AI policy development in Australia and overseas; and
- potential approaches to regulating and mitigating the risks of AI in Australia.

Risks of AI

2.2　AI technology brings with it a number of risks that can arise from both the characteristics of the technology as well as its potential uses or applications.

2.3　On the issue of AI risks generally, the Law Council of Australia submission stated:

> There are foreseeable risks and harms arising from the adoption of AI, as well as risks that may only come to light as the technologies mature, and as new technologies enter the market. Many risks have already been extensively documented and can be categorised in terms of the technical risks, the human rights/societal risks, and what has been described as the 'existential risks' arising out of concerns of what it means to be human and how we understand human machine interactions.[1]

Bias, discrimination and error

2.4　A major and widely recognised risk of AI is the capacity of AI systems to generate results, or decisions in the case of Automated Decision Making (ADM), that are biased. The problem of bias, also referred to as 'algorithmic bias', can arise from AI design or bias within the data used to train an AI system. The submission of Dr Darcy Allen, Professor Chris Berg and Dr Aaron Lane explained:

> The biases in generative AI models are, in part, a reflection of the biases inherent in humans. These models are trained on vast datasets…Unsurprisingly biases from the datasets become embedded in the models. This is [an AI system] capturing the prevailing tendencies, preferences, and prejudices of the data it has been trained on.[2]

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[1]　Law Council of Australia (LCA), *Submission 152*, p. 8.

[2]　Dr Darcy Allen, Professor Chris Berg and Dr Aaron Lane, *Submission 21*, p. 4.

2.5   AI bias can arise not only from biases embedded in datasets but also 'where data quality is low or poorly aligned to the context of its use'.[3] The submission of the Allens Hub for Technology Law and Innovation and Disability Innovation provided the following discussion of AI bias in the context of Automated Decision Making (ADM) in the disability field:

> It is now well established that the use of AI systems often inadvertently exacerbates issues of bias against population groups and communities that are already marginalised by virtue of sex, gender, class, race or other attribute, including disability…
>
> In the case of disability, AI-based classification has been proposed to determine eligibility for disability support funding from the NDIS. However, many people with disability and their representative organisations are concerned that AI systems designed around statistical norms have difficulty with statistically anomalous populations and with the diverse, complex and nuanced realities of living with disability.[4]

2.6   Where AI bias occurs in connection with ADM or AI-assisted decision making, such bias can lead to or entrench unfairness or discrimination in decision making.[5] The Department of Home Affairs (DHA) submission commented on the potential for under-representation of minority groups and small communities in datasets to create AI bias and lead to unfair or discriminatory outcomes:

> AI also presents the risk of minority groups and small communities being misrepresented in AI models. Under representation in underlying training datasets could result in disparities and unconscious systematic bias between the quality of services, or excessive scrutiny from authorities between majority and minority groups.[6]

2.7   The Australian government's 2023 *Safe and responsible AI in Australia* discussion paper (2023 AI discussion paper) provided the following examples of AI bias leading to discrimination against individuals based on race, sex or other categories that are protected by Australian anti-discrimination laws:

- racial discrimination where AI has been used to predict recidivism which disproportionately targets minority groups;
- educational grading algorithms favouring students in higher performing schools; [and]

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[3]   UNSW Allens Hub for Technology Law and Innovation and Disability Innovation (UNSW Allens Hub), *Submission 104*, p. 2.

[4]   UNSW Allens Hub, *Submission 104*, p. 2.

[5]   Attorney-General's Department (AGD), S*ubmission 154*, p. 4. For detailed discussion of ADM, see Chapter 5.

[6]   Department of Home Affairs (DHA), *Submission 55*, p. 5.

- recruitment algorithms prioritising male over female candidates.[7]

2.8 In addition to issues of bias and discrimination, an acknowledged risk of AI is the potential for generative AI systems to produce errors in generated results—also referred to as 'hallucinations'. The Law Council of Australia submission explained:

> Generative AI technologies…can be user-friendly and can automate various tasks quickly to provide users with the data they need. However, their outputs have been criticised as being inaccurate, untruthful, and misleading at times, commonly referred to as the technology producing 'hallucinations'.[8]

2.9 The submission of Dr Darcy Allen, Professor Chris Berg and Dr Aaron Lane explained that the capacity for generative AI to produce errors or hallucinations can be understood as arising from the intrinsic predictive character of the technology:

> Unlike traditional search engines designed for delivering accurate, factual information, generative AI operates as a prediction engine. This key distinction underscores its primary purpose: fostering creativity rather than ensuring accuracy. As non-deterministic systems, generative AI models excel in creativity. This creative ability propels their applicability across many new domains as a general purpose technology. But while the non-determinism of generative AI models is the source of their benefits, it also contributes to what are often termed as 'hallucinations' in their outputs. These are instances where the AI generates content that — while potentially unique, creative and even plausible — may not be factual.[9]

2.10 The capacity for errors in generated content naturally gives rise to questions about the reliability of AI outputs, and to potentially significant consequences in certain contexts. The Australian Publisher Association, for example, noted:

> …generative AI can generate incorrect or misleading information with a high level of confidence. This is problematic in critical sectors such as healthcare, legal services, and scientific research'.[10]

Transparency

2.11 Another significant risk in relation to AI relates to the transparency of AI systems. The Tech Council of Australia noted that transparency of AI systems is 'a key principle at the highest levels of international governance and for

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[7] Department of Industry, Science and Resources (DISR), *Safe and responsible AI in Australia*, Discussion Paper, June 2023, p. 8.

[8] LCA, *Submission 152*, p. 7.

[9] Dr Darcy Allen, Professor Chris Berg and Dr Aaron Lane, *Submission 21*, p. 3.

[10] Australian Publisher Association, *Submission 138*, p. [3].

industry when it comes to responsible AI adoption'.[11] As with the issue of bias and discrimination, the issue of transparency is particularly significant in the context of ADM or AI-assisted decision making.

2.12 The concept of transparency of AI systems can be understood as the ability to see into an AI system to 'understand the nature of the data, connections, algorithms and computations that generate a system's behaviour including its techniques and logic'.[12]

2.13 The Australian government's interim response to its consultation on the 2023 *Safe and responsible AI in Australia* discussion paper noted that a lack of transparency in AI systems:

> …can make it difficult to identify harms, predict sources of error, establish accountability, explain model outcomes and assure quality. For example, if job applications are assessed by 'black box' AI systems (where internal workings are automated and invisible), people affected by discriminatory outcomes may have limited ability to understand or question decisions.[13]

2.14 Similarly, The Law Council of Australia expressed its concern that the use of 'black box' AI systems for ADM means that the 'logic behind decisions made cannot be traced or explained'. It noted that reliance on AI based or assisted ADM for government decision-making therefore raises significant issues from an administrative law perspective.[14]

2.15 The transparency of AI models is a global concern. One leading attempt to quantify this transparency is the Foundation Model Transparency Index (the Index) produced by the Stanford University Centre for Research on Foundation Models. The Index assesses each model on 100 transparency indicators, split across three categories: upstream (the resources involved in developing a model); the model itself and its properties; and the downstream use of the model. In the most recent edition of the Index, published in May 2024, some of the most prominent models, including OpenAI's GPT-4, Google's Gemini, and Amazon's Titan, received among the lowest scores of 49, 47 and 41 out of 100, respectively. Across all foundation models, the key area of opacity is around data, specifically on the presence of copyrighted, licenced or personal information in training datasets.[15]

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[11] Tech Council of Australia (TCA), *Answers to questions on notice (15)*, 21 May 2024 (received 19 June 2024), p. 1.

[12] TCA, *Answers to questions on notice (15)*, 21 May 2024 (received 19 June 2024, p. 1.

[13] DISR, *Safe and responsible AI in Australia consultation: Australian Government's interim response*, January 2024, p. 11.

[14] LCA, *Submission 152*, p. 11.

[15] Rishi Bommasani et al, 'The Foundation Model Transparency Index v1.1 May 2024', pp 10-11, available at Stanford University: https://crfm.stanford.edu/fmti/paper.pdf.

Privacy and data security

2.16 AI technologies often involve the use of significant amounts of personal data. This can be due to the large data sets that are used to train, and are thus incorporated into, AI systems, as well as the personal information that is gathered by or fed into AI systems and used to generate outputs. The Attorney-General's Department (AGD) submission explained:

> Incorporating AI technologies into products and services can amplify privacy risks through increases in scale, scope, frequency or intensity of personal information handling.

2.17 AGD observed that the 'unique capabilities of AI present opportunities but also additional privacy risks'. For example:

> …AI may more readily identify an individual from disparate sources of information, infer sensitive attributes about individuals from information, use personal information to influence consumer behaviour (for example, through content recommendations), and automate decisions that have a legal (or substantially similar) effect on individuals.[16]

2.18 The risks associated with the collection and use of personal information by AI also include the 'inappropriate collection and use of personal information',[17] as well as leakage and unauthorised disclosure or de-anonymisation of personal information.[18]. In this regard, the Accenture submission observed:

> The adoption of AI systems requires organisations to have robust data security policies and practices in place, both to protect data from external threats, as well as internal employees who should not have access to the data stored and generated by these systems.

> If not managed correctly, there is an increased risk associated with data breaches and privacy violations, data manipulation…and regulatory compliance risks.[19]

2.19 The DHA submission provided a national security perspective on the issue of data security:

> AI will amplify the amount and type of data being collected as commercial incentives drive AI developers to collect more data to support the development of more mature language models. Hostile actors will be motivated to seek and aggregate data they steal or obtain from data breaches to enhance models they develop. AI capabilities trained on personal and sensitive data have potential to accelerate adversaries' efforts to erode our technological advantage and to target our networks, systems and people.[20]

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[16] AGD, *Submission 154*, p. 4.

[17] Digital Rights Watch, *Submission 156*, p. 6.

[18] Dr Susan Bennett, *Submission 112*, p. 1.

[19] Accenture, S*ubmission 97*, p. 11.

[20] DHA, *Submission 55*, p. 5.

2.20   The committee raised the issue of privacy with the large multinational technology companies developing general purpose AI models. In response to questions asking how they scrape and curate data for their training sets, Meta, Amazon and Google each said they use publicly available information to train their products, and pointed to the robots.txt exclusion protocol as a way for web domain holders to block access to the data scraping process on an opt-out basis.[21]

2.21   The three platforms also collect and store extensive caches of personal or private information from the users of their other services. It is these massive stores of privately held data which provide Meta, Amazon, Google and other large technology companies with a competitive advantage on the development of LLMs. When asked about how they use this data to train their AI products, the platforms gave largely opaque responses.

2.22   Amazon Australia and New Zealand Head of Public Policy, Mr Matt Levey, when asked whether audio captured by Amazon's Alexa devices in people's homes has been used to train Amazon's AI products, confirmed that this occurs for a 'limited number of voice recordings' in order to 'improve the service'. When further asked what proportion of recordings are used in this way, Mr Levey said he would provide that data at a later date. He did not, but in response to a list of questions about Amazon's use of Alexa-captured data, Amazon pointed to its Terms of Use and Privacy Policy, which did not provide answers to the majority of the questions.[22]

2.23   This refusal to directly answer questions was an ongoing theme in the responses received from Amazon, Meta and Google. For example, when asked whether Amazon uses content published or stored on Prime Video, Kindle, Audible and other Amazon platforms to train its model, Amazon said 'we don't disclose specific sources of our training data.'[23]

2.24   When asked about the use of user data from Google's suite of products to train the company's AI products, Ms Tulsee Doshi, Google Product Director, Responsible AI, said that 'in the context of Google Cloud and Workspace…we promised that by default Google does not use customer data for model-training purposes unless a customer has provided written permission to do so or has opted in.'[24]

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[21]   Meta, *Answers to questions on notice (59)*, 27 September 2024 (received 24 October 2024), p. 7; Amazon, *Answers to questions on notice (56)*, 9 September 2024 (received 9 October 2024), pp 1-2; and Google, *Answers to questions on notice (53)*, 9 September 2024 (received 20 September 2024), p. 6.

[22]   Amazon, *Answers to questions on notice (56)*, 9 September 2024 (received 9 October 2024), pp 4-5.

[23]   Amazon, *Answers to questions on notice (56)*, 9 September 2024 (received 9 October 2024), p 7.

[24]   Ms Tulsee Doshi, Product Director, Responsible AI, Google, *Committee Hansard*, 16 August 2024, p. 23.

2.25   With respect to other Google services, the responses provided were less clear. At the hearing, Ms Doshi was asked about user data from Gmail and Google Books, and responded 'our models are trained on publicly available information from the web'.[25] In follow up questions in writing, Google was provided with a list of 28 Google products and services and asked from which of those Google has taken user data for the purposes of training AI products, to which Google again responded that it only trains its AI models on publicly available data, and referred to its privacy policy.[26]

2.26   Meta provided similarly opaque responses to a detailed list of questions provided on notice. While Meta confirmed that it has used user content from Facebook and Instagram published since 2007 to train its AI models, provided the content had a privacy setting of 'public', it did not answer questions about whether it also used user content from the private messaging applications Messenger and WhatsApp.[27]

2.27   There were numerous other important questions about Meta's use of user data to train its AI products that the company chose not to respond to. For example, Meta spruiked that it does not use data from the accounts of under 18-year-olds to train its models as an example of its responsible approach to AI. However, it did not answer questions about whether that extends to photos of children posted by accounts that are over 18—for example, parents posting pictures of their children—and, further, did not confirm or deny whether it includes photos posted by users who were children at the time of posting, but have since turned 18.[28]

2.28   Meta was also asked about whether a user of its social platforms in 2007 could have knowingly consented to their content being used to train AI technology that would not exist for over a decade, to which Meta's Director of Global Privacy Policy, Ms Melinda Claybaugh, responded: 'I can't speak to what people did or did not know.' A follow up question on notice asking how this could be possible was not answered.[29]

2.29   All three companies repeatedly referred the committee to their privacy policies and terms of use as justification for the use of some user data to train their AI products. With the exception of Google Cloud and Workspace, the use of user data to train AI products was conducted on an opt-out rather than opt-in basis, although in order for a user to be aware of their right to opt-out they would need

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[25]   Ms Tulsee Doshi, Product Director, Responsible AI, Google, *Committee Hansard*, 16 August 2024, p. 24.

[26]   Google, *Answers to questions on notice (53)*, 9 September 2024 (received 20 September 2024), p. 6.

[27]   Meta, *Answers to questions on notice (59)*, 27 September 2024 (received 24 October 2024), pp 1-9.

[28]   Meta, *Answers to questions on notice (59)*, 27 September 2024 (received 24 October 2024), pp 1-9.

[29]   Meta, *Answers to questions on notice (59)*, 27 September 2024 (received 24 October 2024), pp 1-9.

to read the privacy policies. A recent study found that it would take an Australian 46 hours a month on average to read every privacy policy they encounter, based on the average length of each policy and the number of policies Australians are confronted with.[30]

High risk and problematic uses of AI

2.30   AI technology brings with it significant risks arising from the potential for it to be used for high-risk or otherwise highly problematic purposes.

2.31   The Law Council of Australia, for example, identified a number of high-risk uses that are listed as banned uses under the European Union (EU) *Artificial Intelligence Act*:

- social scoring;[31]
- assessing the risk of an individual committing criminal offences solely based on profiling or personality traits;
- 'real-time' remote biometric identification in publicly accessible spaces for law enforcement;
- biometric categorisation systems inferring sensitive attributes; and
- compiling facial recognition databases.[32]

2.32   Generative AI also creates a significant risk insofar as it can be used to produce deep fakes and other material able to be used for nefarious purposes such as perpetrating frauds and scams; sowing dissent; and influencing election outcomes. The Law Council of Australia submission noted:

> AI systems can produce light, sound, images, video, text and other phenomena (AI artefacts) which makes it very difficult if not impossible to distinguish AI artefacts from human artefacts. In some contexts, this will create a serious risk of humans relying on an AI artefact as if it was a human artefact, and acting to their detriment. In such contexts, there will be a strong incentive for deception and scamming using AI artefacts.[33]

2.33   Deep fakes are AI generated images, videos or audio that realistically depict actual or synthetic people. The RMIT Enterprise AI and Data Analytics Hub identified the significant potential for deep fakes to be used in harmful ways:

> An individual may suffer cyberbullying through deep fakes on social media; a business's service or products may be flooded with false negative reviews;

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30   Tom Burton, *Financial Review*, 'Nearly 46 hours a month to read all privacy policies: study', 21 May 2024,   https://www.afr.com/politics/federal/nearly-46-hours-a-month-to-read-all-privacy-policies-study-20240521-p5jfaa#:~:text=Australians%20would%20spend%20nearly%2046,data%20protection%20and%20privacy%20laws (accessed 21 November 2024).

31   Social scoring involves the use of a social, ethical or moral scoring system applied to the behaviour of individuals.

32   LCA, *Submission 152*, p. 9.

33   LCA, *Submission 152*, p. 19.

and ultimately, the biggest threat that it can bring is a broad decline in social trust as a result of misinformation and propaganda that undermines the trust in government and democratic institutions.[34]

2.34 The use of deepfakes and other AI-generated material or AI tools to harm democracy, sow dissent and erode trust in public institutions is perhaps one of the most significant risks of AI.[35]

2.35 The DHA submission stated that, while the 'assessment of the practical impacts of AI on democracy and trust in institutions is still foundational', AI could challenge traditional areas of strength of Australian democracy including 'strong institutions, information integrity and social inclusion'. It noted the ability of generative AI in particular to facilitate malicious actors and threaten democratic representation, accountability and trust:

- Threat to representation: Generative AI allows anyone – from passionate citizens to malicious actors – to create unique letters, emails and social media posts that skew elected officials' perceptions of constituent sentiment, undermining genuine representation.
- Threat to accountability: AI-generated information operations and smear campaigns could unfairly influence perceptions of elected representatives, undermining elections as a mechanism of accountability since the basis for people's vote is factually dubious.
- Threat to trust: A proliferation of false and misleading information may make people sceptical of the entire information ecosystem, in turn eroding the trust that fuels civic engagement, political participation and confidence in institutions, and potentially exacerbating polarisation.[36]

Frontier AI models and catastrophic risks of AI

2.36 Frontier AI models are general purpose AI systems with capabilities that could severely threaten public safety and global security—for example, AI systems that could be used for designing chemical weapons, exploiting vulnerabilities in safety-critical software systems, synthesising persuasive disinformation at scale, or evading human control.[37]

2.37 In November 2023, Australia was one of 28 signatories to the Bletchley Declaration (the declaration) at the first AI Safety Summit, held at Bletchley Park in the United Kingdom. As noted in the Good Ancestors Policy submission, the declaration identified the potential for frontier AI to pose 'serious, even

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[34] RMIT Enterprise AI and Data Analytics Hub, *Submission 85*, pp 3-4.

[35] For detailed discussion of the impacts of AI on democracy, see the committee's interim report.

[36] DHA, *Submission 55*, p. 6.

[37] Future of Life Institute, *General Purpose AI and the AI Act*, May 2022, p. 3.

catastrophic, harm' due to its capabilities being 'not fully understood and therefore hard to predict'.[38]

2.38 Signatories to the declaration affirmed their responsibility for ensuring the safety of AI systems, and encouraged:

> …all relevant actors to provide context-appropriate transparency and accountability on their plans to measure, monitor and mitigate potentially harmful capabilities and the associated effects that may emerge, in particular to prevent misuse and issues of control, and the amplification of other risks.[39]

2.39 Good Ancestors Policy noted that, by signing the declaration, Australia had committed to:

- developing policies, including appropriate evaluation metrics, tools for safety research
- supporting an internationally inclusive network of scientific research on frontier AI safety, and
- intensifying our cooperation with other nations on risk from frontier AI.[40]

AI policy development in Australia

2.40 This section provides an overview of recent AI policy developments in Australia.

2.41 Given the rapid advances and increasing use of AI technology in recent years, governments in Australia and around the world have been developing a range of policy responses seeking to address its very significant potential risks and harms. The Australian Government's 2023 AI discussion paper noted that there is a relationship between Australia's policy responses to AI and the policies being implemented by other countries:

> While Australia already has some safeguards in place for AI and the responses to AI are at an early stage globally, it is not alone in weighing whether further regulatory and governance mechanisms are required to mitigate emerging risks. Our ability to take advantage of AI supplied globally and support the growth of AI in Australia will be impacted by the extent to which Australia's responses are consistent with responses overseas. However, the early responses of other jurisdictions vary.[41]

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[38] DISR, *The Bletchley Declaration by Countries Attending the AI Safety Summit, 1–2 November 2023*, 2 November 2023, www.industry.gov.au/publications/bletchley-declaration-countries-attending-ai-safety-summit-1-2-november-2023 (accessed 5 September 2024); Good Ancestors Policy, *Submission 105*, p. 24.

[39] DISR, *The Bletchley Declaration by Countries Attending the AI Safety Summit, 1–2 November 2023*, 2 November 2023, www.industry.gov.au/publications/bletchley-declaration-countries-attending-ai-safety-summit-1-2-november-2023 (accessed 5 September 2024).

[40] Good Ancestors Policy, *Submission 105*, p. 24.

[41] Australian Government, DISR, *Safe and responsible AI in Australia*, Discussion Paper, June 2023, p. 3.

2.42   The 2023 AI discussion paper observed that Australia has relatively low adoption rates of AI, due in part to low levels of public trust and confidence in AI technologies and systems;[42] and that a considered regulatory and governance response, including consideration of the existing regulatory frameworks, is therefore required:

> A starting point for considering any response is an understanding of the extent to which our existing regulatory frameworks provide these safeguards. These existing regulations include our consumer, corporate, criminal, online safety, administrative, copyright, intellectual property and privacy laws.[43]

2.43   The Department of Industry, Science and Resources submission further noted that, through its consultation on the 2023 *Safe and responsible AI in Australia* discussion paper, the government has acknowledged that the current regulatory framework in Australia does not sufficiently address the known risks presented by AI, and that existing laws are not sufficient to guard against the potential risks of AI.[44]

AI Ethics framework (2019)

2.44   The AI Ethics Framework was released by the Department of Industry, Science and Resources in November 2019, with the aim of guiding businesses and government to design, develop, and implement AI responsibly.

2.45   The framework includes eight voluntary AI Ethics Principles, intended to:

- achieve safer, more reliable and fairer outcomes for all Australians;
- reduce the risk of negative impact on those affected by AI applications; and
- help businesses and governments to practice the highest ethical standards when designing, developing and implementing AI.[45]

2.46   The AI Ethics Principles are as follows:

> **Human, societal and environmental wellbeing**: AI systems should benefit individuals, society and the environment.
>
> **Human-centred values**: AI systems should respect human rights, diversity, and the autonomy of individuals.
>
> **Fairness**: AI systems should be inclusive and accessible, and should not involve or result in unfair discrimination against individuals, communities or groups.

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42   Australian Government, DISR, *Safe and responsible AI in Australia*, Discussion Paper, June 2023, p. 3.

43   Australian Government, DISR, *Safe and responsible AI in Australia*, Discussion Paper, June 2023, p. 3.

44   DISR, Submission 160, pp 6-8.

45   DISR, *Australia's AI Ethics Principles*, www.industry.gov.au/publications/australias-artificial-intelligence-ethics-framework/australias-ai-ethics-principles (accessed 4 September 2024).

> **Privacy protection and security**: AI systems should respect and uphold privacy rights and data protection, and ensure the security of data.
>
> **Reliability and safety**: AI systems should reliably operate in accordance with their intended purpose.
>
> **Transparency and explainability**: There should be transparency and responsible disclosure so people can understand when they are being significantly impacted by AI, and can find out when an AI system is engaging with them.
>
> **Contestability**: When an AI system significantly impacts a person, community, group or environment, there should be a timely process to allow people to challenge the use or outcomes of the AI system.
>
> **Accountability**: People responsible for the different phases of the AI system lifecycle should be identifiable and accountable for the outcomes of the AI systems, and human oversight of AI systems should be enabled.[46]

2.47   In 2021, the industry department conducted the AI Ethics Principles Pilot, in which it worked with Australian businesses to road test the ethics principles to identify challenges to their implementation.[47]

National Artificial Intelligence Centre (2021)

2.48   The National Artificial Intelligence Centre (NAIC) was established in 2021 to support and accelerate Australia's AI industry. The role of the NAIC is to:

- support AI adoption by small and medium businesses by addressing barriers and challenges;
- grow an Australian AI industry;
- convene the AI ecosystem; and
- uplift safe and responsible AI practice.[48]

2.49   The NAIC has established a number of AI initiatives such as:

- the Responsible AI Network (RAIN), which brings together experts, regulatory bodies, training organisations and practitioners to focus on AI solutions for Australian industry;
- the AI Sprint, which is a three-month competitive program that aims to help startups and entrepreneurs quickly create AI solutions aimed at issues such as cost of living, governance, supply chain resilience, human and environmental wellbeing, and workforce transformation. A second stage of

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[46]   DISR website, Australia's AI Ethics Principles, www.industry.gov.au/publications/australias-artificial-intelligence-ethics-framework/australias-ai-ethics-principles (accessed 4 September 2024).

[47]   DISR website, Testing the AI Ethics Principles, www.industry.gov.au/publications/australias-artificial-intelligence-ethics-framework/australias-ai-ethics-principles (accessed 4 September 2024).

[48]   DISR, *National Artificial Intelligence Centre*, https://www.industry.gov.au/science-technology-and-innovation/technology/national-artificial-intelligence-centre (accessed 3 September 2024).

the program provides participants with support and resources to develop and showcase their AI prototypes.[49]

AI Adopt Program (2023)

2.50 On 8 December 2023, the industry minister announced the AI Adopt Program, designed to provide $17 million to establish up to five new centres to support Small to Medium Enterprises (SMEs) to make informed decisions about using AI to improve their business.

2.51 The purpose of the AI Adopt centres is to showcase the capabilities of AI; provide guidance; responsible and efficient adoption of AI; and provide specialist skills training to help SMEs effectively manage AI.

2.52 Grant applications of between $3 to $5 million for businesses, organisations and research organisations to create the AI Adopt centres closed 29 January 2024. Grant recipients were announced in May 2024.

Consultation on safe and responsible AI in Australia (2023)

2.53 In mid-2023, the Australian Government conducted a consultation on safe and responsible AI in Australia (the consultation), which sought advice on steps Australia could take to mitigate the potential risks of AI. The purpose of the consultation was to identify:

- 'potential gaps in the existing domestic governance landscape and [identify] any possible additional AI governance mechanisms to support the development and adoption of AI'; and
- governance mechanisms to ensure AI is used safely and responsibly, including regulations, standards, tools, frameworks, principles and business practices.[50]

2.54 The consultation received 447 public submissions (of a total of 510 submissions), which can be accessed on the consultation website.[51]

2.55 In January 2024, the government released its interim response to the consultation. The interim response made the following observations on the status of AI in Australia:

- AI can create new jobs, power new industries, boost productivity and benefit consumers. Highlighting the benefits presented by AI will boost community confidence

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[49] DISR, *Submission 160*, p. [14].

[50] DISR, *Safe and responsible AI in Australia*, Discussion Paper, June 2023, p. 4.

[51] DISR, Published responses, https://consult.industry.gov.au/ supporting-responsible-ai/submission/list (accessed 3 September 2024).

- many applications of AI do not present risks that require a regulatory response, and there is a need to ensure the use of low-risk AI is largely unimpeded
- our current regulatory framework does not sufficiently address risks presented by AI, particularly the high-risk applications of AI in legitimate settings, and frontier models
- existing laws do not adequately prevent AI-facilitated harms before they occur, and more work is needed to ensure there is an adequate response to harms after they occur
- the speed and scale that defines AI systems uniquely exacerbates harms, and in some instances makes them irreversible, such that an AI-specific response may be needed
- consideration needs to be given to introducing mandatory obligations on those who develop or use AI systems that present a high risk, to ensure their AI systems are safe
- the need for government to work closely with international partners to establish safety mechanisms and testing of these systems, noting that models developed overseas can be built into applications in Australia.[52]

2.56 In light of these observations, the interim response indicated that the government's regulatory approach would be to:

> …ensure the development and deployment of AI systems in Australia in legitimate, but high-risk settings, is safe and can be relied upon, while ensuring the use of AI in low-risk settings can continue to flourish largely unimpeded.[53]

2.57 The interim response indicated that the government's immediate focus would be on considering the implementation of any necessary mandatory legal or other safeguards around AI, which it would undertake in close consultation with industry, academia and the community.[54] The following principles were set out as guiding the government's approach to supporting safe and responsible AI:

Risk-based approach

The Australian Government will use a risk-based framework to support the safe use of AI and prevent harms occurring from AI. This includes considering obligations on developers and deployers of AI based on the level of risk posed by the use, deployment or development of AI.

Balanced and proportionate

The Australian Government will avoid unnecessary or disproportionate burdens for businesses, the community and regulators. It will balance the

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52   DISR, *Safe and responsible AI in Australia consultation: Australian Government's interim response*, January 2024, p. 18.

53   DISR, *Safe and responsible AI in Australia consultation: Australian Government's interim response*, January 2024, p. 18.

54   DISR, *Safe and responsible AI in Australia consultation: Australian Government's interim response*, January 2024, p. 18.

need for innovation and competition with the need to protect community interests including privacy, security and public and online safety.

Collaborative and transparent

The Australian Government will be open in its engagement and work with experts from across Australia in developing its approach to the safe and responsible use of AI. It will ensure there are opportunities for public involvement and draw on technical expertise. Government actions will be clear and make it easy for those developing, implementing or using AI to know their rights and protections.

A trusted international partner

Australia will be consistent with the Bletchley Declaration and leverage its strong foundations and domestic capabilities to support global action to address AI risks. This includes substantial risks to humanity from frontier AI, addressing the high-risk applications of AI, as well as near-term risks to individuals, our institutions and our most vulnerable populations.

Community first

The Australian Government will place people and communities at the centre when developing and implementing its regulatory approaches. This means helping to ensure AI is designed, developed and deployed to consider the needs, abilities and social context of all people.[55]

2.58   The interim response indicated that, to further it's 'overall objective to maximise the opportunities that AI presents for our economy and society', the government's next steps would relate to:

- preventing harms from occurring through testing, transparency and accountability;
- clarifying and strengthening laws to safeguard citizens;
- working internationally to support the safe development and deployment of AI; and
- maximising the benefits of AI.[56]

Voluntary AI Safety Standard (2024)

2.59   At the request of the government, the NAIC is developing a Voluntary AI Safety Standard, which will help organisations using AI to achieve best practice for safe use of AI.

2.60   The NAIC convened a meeting of leading AI specialists in February 2024 to develop the scope, design principles and core content of the voluntary standard. Roundtables hosted by Responsible AI Network partners were held in March

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[55]   DISR, *Safe and responsible AI in Australia consultation: Australian Government's interim response*, January 2024, p. 19.

[56]   Australian Government, DISR, *Safe and responsible AI in Australia consultation: Australian Government's interim response*, January 2024, p. 19.

2024, with key insights and early content from the roundtables tested with a cross section of stakeholders.[57]

Temporary AI Expert Group (2024)

2.61 In February 2024, the industry minister announced the establishment of a temporary AI Expert group, which was to operate until 30 June 2024. This action arose from the government's interim response to its 2023 consultation.

2.62 The group included experts from a range of areas including law, ethics and technology, and its purpose was to advise government on testing, transparency, and accountability measures for AI in legitimate but high-risk settings to ensure the safety of AI systems.

2.63 The group was to consider a definition of 'high risk' in relation to AI technologies and uses; options for mandatory guardrail measures for high-risk systems, with a focus on testing, transparency and accountability; and options for regulatory mechanisms.[58]

Budget 2024-25 AI related measures

2.64 The Department of Industry, Science and Resources submission states that the government provided $39.9 million over five years for development of policy and capability to support the adoption and use of AI technology. The related Budget measures include:

- establishment of a permanent AI Advisory Body (effectively to continue the role carried out by the temporary AI Expert Group) to advise on AI capability development and regulatory settings to support the design, development and deployment of AI systems in high-risk settings.
- repurposing $21.6 million to bring the NAIC into the industry department in support of its role enabling industry engagement and driving collaboration on AI.
- providing $11.5 million over 2024-25 and 2025-26 to the industry department to support its role of analysing industry capability and coordinating the government's safe and responsible AI agenda.[59]

Proposals paper on guardrails for AI in high-risk settings (2024)

2.65 In September 20024, the government released a proposals paper titled *Introducing mandatory guardrails for AI in high-risk settings: proposals paper* (the proposals paper). The proposals paper followed and built upon the government's 2023 consultation on safe and responsible AI in Australia, as well as the government's interim response to that consultation process, released in

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57   DISR, *Submission 160*, p. [13].

58   DISR, *Submission 160*, pp [11-12].

59   DISR, *Submission 160*, p. [13].

January 2024, which expressed its commitment to a risk-based approach to regulating AI and to 'develop a regulatory environment that builds community trust and promotes AI adoption'.[60]

2.66   The proposals paper noted that the safe and responsible AI consultation had shown that Australia's 'current regulatory system is not fit for purpose to respond to the distinct risks that AI poses', and that overseas governments are:

> …reforming existing regulations and introducing new regulations to address the risks of AI, with a focus on creating preventative, risk-based guardrails that apply across the AI supply chain and throughout the AI lifecycle.[61]

2.67   In this context, the purpose of the proposals paper is to seek views on:

- **Defining high-risk AI:** the proposed principles for determining high-risk AI settings and their potential application to general-purpose AI models;
- **Mandatory guardrails:** 10 guardrails proposed for AI systems in high-risk settings to reduce the likelihood of harms occurring from the development and deployment of AI systems. These preventative measures would require developers and deployers of AI in high-risk settings to take steps to ensure their products are safe, including in relation to:
  - testing during development and in deployment to ensure systems perform as intended and meet appropriate performance metrics;
  - transparency about how AI products are developed and used with end-users, other actors in the AI supply chain and relevant authorities; and
  - accountability for governing and managing the risks associated with AI systems.
- **Regulatory options to mandate guardrails**: 3 options for implementing the proposed mandatory guardrails:
  - Option 1: Domain specific approach – adapting existing regulatory frameworks to include the proposed mandatory guardrails;
  - Option 2: Framework approach – introducing framework legislation, with associated amendments to existing legislation; or
  - Option 3: Whole of economy approach – introducing a new cross-economy AI Act.[62]

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[60]   DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024, p. 2.

[61]   DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024, p. 2.

[62]   DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024, p. 2.

Other AI policy guidance, initiatives and inquiries

2.68   A range of other recent policy guidance and initiatives are relevant to the development and use of AI technology in Australia. These include:

Automated Decision-Making Better Practice Guide (2019)

2.69   The Office of the Commonwealth Ombudsman *Automated Decision-Making Better Practice Guide* was originally published in 2007 and was updated in 2019. The guide offers guidance for agencies to ensure compliance with administrative law and privacy principles and best practice in the implementation of AI and ADM systems.[63]

Data and Digital Government Strategy (2023)

2.70   In December 2023, the government released the Data and Digital Government Strategy, setting out its intent to harness analytical tools and techniques, including AI and machine learning, to predict service needs, gain efficiencies in agency operations, support evidence-based decisions and improve user experience.[64]

Copyright and Artificial Intelligence Reference Group (CAIRG) (2023)

2.71   Also in December 2023, the Attorney-General announced the establishment of a Copyright and Artificial Intelligence Reference Group (CAIRG) to better prepare for future copyright challenges emerging from AI, including the use of copyright material as inputs for AI systems, potential copyright infringements in AI outputs, and the copyright status of AI outputs.[65]

Using AI to deliver public services briefing (2023)

2.72   In October 2023, the Department of Prime Minister and Cabinet published a briefing paper titled *How might artificial intelligence affect the trustworthiness of public service delivery?* The paper explores how using artificial intelligence AI to deliver public services might affect the trustworthiness of public service delivery.[66]

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63   Commonwealth Ombudsman, *Automated Decision-Making Better Practice Guide*, 2019, OMB1188-Automated-Decision-Making-Report_Final-A1898885.pdf (ombudsman.gov.au) (accessed 4 September 2024).

64   Australian Government, *Data and Digital Government Strategy*, www.dataanddigital.gov.au/about (accessed 4 September 2024).

65   Attorney-General's Department, 'Copyright and Artificial Intelligence Reference Group (CAIRG)', https://www.ag.gov.au/rights-and-protections/copyright/copyright-and-artificial-intelligence-reference-group-cairg (accessed 4 September 2024).

66   Department of Prime Minister and Cabinet, *How might artificial intelligence affect the trustworthiness of public service delivery?*, October 2023 (accessed 4 September 2024).

AI in Government Taskforce (2023)

2.73   In September 2023, the government announced the establishment of the AI in Government Taskforce, jointly led by the Digital Transformation Agency (DTA) and the industry department. The purpose of the taskforce is to help the Australian Public Service (APS) to engage with and deploy AI in a way that is safe, ethical and responsible.[67]

Government response to review of the Privacy Act 1988 (2023)

2.74   As noted above, AI technologies often involve the use of significant amounts of personal data, and thus give rise to significant privacy risks. The review of the *Privacy Act 1988* commenced in October 2020 with the release of an issues paper followed by a discussion paper in 2021, which put forward proposals for reforming the Act.

2.75   The government response to the review, published on 28 September 2023, indicated that the reforms to the Act would include consideration of their 'interaction with related but separate work on strengthening cyber security, the use of…[AI] including automated decision making and digital identity'.[68]

Interim guidance on government use of public generative AI tools (2023)

2.76   In July 2023, the DTA and industry department issued initial interim guidance on government use of publicly available generative AI platforms.[69]

List of Critical Technologies in the National Interest (2023)

2.77   In May 2023, the government issued the List of Critical Technologies in the National Interest, which was developed through a public consultation process. The purpose of the list is to 'align Australia's critical technologies ecosystem [and] support consistency and coordination across related government activity'.[70]

2.78   The list identifies critical technology fields for which Australia:

- has research and other relevant capabilities;
- needs uninterrupted access through trusted supply chains; and

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[67]   Digital Transformation Agency (DTA), 'The AI in Government Taskforce: examining use and governance of AI by the APS', www.dta.gov.au/blogs/ai-government-taskforce-examining-use-and-governance-ai-aps (accessed 4 September 2024).

[68]   AGD, *Privacy Act Review Report*, Government Response, 28 September 2023, p. 3.

[69]   DTA, *Interim guidance on government use of public generative AI tools*, https://architecture.digital.gov.au/generative-ai (accessed 4 September 2024).

[70]   DISR, *List of Critical Technologies in the National Interest*, https://www.industry.gov.au/publications/list-critical-technologies-national-interest#introduction-2 (accessed 4 September 2024).

- must retain strategic capability or maintain awareness.[71]

2.79 The list includes AI technologies, which are defined to include:

- machine learning, including neural networks and deep learning;
- AI algorithms and hardware accelerators; and
- natural language processing, including speech and text recognition, analysis and generation.[72]

Productivity Commission AI research papers (2024)

2.80 In February 2024, the Productivity Commission published three research papers around the theme of *Making the most of the AI opportunity: productivity, regulation and data access*.

- *AI uptake, productivity, and the role of government*: outlining how Australia stands to benefit most from AI technology and, consequently, where governments should focus their policy efforts;
- *The challenges of regulating AI*: considering government regulation of AI, including international approaches; and
- *AI raises the stakes for data policy*: considering how AI raises the stakes for data policy, and how Australian policymakers can address the questions about data rights and incentives that AI presents.[73]

Next Generation Graduates Program

2.81 The Next Generation Graduates Program is delivered by the Commonwealth Scientific and Industrial Research Organisation (CSIRO). The program aims to attract and train AI and emerging technology specialists to drive growth of the Australian technology sector.

2.82 The Department of Industry, Science and Resources submission noted that the 2023-24 round of the program would fund around 160 postgraduate students, including a regional stream.

Federal parliamentary inquiries

2.83 A number of federal parliamentary inquiries over recent years have considered issues relating to AI policy development. These include:

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[71] DISR, *List of Critical Technologies in the National Interest*, https://www.industry.gov.au/publications/list-critical-technologies-national-interest (accessed 14 August 2024).

[72] DISR, *List of Critical Technologies in the National Interest*, https://www.industry.gov.au/publications/list-critical-technologies-national-interest#introduction-2 (accessed 4 September 2024).

[73] Productivity Commission, *Making the most of the AI opportunity: productivity, regulation and data access*, https://www.pc.gov.au/research/completed/making-the-most-of-the-ai-opportunity (accessed 2 February 2024).

Inquiry into civics education, engagement, and participation in Australia

2.84   In March 2024, the Joint Standing Committee on Electoral Matters commenced an inquiry into civics education, engagement and participation in Australia in March 2024.

2.85   The terms of reference for the inquiry included:

> …the mechanisms available to assist voters in understanding the legitimacy of information about electoral matters; the impact of artificial intelligence, foreign interference, social media mis-and disinformation; and how governments and the community can prevent or limit inaccurate or false information influencing electoral outcomes.[74]

Inquiry into the digital transformation of workplaces

2.86   In April 2024, the House of Representatives Standing Committee on Employment, Education and Training commenced an inquiry into the digital transformation of workplaces. The inquiry is considering the rapid development and uptake of automated decision making and machine learning techniques in the workplace.[75]

Inquiry into the use of generative artificial intelligence in the Australian education system

2.87   In May 2023, the House of Representatives Standing Committee on Employment, Education and Training commenced an inquiry into the use of generative artificial intelligence in the Australian education system.

2.88   The inquiry considered issues and opportunities presented by generative AI and explored current and future impacts on Australia's early childhood education, schools, and higher education sectors.[76]

Inquiry into promoting economic dynamism, competition and business formation

2.89   In January 2023, the House of Representatives Standing Committee on Economics commenced an inquiry into promoting economic dynamism, competition and business formation.

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[74]   Joint Standing Committee on Electoral Matters, *Inquiry into Civics Education, Engagement, and Participation in Australia*, Terms of Reference, https://www.aph.gov.au/Parliamentary_Business /Committees/Joint/Electoral_Matters/Civicseducation/Terms_of_Reference (accessed 4 September 2024).

[75]   Standing Committee on Employment, Education and Training, *Inquiry into the Digital Transformation of Workplaces*, Terms of reference, https://www.aph.gov.au/Parliamentary_Business/Committees/House/Employment_Education_an d_Training/DigitalTransformation/Terms_of_Reference (accessed 4 September 2024).

[76]   House of Representatives Standing Committee on Employment, Education and Training, *Inquiry into the use of generative artificial intelligence in the Australian education system*, https://www.aph.gov.au/Parliamentary_Business/Committees/House/Employment_Education_an d_Training/AIineducation (accessed 4 September 2024).

2.90   The inquiry included consideration of the potential impacts and risks of AI in relation to competition.[77]

Inquiry into the influence of international digital platforms

2.91   In September 2022, the Senate Standing Committee on Economics 2022–23 commenced an inquiry into the influence of international digital platforms.

2.92   The committee's report, tabled in November 2023, addressed a number of the risks and challenges of generative AI such as enabling profiling on digital platforms and the generation of deep fake materials.[78]

AI policy development in other countries

2.93   This section provides an overview of significant policy initiatives being considered and implemented in overseas jurisdictions.

2.94   As noted above, the challenges for Australian policymakers in relation to the development and regulation of AI technologies are global, as countries around the world seek to implement policies that realise the benefits of AI while mitigating its significant risks.

2.95   As well as offering guidance on the available policy choices for policymakers, a number of submissions pointed to the need for Australia to ensure that its regulation of AI takes into account, and maintains some degree of consistency with, the approaches being implemented in other countries.

2.96   The ANU Tech Policy Design Centre, for example, commented:

> Tech policy and regulation does not exist in a vacuum. Policy makers should be aware of international approaches to tech policy when determining the appropriate approach for Australia, a digitally advanced liberal democratic country.
>
> A small group of countries - often the European Union, United Kingdom, and United States of America - are the most common reference point context for contextualising how countries are grappling with emerging issues. While these countries remain essential points of reference for Australia given their profile as similar digitally advanced liberal democracies, it is useful to be aware of the diverse AI governance approaches being explored by countries around the world for broader context.[79]

2.97   The submission of Deloitte Australia emphasised the importance of ensuring Australia's approach to regulating AI is compatible with international regimes:

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[77]   House of Representatives Standing Committee on Economics, *Report on the inquiry into promoting economic dynamism, competition and business formation*, March 2024, pp 14-18.

[78]   Senate Standing Committee on Economics, *Influence of international digital platforms*, November 2023, pp 153-164.

[79]   ANU Tech Policy Design Centre, *Submission 68*, p. 7.

> Implementing a flexible and globally compatible regulatory framework to facilitate cross border collaboration on AI development through shared standards and global management of challenges associated with AI will be important. Jurisdictional compatibility also reduces regulatory complexities for organisations operating in multiple countries, enabling smoother cross-border AI deployments and reduces the risk of actors gaming jurisdictional regulation.[80]

2.98 Similarly, the Australian Institute of Company Directors noted that 'to maintain competitiveness, the Productivity Commission has recommended against Australia adopting an AI regulatory approach that is inconsistent with or more stringent than that of overseas [countries]'.[81]

2.99 The CSIRO submitted that the AI policies of other advance-economy countries of relevance to Australia are those of Canada, the European Union, Singapore, the United Kingdom and the United States.[82] Some key measures from those countries highlighted by submitters are set out below.

2.100 Other submitters pointed to contrasting approaches in countries such as China and South Korea. Some key measures from those countries highlighted by submitters are also set out below.

Canada

2.101 **AI measures package**: in April 2024, the Canadian Prime Minister Justin Trudeau announced a package of measures to upgrade the country's AI capabilities. The measures will make high-performance AI computing capabilities available to Canada's AI ecosystem to build new AI models and tools; and include instruments designed to improve AI uptake and adoption by Canadian companies and supporting AI startup companies.[83]

2.102 **Artificial Intelligence and Data Act (AIDA)**: in June 2022, Canada introduced the AIDA as part of the Canadian *Digital Charter Implementation Act*, which, as at September 2024, remained under review by the Canadian House of Commons. The AIDA is similar to the European Union Artificial Intelligence Act (EU AI Act) (see below) in proposing a risk-based approach to AI that requires 'high-impact AI systems to meet safety and human rights standards'. The AIDA would also introduce criminal provisions 'to prevent reckless AI use and ensures accountability for AI systems in international and interprovincial trade'.[84]

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80   Deloitte Australia, *Submission 106*, p. 6.

81   Australian Institute of Company Directors, Submission *172*, p. 3.

82   Commonwealth Scientific and Industrial Research Organisation (CSIRO), *Submission 63*, p. 6.

83   CSIRO, *Submission 63*, p. 6.

84   Human Rights Law Centre (HRLC), *Submission 149*, p. 8.

2.103 **ADM impacts assessment**: The Australian Council of Social Service noted that Canada requires impact assessment of ADM systems to assess the risk of impacts on the rights, health or wellbeing of people; and requires certain safeguards such as human intervention where risks are high.[85]

European Union

2.104 **EU General Data Protection Regulation (GDPR)**: the GDPR is an EU regulation relating to information privacy that became effective in May 2018. The GDPR includes the individual right to opt out of automated decision-making (ADM) processes, and for a person to request human intervention in order to can contest ADM decisions'.[86]

2.105 **AI start-up measures**: announced in January 2024, these measure are intended to support European start-ups and SMEs to build and adopt AI models. They included a modification to the regulation of the European High-Performance Computing Joint Undertaking that grants startups and the wider innovation community access to supercomputers optimised for AI.[87]

2.106 **EU Artificial Intelligence Act (EU AI Act)**: the EU AI Act commenced on 1 August 2024 and establishes a regulatory and legal framework for AI within the EU. Universities Australia described the purpose of the AI Act as:

> …the first comprehensive regulation on AI…[that] will likely serve as a global standard for regulations. The Act will split [AI] applications into three categories of risk: First, applications and systems that create an unacceptable risk, such as government-run social scoring of the type used in China, are banned. Second, highrisk applications, such as a CV-scanning tool ranking applicants, are subject to specific legal requirements. Lastly, applications not explicitly banned or "high-risk" are largely unregulated.[88]

2.107 The Australian Chamber of Commerce and Industry (ACCI) submission pointed to considerations around the interaction of the AI Act with the GDPR:

> One notable concern with the introduction of…[the AI Act] is the close interaction with other general regulations, e.g. General Data Protection Regulation (GDPR): although each law has a different focus, since AI relies on data (in many cases personal data), the overlap is significant and could lead to overly complex and duplicated requirements for business.[89]

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85 Australian Council of Social Service (ACOSS), *Submission 118*, p. 4.

86 ACOSS, *Submission 118*, p. 6.

87 CSIRO, *Submission 63*, p. 7.

88 Universities Australia, *Submission 57*, p. 6.

89 Australian Chamber of Commerce and Industry (ACCI), *Submission 37*, p. 7.

Singapore

2.108 **Model AI Governance Framework**: introduced in 2019 and updated in 2020, the framework provides guidance to private sector organisations on addressing key ethical and governance issues when deploying AI solutions. It details measures to enhance transparency in AI models such as user notices and disclosures, and recommended practices for explainability and transparency including model documentation.

2.109 **Draft Model AI Governance Framework for Generative AI**: introduced in 2024, the generative AI framework expands on the 2020 framework to address issues emerging from generative AI, including a statement on content provenance and on the importance of 'transparency about where content comes from as useful signals for end-users'.[90]

2.110 **AI Verify**: an AI governance testing framework and toolkit designed to help organisations validate the performance of their AI systems against AI ethics principles through standardised tests.

2.111 **AI Verify Foundation (AIVF)**: a not-for-profit foundation to concentrate expertise from private sector organisations including Adobe, Amazon, Google, IBM and Microsoft to develop AI testing frameworks, standards and best practices.

United Kingdom

2.112 **National AI Strategy**: published in September 2021, the aim of the strategy is to provide for long-term investment and planning in relation to AI; support the transition to an AI-enable economy; encourage innovation and investment; and establish appropriate governance arrangements.

2.113 **AI policy white paper**: In March 2022, the UK government published a white paper, titled *Establishing a pro-innovation approach to regulating AI*, and setting out the government's proposals for implementing a proportionate, future-proof and pro-innovation framework for regulating AI. The Law Council of Australia noted that the key recommendation of the white paper was that:

> …the UK Government should introduce principle-based regulation, with implementation to occur through existing regulators, but with central coordination to ensure proper oversight and to address cross-cutting risks.[91]

2.114 A UK government response to the white paper was published in February 2024, which continued the emphasis on 'voluntary measures directed to AI developers' and implementation of AI measures through existing regulators.[92]

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90   TCA, *Answers to questions on notice (15)*, 21 May 2024 (received 19 June 2024).

91   LCA, *Submission 152*, p. 14.

92   LCA, *Submission 152*, p. 14.

2.115 **AI Research Resource (AIRR)**: announced in November 2023, the AIRR is a cluster of UK-based advanced, high-performance computers that can be used by UK researchers for AI research and development, and to create foundation/frontier AI models.

2.116 **UK AI bill**: in July 2024, the newly elected Starmer government announced its intention to introduce an AI bill.[93]

United States

2.117 **Executive Order on Safe, Secure and Trustworthy Development of the Use of AI**: in October 2023, President Joe Biden issued an executive order to regulate AI by mandating:

2.118 …the adoption of technical standards for AI covering safety and security concerns; the passage of data privacy legislation; measures to support workers, consumers, patients and students; and measures to promote innovation and competition.[94]

2.119 The focus of the order is on guidelines and regulation as opposed to an EU AI Act-style regulatory enforcement scheme. However, some similarities with the EU approach include 'testing and monitoring across the lifecycle of the AI system, an emphasis on post-market/post-deployment monitoring, privacy law, and adherence to cybersecurity standards'.[95]

2.120 **National Artificial Intelligence Research Resource (NAIRR) pilot**: launched in January 2024, the pilot is intended to connect researchers and educators with AI computational resources, datasets and training resources needed to advance AI development. A bipartisan bill called the CREATE AI Act to fund the NAIRR has was introduced into the US Senate in July 2023.

2.121 **Artificial Intelligence Risk Management Framework**: in July 2024, the US National Institute of Standards and Technology (NIST) released the Artificial Intelligence Risk Management Framework, which was developed in part to respond to the 2023 executive order. The framework is intended to assist organisations to identify risks posed by generative AI and proposes actions for generative AI risk management.[96]

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[93] DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024, p. 3.

[94] ACCI, *Submission 37*, p. 7.

[95] LCA, *Submission 152*, p. 16.

[96] ACCI, *Submission 37*, p. 7.

China

2.122 **New Generation Artificial Intelligence Development Plan**: introduced in 2017, the plan outlines China's goals for AI development and covers ethical norms and regulations in relation to safe development of AI technology.

2.123 **Governance Principles for a New Generation Artificial Intelligence**: introduced in 2019, the principles outline eight principles for responsible development of AI.

2.124 **AI data regulations**: China has introduced a range of specific regulations relating to security and management of data critical for AI development, including the Cybersecurity Law (2017), Data Security Law (2021) and Personal Information Protection Law (2021). Collectively, these instruments regulate how data is collected, stored, and used by imposing very strict requirements on data transfer, government access to data and data localisation.

2.125 **AI regulations**: Since 2021, China has produced a series of binding regulations described by the ANU Tech Policy Design Centre as 'some of the most significant approaches by a major power to govern AI'.[97] The regulations relate to 'recommendation algorithms, deep synthesis, generative AI, and facial recognition'

2.126 Notwithstanding the suite of AI regulations in place, the ANU Tech Policy Design Centre submission noted that 'China is now examining the creation of an overarching national AI law'.[98]

2.127 **Interim regulations on generative AI**: in 2022, China established a set of provisions regulating the impacts of algorithmically generated and recommended content. These have since been replaced with interim regulations on generative AI, intended to guide the AI industry while more comprehensive legislation is drafted.[99]

South Korea

2.128 **National Strategy on AI**: introduced in December 2019, the strategy sets out South Korea's goals for AI development and includes substantial investment in AI technologies, fostering talent and creating an AI research and development ecosystem.

2.129 **Ethical Principles in Human-Centric AI**: released in 2020, the government released the ethical principles are based on five principles of safety; fairness; transparency and accountability; cooperation; and privacy and autonomy, which serve as a foundation for more detailed regulations and practices.

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97 ANU Tech Policy Design Centre, *Submission 68*, p. 10.

98 ANU Tech Policy Design Centre, *Submission 68*, p. 10.

99 ANU Tech Policy Design Centre, *Submission 68*, p. 10.

2.130 **Personal Information Protection Act (PIPA)**: The ANU Tech Policy Design Centre observed:

> AI regulation in…[South Korea] is closely linked with their data protection laws, most notably the PIPA [that] governs the collection, use and sharing of personal data, which is crucial for operating AI systems.[100]

2.131 **Sector-specific AI regulation**: The ANU Tech Policy Design Centre also observed that South Korea has introduced regulations in areas where AI application is prevalent, such as autonomous vehicles, healthcare and finance.[101]

Risk-based regulation of AI

2.132 Many inquiry participants commented on the merits of pursuing a risk-based approach to regulating AI, with some drawing on examples from overseas jurisdictions to illustrate the respective advantages and disadvantages of risk-based regulation of AI.

Australia's adoption of risk-based regulation of AI

2.133 As noted above, the high-risk AI proposals paper has confirmed the government's commitment to a risk-based approach to regulating AI in Australia which focuses on regulating AI in high-risk settings. In confirming this approach, it noted that certain features of AI make it well suited to a 'risk based and preventative approach to regulation'. These include AI's potential to:

- cause significant harms that could spread quickly across the economy and community;
- cause harms not only to people but also to groups of people and society at large;
- cause catastrophic harm, such as via weaponisation;
- cause highly context-specific harms—for example, an AI system deployed for a particular purpose in one sector may present very low risk of harm; but applied in a different sector may present a high-risk of harm; and
- create uncertainty about harms that might arise as AI technology evolves, requiring regulatory measures that successfully adapt to new forms of AI.[102]

2.134 The high-risk AI proposals paper continues the government's consultation on safe and responsible AI commenced in 2023, by seeking views on the proposed principles for assessing whether AI systems should be classified as high risk and proposing for further public consultation three options for implementing

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[100] ANU Tech Policy Design Centre, *Submission 68*, p. 10.

[101] ANU Tech Policy Design Centre, *Submission 68*, p. 10.

[102] DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024, p. 16.

mandatory guardrails for high-risk AI.[103] It indicates that, in designing a risk based regulatory regime for AI, the government will consider:

- the levels of risk and key characteristics of known risks; and
- the balance of ex ante (preventative) and ex post (remedial) regulatory measures to effectively target and mitigate known risks of AI.[104]

Advantages and disadvantages of risk-based regulation

2.135 The government's interim response to its consultation on the 2023 *Safe and responsible AI in Australia* discussion paper described risk-based regulation as a framework in which AI model development and application to specific uses 'is subject to regulatory requirements commensurate to the level of risk they pose. It noted that a benefit of a risk-based approach is that it allows for low-risk AI development and uses to proceed while AI development and applications with a higher risk of harm are targeted by regulation.[105]

2.136 The interim response listed the benefits of a risk-based regulatory approach that were identified in submissions to the consultation as including:

- providing regulatory certainty through categorising risks and obligations;
- minimising compliance costs for businesses that do not develop or use high-risk AI;
- balancing the costs of regulation against the value of risk mitigation; and
- allowing for flexibility and responsiveness as AI technology develops.[106]

2.137 The limitations of a risk-based approach identified in submissions to the consultation included:

- risks not being accurately and reliably predicted and quantified;
- specific risks not being well captured by general categories of risk;
- unpredictable risks not being considered, particularly for frontier models designed for general-purpose application;
- risk being underestimated where assessment is voluntary or carried out via self-assessment;
- categorisation of risk being reductive and ineffective;
- lack of an appropriate legislative foundation or regulator to administer the risk-based framework; and

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[103] DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024.

[104] DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024, p. 16.

[105] DISR, *Safe and responsible AI in Australia consultation: Australian Government's interim response*, January 2024, p. 13.

[106] DISR, *Safe and responsible AI in Australia consultation: Australian Government's interim response*, January 2024, p. 13.

- diverse views on what defines high-risk AI.[107]

Approaches to risk-based regulation

2.138 The government's interim response to its consultation on the 2023 *Safe and responsible AI in Australia* discussion paper indicated that, while submitters to the consultation broadly favoured a (non-voluntary) risk-based approach to AI, there were mixed views on what form such regulation should take. It observed:

> Industry groups preferred an approach that focused on strengthening existing laws, through amendments or providing regulatory guidance. On the other hand, consumers and academic groups were more likely to call for new laws or a specific AI Act like those being pursued in the EU, Canada and Korea.[108]

2.139 A number of submitters indicated their support for stand-alone legislation to provide an overarching risk-based legislative scheme for regulating AI, similar to the approach taken by the EU AI Act. The Regional Universities Network, for example, observed:

> [The EU AI Act] risk-based approach to regulation appears compatible with the Commonwealth Government's interim response to the Safe and Responsible AI in Australia consultation process, which identifies the need for regulatory requirements commensurate to the level of risk they (specific AI systems) pose. A risk based approach allows low-risk AI development and application to operate freely while targeting regulatory requirements for AI development and application with a higher risk of harm.[109]

2.140 The Human Rights Law Centre also recommended that adoption of a regulatory model similar to the EU AI Act, noting in particular the benefits of its focus on transparency obligations:

> The EU mandates that AI developers and deployers maintain detailed documentation of their processes and products. The EU also requires that AI-generated content is identifiable, and provides clear information about the system's purpose and operations. Such transparency is essential for safeguarding human rights and ensuring public oversight and accountability.[110]

2.141 However, some inquiry participants questioned whether Australia should adopt a comprehensive legislative scheme in the manner of the EU AI Act. SBS, for example, submitted:

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[107] DISR, *Safe and responsible AI in Australia consultation: Australian Government's interim response*, January 2024, pp 13-14.

[108] DISR, *Safe and responsible AI in Australia consultation: Australian Government's interim response*, January 2024, p. 12.

[109] Regional Universities Network, *Submission 49*, p. 6.

[110] HRLC, *Answers to questions on notice (17)*, 16 July 2024 (received 30 July 2024).

Standalone AI legislation or regulations (similar to those in the European Union) are not necessarily required in Australia, as we already have relevant regulatory frameworks…thus avoiding duplication and unnecessary layers of regulation.[111]

2.142 A number of submitters and witnesses suggested that existing laws and regulatory schemes should be reviewed and adapted to regulation of AI, with new AI-specific legislation being enacted if required to address any regulatory gaps unable to be addressed by existing laws and regulations.

2.143 The Financial Services Council, for example, suggested that the AI industry should not be 'unduly burdened with red tape, particularly where industry-specific regulation already exists to mitigate the risks'.[112]

2.144 The Governance Institute of Australia (GIA) drew attention to existing statutory frameworks that could be adapted to regulate AI, including the *Corporations Act 2001*, the *Privacy Act 1988* and the Australian Consumer Law within the *Competition and Consumer Act 2010*. The GIA recommended that the government review the effectiveness of these existing schemes for regulating AI.[113]

2.145 The Digital Industry Group Incorporated (DIGI) noted that 'many uses of AI systems in Australia are already subject to regulatory frameworks'. Before enacting any AI-specific laws, DIGI urged consideration be given to clarifying and strengthening the adequacy of existing regulatory frameworks for regulation of AI.[114]

2.146 Similarly, Mrs Lorraine Finlay, Human Rights Commissioner, Australian Human Rights Commission, observed:

…there are laws already in place when it comes to, for example, discrimination…[which] already encompass technology and advances in technology, and the general principles don't change. That's where we say there is a need to use existing laws and adapt them to changing circumstances where appropriate but then identify…[any gaps or new issues] that have emerged because of AI [which] need specific regulation.[115]

2.147 However, the government's high-risk AI proposals paper identified a number of gaps and uncertainties in relation to the capacity of existing laws and regulatory schemes to address AI risks, including that:

- many existing laws were originally drafted on the presumption that humans are taking actions and making decisions, and are unclear in respect

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[111] SBS, *Submission 153*, p. 8.

[112] Financial Services Council, *Submission 135*, p. 1.

[113] Governance Institute of Australia, *Submission 143*, pp 5, 8, 10 and 13.

[114] Digital Industry Group Inc., *Submission 155*, p. 1.

[115] Mrs Lorraine Finlay, Human Rights Commissioner, Australian Human Rights Commission, *Committee Hansard*, 20 May 2024, p. 47.

of providing accountability and ensuring legal responsibility of AI
developers and deployers;

- the ability of individuals to rely on existing laws to seek redress for
potential harms caused by AI is unclear and dependent on the transparency
of the development and operation of AI models;
- there is regulatory uncertainty about the policies need to address the risks of
AI due to gaps in knowledge at the development phase of training AI
models; and
- there is uncertainty about the ability of individuals to enforce their rights
and the availability of appropriate remedies under existing laws leading to
enforcement gaps.[116]

Auditing and assurance of AI systems

2.148 A number of inquiry participants identified the need for systems of AI audit and
assurance to support the development of a responsible AI industry in Australia.

2.149 Good Ancestors Policy noted in its submission that a University of Queensland
survey of public views on AI found a strong public interest in auditing of AI
systems, with a requirement for mandatory pre-release auditing of AI being the
second most selected priority of respondents.[117]

2.150 Infosys suggested that the development of a safe and responsible AI industry
requires a new field of auditing: algorithmic auditing and assurance. The
purpose of this field would be:

> …to provide standards, practical codes, and regulations to assure users of
> the safety and legality of their algorithmic system, producing a sustainable
> ecosystem of trustworthy and responsible AI.[118]

2.151 The Kingston AI group (KAI) called more specifically for the implementation of
an AI auditing body and framework in Australia to 'help build a brand in
trustworthy AI for Australia'. Noting that the AI industry is largely based
overseas, KAI observed that, like food safety, promoting trust in AI in Australia
is 'based on holding AI companies to the statements they make about their
products, not about attempting to regulate an industry that is largely based
overseas'. The KAI submission explained:

> Rather than relying on a static legislated set of requirements, we advocate
> for a dynamic approach: the creation of an AI audit body that serves as a
> central authority for both the private and public sectors. This body would
> oversee AI applications across industries and operate in an agile and time-

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[116] DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024, pp 15-16.

[117] Good Ancestors Policy, *Submission 105*, p. 5.

[118] Infosys, *Submission 159*, p. 15.

> sensitive manner, ensuring that the system is able to evolve alongside the rapid advancements in high-performance AI models.[119]

2.152 The KAI submission cited examples of overseas jurisdictions that have already implemented audit-style schemes for AI, including in the US, UK and France.[120] A number of other inquiry participants also supported calls for establishment of a body tasked with oversight of AI, such as an AI safety institute,[121] with various functions including the evaluation of AI models and applications.[122]

Committee view

Risks of AI

2.153 AI technologies, and specifically the generative AI systems that have become prevalent in recent years, present a number of recognised risks that have the potential to cause significant harms.

2.154 The committee heard that the problem of bias in AI arises due to embedded biases within datasets used to train AI models, such as under- or over-representation of certain social groups, or due to biases in the design or application of the algorithms used by AI systems.

2.155 Depending on the context in which AI is deployed, bias in AI systems can lead to unfair, unsafe and discriminatory outcomes, particularly where the outputs of AI systems are relied on to support human decision-making as part of ADM processes. The potential for such systems to be applied to decision-making and other purposes *en masse* can amplify the scale of any harms flowing from AI bias.

2.156 Further, the committee notes that generative AI presents particular challenges due to the creative and predictive character of that particular AI technology, which can produce inaccurate, misleading or simply untrue outputs, sometimes referred to as 'hallucinations'. In high-risk settings such as healthcare and legal services, where individual safety or rights may be impacted, the potential for error in generative AI outputs poses significant policy and regulatory challenges.

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[119] Kingston AI Group, Audit standards, *Answers to questions on notice*, 9 August 2024 (received 23 August 2024).

[120] Kingston AI Group, Audit standards, *Answers to questions on notice*, 9 August 2024 (received 23 August 2024).

[121] Mr Greg Sadler, Chief Executive Officer, Good Ancestors Project, *Committee Hansard*, 16 August 2024, p. 48.

[122] See, for example: Australia for AI Safety, *Submission 96*, p. 1; Ready Research, *Submission 48*, p. 1; Infosys, *Submission 159*, p. 15; Existential Risk Observatory, *Submission 28*, p. 5; Dr Peter Slattery, *Submission 18*, p. 1; ARC Centre of Excellence on Automated Decision-Making and Society, *Submission 146*, p. 10.

2.157 More generally, the committee heard concerns about the potential for AI systems to be applied to improper and inappropriate uses, such as social scoring, compiling facial recognition databases and biometric categorisation of individuals. Further, 'frontier' AI models may possess capabilities that pose severe threats to public safety and global security, such as the ability to design chemical weapons. The committee notes that, as the current generation of AI systems are powerful, widely accessible and capable of being applied to myriad new uses, the prevention of the use of AI for problematic and catastrophic purposes is a key consideration in relation to the regulation of AI.

Transparency

2.158 The committee heard that the transparency of AI systems is a key requirement to address the problem of AI bias. Transparency of AI systems allows those using or assessing the operation of an AI system to understand how that system produces its outputs. To understand and correct AI system bias requires transparency of all those elements which have a bearing on the way that a particular AI system output is produced. This commonly includes visibility of the data on and method by which the AI system was developed and an understanding of the algorithm or 'logic' by which the system generates outputs in response to user inputs. Given the technical and complex nature of these aspects of AI systems, a key consideration for the regulation of AI is to ensure that AI systems are meaningfully transparent to the users of, and those impacted by, such systems.

2.159 Further, as noted above, as predictive systems, generative AI models are inherently creative and therefore resistant to definitive understanding of how a particular output is produced, which may mean that generative AI is unsuitable for use in certain high-risk settings.

2.160 The glaring absence of transparency from the developers of general-purpose AI models, including from those operating in Australia such as Meta, Google and Amazon, was highlighted by submitters to this inquiry, and is a matter of record in Stanford University's Foundation Model Transparency Index, among other sources. This issue is particularly acute when it comes to the data inputs to these models, and these companies resisted the committee's efforts to inquire about what data is used in training datasets, including evading questions about copyrighted data, personal information, and data from the users of their ubiquitous social media platforms and other digital services.

Risk-based regulation of AI

2.161 The committee notes that the key challenge for Australia and governments worldwide is to introduce policies and regulatory arrangements that effectively mitigate these risks of AI while fostering its vast potential economic and social benefits. This challenge has been compounded by the advent of generative AI, which has been and continues to be rapidly adopted into commercial products

and services. In this regard, policy- and law-makers worldwide are grappling with not only the as-yet-unknown potential risks of AI but also the applications and impacts of AI technologies that are already manifest.

2.162 The committee notes that, while some major jurisdictions overseas are further progressed than Australia in implementing schemes for the regulation of AI, over recent years Australia has implemented a range of policy initiatives intended to guide and foster the ethical and responsible use of AI, including the AI Ethics Framework, the National Artificial Intelligence Centre and the Voluntary AI Standard. These initiatives have served to engage and build capacity in Australia businesses and industry in relation to the development and use of AI, and such initiatives will continue to play an important role in Australia's AI ecosystem.

2.163 The committee notes that, throughout the course of the inquiry, the government has continued to progress its extensive and comprehensive consultation process on the development of safe and responsible AI in Australia, which commenced in June 2023. In January 2024, the government's interim response to the consultation acknowledged that that Australia's legal and regulatory environment is currently insufficient to address the risks of AI and indicated that it would pursue a risk-based approach to the regulation of AI, focusing on the introduction of guardrails around the use of AI in high-risk settings.

2.164 In September 2024, the government's interim response was followed by the release of a proposals paper on the introduction of mandatory guardrails for the use of AI in high-risk settings, which seeks further consultation on the proposed principles for determining high-risk uses of AI, and the mandatory guardrails that will apply to the development and deployment of high-risk AI to reduce the risks of potential harm.

2.165 The committee notes that there is broad support for the government's commitment to pursuing a risk-based approach to the regulation of AI, with inquiry participants recognising that this approach will most efficiently address the significant risks of AI while allowing for the development and deployment of low-risk uses without undue regulatory burden. A risk-based approach to regulating AI is also consistent with approaches being implemented in significant overseas jurisdictions, which is important to ensuring that Australia's AI industry can develop in parallel to the major AI industries in those countries.

2.166 In addition, the proposals paper poses three possible approaches to mandating the guardrails for high-risk AI: adapting existing regulatory frameworks to include the proposed mandatory guardrails; introducing framework legislation, with associated amendments to existing legislation; or pursuing a whole-of-economy approach via the introduction of new, cross-economy and AI-specific legislation.

2.167 The committee notes that in this regard there was a range of views presented in the evidence received by the inquiry. While there was significant support expressed for broad framework or EU AI Act-style legislation to provide a comprehensive scheme for AI regulation, there were some arguments in favour of reviewing and, if possible, adapting existing relevant laws and regulatory schemes to provide coverage of AI, particularly from the big tech companies developing general purpose AI models.

2.168 Ultimately, the committee believes the breadth and scale of the threats posed by the use of AI in high-risk settings warrants a comprehensive, whole-of-economy approach. For that reason, and for the reasons set out in the proposals paper and by many submitters to the consultation process—including that it would result in siloed, inconsistent regulation exacerbating gaps and inconsistencies in existing regulation—the committee does not support the first option, which would merely adapt existing frameworks to the proposed guardrails.

2.169 The committee sees the merits in both the second and third options put forward for implementing guardrails for AI in high-risk settings. There are specific areas of regulation where existing legislation will need to be amended to maintain and strengthen the rights and protections Australians currently enjoy, as AI becomes more ubiquitous, particularly in areas that are inherently higher risk. An example of this is provided in Chapter 4, in the context of industrial relations and work health and safety laws. Similarly, the interim report highlighted the need for reforms specific to the use of AI in political and electoral contexts.

2.170 However, without a whole-of-economy approach to AI regulation there is a risk of fragmentation and, as specific areas of law or uses of AI are prioritised for reform, there is a risk that certain rights and protections fall through the cracks. Given the rapidly developing nature of AI technology, there would also be logistical challenges associated with potentially needing to frequently refresh reforms across so many different pieces of legislation.

2.171 A whole-of-economy approach, such as a standalone AI Act, would address these issues and would not preclude targeted reforms to existing legislation where it is particularly warranted. The committee acknowledges that this approach could potentially introduce undesirable duplication, and the specific implementation of this approach should seek to minimise this risk. However, the committee believes the benefits of whole-of-economy coordination and coverage; regulatory efficiency; and cohesion with the approaches or intended approaches of other jurisdictions, including the EU, Canada, the UK and the US (including Colorado), outweigh these limitations.

Recommendation 1

2.172 That the Australian Government introduce new, whole-of-economy, dedicated legislation to regulate high-risk uses of AI, in line with Option 3

presented in the government's *Introducing mandatory guardrails for AI in high-risk settings: proposals paper.*

2.173 The proposals paper also asks whether a principles-based or list-based approach should be adopted to defining high-risk uses of AI. The committee believes a purely list-based approach may be overly prescriptive and risk unintentionally omitting high-risk uses, particularly given the fast-moving nature of AI technology and its applications. On the other hand, a purely principles-based approach may create uncertainty. Accordingly, the committee supports a principles-based approach with a non-exhaustive list of examples of high-risk uses. This approach was supported in the consultation on the proposals paper by a number of submitters, ranging from the Law Council of Australia to the Tech Council of Australia.

Recommendation 2

2.174 That, as part of the dedicated AI legislation, the Australian Government adopt a principles-based approach to defining high-risk AI uses, supplemented by a non-exhaustive list of explicitly defined high-risk AI uses.

2.175 A significant amount of the inquiry's time was dedicated to discussion of the structure, growth and impact of general-purpose AI models, including the LLMs produced by large multinational technology companies. Some of these firms appeared before the committee, such as Amazon, Meta and Google.

2.176 There are unique risks and concerns associated with the operation of these models, which have only intensified through the committee's direct interaction with the developers. These include the lack of transparency around the models, the massive market power these companies already enjoy in their respective fields, their record of aversion to accountability and regulatory compliance, the overt and explicit theft of copyrighted information from Australian copyright holders, the non-consensual scraping of personal and private information, the potential breadth and scale of the models' applications, and the disappointing avoidance of this committee's questions on these topics.

2.177 The committee believes these issues warrant a regulatory response that explicitly defines general purpose AI models as high-risk. In doing so, these developers will be held to higher testing, transparency and accountability requirements than many lower-risk, lower-impact uses of AI. While some of these firms have opposed this proposition in their submissions on the proposals paper, including on the basis of compliance being burdensome, the firms with the resources to develop these models have the resources to, at the very least, comply with such requirements.

Recommendation 3

2.178 That the Australian Government ensure the non-exhaustive list of high-risk AI uses explicitly includes general-purpose AI models, such as large language models (LLMs).

Chapter 3
Developing the AI industry in Australia

3.1 Chapter 2 considered the general risks of Artificial Intelligence (AI) and potential regulatory and policy approaches to managing the risks of AI technologies.

3.2 This chapter considers the evidence received by the inquiry regarding the potential opportunities and benefits of AI technology and proposals for developing the AI industry in Australia.

Snapshot of the Australian AI industry

AI companies in Australia

3.3 The *Australia's artificial intelligence ecosystem: Catalysing an AI industry* report (the AI ecosystem report) is produced by the National Artificial Intelligence Centre (NAIC). This purpose of the report is to provide a snapshot of the current state of Australia's AI ecosystem to inform future strategy and policy decisions about its growth and development.[1]

3.4 The AI ecosystem report defines Australia's AI ecosystem as comprising startups; small-to-large-sized companies; universities; education, training and research institutes; industry organisations; and public sector agencies engaged in developing and applying AI technologies. In 2023, the AI ecosystem report identified '544 companies in Australia whose main business activity is developing and selling AI products and services'. These companies sit within a 'broader ecosystem' of more than 336,000 technology companies in the professional, scientific and technical services industry and close to 25,000 firms in the information, media and telecommunications industries.[2]

3.5 The AI ecosystem report found that AI companies in Australia provide a range of products and services, with data services, finished solutions and consulting being the most common. Australian AI companies providing their services to a wide range of customer industry groups, with the most common being software; data and analytics; science and engineering; and professional services.[3]

3.6 About 85 per cent of Australian AI companies have 50 or fewer employees. However, there are 13 Australian publicly listed AI companies trading on the

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[1] National Artificial Intelligence Centre (NAIC), *Australia's artificial intelligence ecosystem: Catalysing an AI industry*, December 2023, p. 6.

[2] NAIC, *Australia's artificial intelligence ecosystem: Catalysing an AI industry*, December 2023, p. 6.

[3] NAIC, *Australia's artificial intelligence ecosystem: Catalysing an AI industry*, December 2023, pp 2 and 14.

Australian Stock Exchange and internationally (UK and USA). The combined market capitalisation of these companies was approximately $73 billion in 2023.[4]

AI skills and jobs in Australia

3.7   The Australian AI ecosystem report indicates that the demand for AI-related skills is growing in Australia and internationally. For example, in 2022, 2.1 per cent of all job postings in the USA were AI-related. Australia was ranked third in AI job postings, with 1.2 per cent of all job postings in 2022 being AI-related. Demand for AI jobs has been growing faster in Australia relative to international comparisons, with the share of AI-related job postings increasing by more than seven times between 2014 and 2022, roughly double that of peer nations.[5]

Developing Australia's AI industry

3.8   The essential challenge for Australia is to develop its AI industry through policies that maximise the widespread opportunities afforded by AI technologies, while ensuring appropriate protections are in place. Such policies could comprise a mix of, for example, direct regulation, such as AI-specific laws, regulations and codes, and other support measures, such as targeted funding, infrastructure development and capability and skills building.

Use of AI in Australia to date

3.9   The committee's inquiry occurs in a context of heightened public interest in AI technology, much of which followed the release in November 2022 of ChaptGPT. However, despite the relatively recent interest in more widely accessible generative AI models, AI has been employed over recent years in various aspects of the Australian society and economy to deliver significant benefits. This includes, for example:

- using AI to consolidate large amounts of patient data to support diagnosis and early detection of health conditions;
- AI tools to help evaluate and optimise engineering designs to improve building safety;
- using AI to expedite travel at airports through the use of SmartGates;
- using AI to support personalised learning and teaching in remote areas; and
- AI-enabling improvements and cost savings in the provision of legal services.[6]

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[4]   NAIC, *Australia's artificial intelligence ecosystem: Catalysing an AI industry*, December 2023, p. 23.

[5]   NAIC, *Australia's artificial intelligence ecosystem: Catalysing an AI industry*, December 2023, p. 24.

[6]   Department of Industry, Science and Resources (DISR), *Safe and responsible AI in Australia*, Discussion Paper, June 2023, pp 3 and 7.

3.10 The submission from the Department of Home Affairs (DHA) noted that 'products and services that utilise AI are already broadly in use across the Australian economy', and summarised these as being generally in relation to:

- Automated decision making (ADM): machine-based systems that make predictions, recommendations or decisions based on a given set of human defined objectives;
- content curation or recommendations: systems that prioritise content or make personalised content suggestions to users of online services; and
- generative AI: sophisticated machine learning algorithms used to predict an output, such as images or words, based on a prompt.[7]

3.11 The Digital Transformation Agency (DTA) observed that past uses of AI by government have typically been 'in the form of narrow applications that perform specific tasks within defined domains', with the technical expertise and costs of deploying and operating AI forming a 'natural barrier to adoption for many agencies.'[8] More recently, however, there has been a rapid development driven by generative and general purpose AI:

> Generative AI has changed this and brought AI to the masses with large language models such as ChatGPT being widely accessible, easy to use and interact with, while also delivering outputs that often require no technical expertise.[9]

3.12 The DHA submission noted that the development of AI products and services in Australia is 'rapidly accelerating' and that 'significant investment by industry and governments is driving unprecedented advancements in AI'.[10]

3.13 However, the Australian government's June 2023 *Safe and responsible AI in Australia* (the 2023 AI discussion paper) observed that, relative to other countries, adoption rates of AI across Australia remain relatively low', due in part to low levels of public trust and confidence of Australians in AI technologies and systems.'[11]

Transformative nature of AI

3.14 The submissions provided to the inquiry reflect the understanding, both in Australia and globally, that the current state of AI technology brings with it profound opportunities across a broad and rapidly increasing range of uses.

3.15 The Tech Council of Australia, for example, observed that 'AI is one of the most transformative technologies of our time, offering significant economic, social,

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[7] Department of Home Affairs (DHA), *Submission 55*, p. 2.

[8] Digital Transformation Agency (DTA), *Submission 53*, p. 2.

[9] DTA, *Submission 53*, p. 3.

[10] DHA, *Submission 55*, p. 3.

[11] DISR, *Safe and responsible AI in Australia*, Discussion Paper, June 2023, p. 3.

environmental, and strategic opportunities'.[12] This view was also expressed in the 2023 AI discussion paper:

> …AI presents significant opportunities for Australia to improve economic and social outcomes. AI has been identified as a critical technology in Australia's national interest. In its recent 5-year Productivity Inquiry report, the Productivity Commission (PC) identified AI as one of the transformative digital technologies that can help to drive productivity growth in Australia including through the support it provides for the production and adoption of robotics. McKinsey has estimated that automation, including AI, could cumulatively add between $1.1 trillion and $4 trillion to the Australian economy by the early 2030s.[13]

3.16 The opportunities arising from potential applications of AI apply broadly across virtually all areas of government, society and the economy. The DHA submission, for example, noted the potential breadth of application for AI in the delivery of government services:

> As [AI] technologies mature, government will increase automation and machine learning into core business roles such as risk, strategy, resource allocation and delivery. AI is an attractive and scalable solution to improving our service offerings to the public with increased sophistication.[14]

3.17 In relation to the economy and society, the Tech Council of Australia submitted that AI offered 'major benefits across Australia's key industry and service sectors', including education, manufacturing, agriculture finance, professional services, telecommunications and public transport. It also noted the use of AI to solve 'pressing societal and global challenges' through 'research and scientific discovery at the frontier, as well supporting ground-breaking applications' in fields such as astronomy, biology and ecology.[15]

3.18 The Department of Industry, Science and Resources (DISR) identified the following general areas of opportunity for increased use of AI and AI innovation:

- **Automation:** automation of simple or repetitive tasks like writing emails or summarising documents, thereby freeing up human workers to focus on tasks that require human input like care, leadership and creative problem-solving. For example:

  - healthcare: use of AI for to assist with analysis of medical imagery, diagnosis, predicting patient outcomes and administrative tasks;

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[12] Tech Council of Australia (TCA), *Submission 37*, p. 2.

[13] DISR, *Safe and responsible AI in Australia*, Discussion Paper, June 2023, p. 7.

[14] DHA, *Submission 55*, p. 3.

[15] TCA, *Submission 37*, pp 2-3.

- education: use of AI classroom assistants for individualised, step-by-step math and reading instruction; and
- manufacturing: use of AI to assist with quality control, such as inspecting for and identifying the root cause of defects; supply chain optimisation; demand forecasting and balancing inventory levels.

- **Skills shortages:** addressing skills shortages in areas of need. For example:

  - agriculture: use AI to monitor crops; conduct quality checks; assist in planting and harvesting; and improve yields;
  - recruitment: use AI to identify broader talent pools and reduce bias in selection processes;
  - science, technology, engineering and maths: use generative AI, which has been shown to perform well at such tasks, to alleviate skills shortages; and
  - aged care: use of AI-connected motion to detect deviations in the regular movements of people living with dementia and alert carers.

- **AI-driven innovation:** facilitating innovation across industries by using AI to develop new products, services and business models. For example:

  - pharmaceuticals: use of AI to screen existing medicines for new applications and predict which molecules can treat different illnesses;
  - medicine: use of AI to circumvent medical professionals' assumptions or knowledge limitations and reduce disparity in health outcomes for women and culturally and linguistically diverse groups; and
  - environment: use of AI to empower traditional owners to respond to environmental challenges and support caring for country.

- **Decision-making:** use of AI to improve the quality of decisions. For example:

  - renewable energy and emissions reduction: use of AI for forecasting renewable energy production; and analysing weather patterns, historical data and grid conditions to predict the output of renewable energy sources like solar or wind power; and
  - mining: use of AI to provide real-time information to support quicker and more precise decisions about hazardous conditions, thereby lowering the chance of injuries.

- **User experience and accessibility:** creating tailored or personalized approaches to improve user experience or accessibility through use of AI-powered systems like chatbots. For example:

  - physical/cognitive impairment: use of AI for converting text to speech and vice versa; summarising; and translating or interpreting different languages, accents or speech disorders;

– personal security: 24/7 chatbots for domestic violence survivors that leave no digital trail and require no download or registration, to provide secure and fully encrypted services (including secure evidence collection); and

– hospitality industry: use of AI virtual assistants accessed through a hotel website or app to assist guests with things like check-ins, ordering room service and planning holiday activities.[16]

Developing Australia's sovereign AI capability

3.19 Many submissions identified the development of Australia's 'sovereign capability' in respect of AI technology as a key strategy for realising its many opportunities.[17]

3.20 The Commonwealth Scientific and Industrial Research Organisation (CSIRO) described sovereign capability as follows:

> Sovereign capability relates to the ability of [a] country's governments, industry and society to use technologies productively and effectively to meet their needs in the absence of any inputs sourced from other countries.

> With respect to AI, sovereign capability includes the availability (and scalability) of high performance computing infrastructure, secure data storage, skilled technical workers, datasets for training/adapting AI models and the ability to manage/regulate AI model use in Australia.[18]

3.21 The CSIRO noted that sovereign capability also includes the notion of data security:

> AI systems vacuum-up vast quantities of data. They need this data to work, but if the data is sensitive, private or confidential that can cause concerns for citizens or governments about whether the data is secure. If the models are built (trained) and operated within Australia then data sovereignty is improved. It is important to address the need for data sovereignty and ensuring…Australian data is stored and processed within national borders when necessary.[19]

3.22 Sovereign capability therefore can refer broadly to the development and regulation of all the elements comprising an Australian AI industry, across both government and private sectors.

3.23 The Australian Chamber of Commerce and Industry submitted that fostering the Australian AI industry involves more than managing innovation through rules and regulations, arguing that government needs to provide the right

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[16] DISR, *Submission 160*, pp 4-6.

[17] See, for example: Science & Technology Australia, *Submission 161*, p. 1; Kingston AI Group, *Submission 122*, p. 2; La Trobe University, *Submission 186*, p. 1; Deloitte, *Submission 106*, p. 3; Accenture, *Submission 97*, p. 6; Australian Alliance for AI in Healthcare, *Submission 234*, p. 5; and Insurance Council of Australia, *Submission 46*, p. 2.

[18] Commonwealth Scientific and Industrial Research Organisation (CSIRO), *Submission 63*, p. 5.

[19] CSIRO, *Submission 63*, p. 6.

conditions and incentives to support new operating models and business ideas; realise efficiency gains; and increase productivity and competitiveness. This could involve measures like regulatory sandboxes; industry codes of conduct; voluntary technical standards; ethical principles; skills investment; and research and development.[20]

3.24   The ANU Integrated Artificial Intelligence Network submitted that fostering the development of the AI industry in Australia also requires measures to promote professionalism in the supply and use of AI services more generally. This could include measures relating to, for example, industry codes of conduct; recognition of qualifications; non-discriminatory accreditation and registration; insurance, including public liability, product liability and professional indemnity schemes; and educational support and services relevant to all phases of AI development.[21]

3.25   A number of submissions commented on measures required to develop a responsible and ethical AI industry. The University of Sydney Faculty of Engineering and Information Technology, for example, identified transparency and trustworthiness of AI systems; preserving personal privacy and cybersecurity; and ethical guidelines for the adoption of AI as key aims for supporting the AI industry in Australia.[22] In relation to small and medium business enterprises (SMEs), for example, these aims could be pursued by:

- identification of risks and harms arising from the adoption of AI by SMEs;
- development of solutions to mitigate risks and harms particular to SMEs;
- development of AI ethics assurance approaches focused on the use and development of AI by SMEs;
- development of guidelines for the adoption of generative AI by SMEs;
- providing training for and consultation with SMEs in relation to the responsible use of AI; and
- engaging SMEs in the co-design of AI solutions with various stakeholders.[23]

Benefits of developing sovereign capability

3.26   Many submission to the inquiry noted the importance of Australia developing its sovereign capability in relation to AI technology.

3.27   Science & Technology Australia, for example, noted that Australia would be letting 'key opportunities slip past' if it were to rely on 'foreign off-the-shelf capabilities rather than invest in our own AI industry and…workforce'. A 'deep sovereign capability' would allow Australia to develop AI technologies that are

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[20]   Australian Chamber of Commerce and Industry, *Submission 37*, pp 9-10.

[21]   ANU Integrated Artificial Intelligence Network, *Submission 66*, p. 5.

[22]   University of Sydney Faculty of Engineering and Information Technology, *Submission 62*, p. 5.

[23]   University of Sydney Faculty of Engineering and Information Technology, *Submission 62*, p. 5.

'relevant, appropriate and safe' for Australian society, avoid dependency on other countries, and realise sustained economic benefits.[24]

3.28 The Pawsey Super Computing Research Centre and the Curtin University Institute for Data Science noted that, while many countries are making significant investments in national AI programs, the level of investment in Australia is relatively low. It called for Australia to invest significantly in the establishment of sovereign AI capability to improve the pace of AI development and adoption into practical applications, develop its AI workforce and maintain its international competitiveness in research and industry.[25]

3.29 The Deloitte submission observed that sovereign AI capabilities would allow Australia to meet forecast workload requirements for government and defence through domestic rather than international solutions; and provide an opportunity for 'the public and private sectors to work together to provide infrastructure for these needs'.[26]

3.30 The Kingston AI Group identified the development of an Australian AI industry as an opportunity to reinforce Australia's 'existing brand of being a provider of premium, responsible and safe products'. It considered that fostering a responsible AI industry can be supported by:

- targeting funding to deliver quality training to current and prospective Australian AI professionals;
- defining what responsible AI is so that Australian companies can understand and develop it;
- prioritising funding to development of responsible AI generally rather than targeting particular sectors;
- supporting whistleblowing and penalising irresponsible AI; and
- government becoming an early adopter of responsible AI.[27]

3.31 In relation to parliament and the public sector, the Community and Public Sector Union (CPSU) identified four areas of reform to foster responsible the responsible development and use of AI: privacy reform and ethical sourcing of data; inclusive AI development; public education and awareness; and establishing a federal Parliamentary Science and Technology Office. Elaborating on its proposal for a Parliamentary Science and Technology Office, the CPSU stated:

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24 See, for example: Science & Technology Australia, *Submission 161*, pp 1-2.

25 Pawsey Super Computing Research Centre and the Curtin University Institute for Data Science, *Submission 130*, pp 1-2.

26 Deloitte, *Submission 106*, p. 5.

27 Kingston AI Group, *Submission 122*, p. 4.

> As the use of AI increases, we must continue to build and improve relevant expertise within both Parliament and the public sector.
>
> Decision-makers will need greater assistance navigating the issues associated with emerging technologies such as AI. The overload of information available and the need for greater science literacy means that science advisory mechanisms that can help our parliamentarians grapple with these challenges are more important than ever.
>
> A dedicated technology assessment office, known as the Parliamentary Science and Technology Office should be established, providing a similar non-partisan and independent function to the Parliamentary Library and Parliamentary Budget Office to inform parliamentary debate.[28]

Development of an Australian foundation AI model

3.32   In addition to its broader meaning, 'sovereign capability', and similar phrases such as 'sovereign AI' and 'sovereign LLM', can refer more specifically to control or ownership of a specific AI model or system. Professor Nicholas Davis noted that sovereign capability in this sense can refer to an AI model or system that possesses one or more of the following three characteristics:

- an AI system controlled by a government for its own secure use…(for example, a Large language Model (LLM) that can be used exclusively and with complete independence by a state);
- an AI system developed or trained using national datasets, values and languages for specific, nationally-oriented purposes (for example, an LLM optimised for sovereign purposes or that reflects national characteristics); and
- an AI model trained 'from scratch' by or for a specific country that gives government knowledge and oversight of the training data and process used for developing the model and surrounding system components (for example, an LLM that is entirely the product of Australian efforts).[29]

3.33   At a general level, Professor Nicholas Davis observed that the development of sovereign AI models in Australia would require government to establish 'clear laws and a correspondingly effective regulatory environment'.[30]

3.34   The 2024 CSIRO report titled *Artificial Intelligence foundation models Industry enablement, productivity growth, policy levers and sovereign capability considerations for Australia* (2024 AI report) identified a number of 'generic policy levers'

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[28]   Community and Public Sector Union, *Submission 219*, p. 6.

[29]   Professor Nicholas Davis, Human Technology Institute (HTI), *Answers to questions on notice (3)*, 21 May 2024 (received 26 June 2024), p. 1.

[30]   Professor Nicholas Davis, Co-Director, HTI Industry; and Professor, Emerging Technology, University of Technology Sydney, *answers to questions on notice (3)*, 21 May 2024 (received 26 June 2024).

available to government to address 'sovereign capability issues relating to foundation models'. These include:

- building high performance computing (HPC) infrastructure and democratising and prioritising access;
- negotiating bilateral or multi-lateral international collaborations to share AI expertise and resources;
- increasing workforce skills via training, education and improved access to national and global talent pools;
- developing resources, policies, regulations and testing systems to ensure that the development of AI foundation models is productive, safe and ethical;
- identifying, validating and making available datasets that could be used to train AI foundation models; and
- investing in building, adapting (fine-tuning) and applying AI foundation models to improve government functions.[31]

3.35 The concept of developing sovereign capability in this regard thus refers specifically to the development of foundation AI models which encompass '[LLMs]…and other AI systems that rely on foundation model architectures'.[32] A number of participants in the inquiry offered views on whether Australia should pursue the development of its own foundation AI model.

Benefits of developing a foundation AI model

3.36 Foundation AI models in themselves offer benefits through the wide range of applications or uses for which they can be employed for significant productivity gains. In the case of LLMs, for example, this could include 'analysing documents and other data and holding conversations in natural language'.[33] However, Professor Nicholas Davis observed:

> Intensifying the safe and responsible use of foundation models – and deepening Australian understanding of how they work – may be beneficial for reasons other than their application in text analysis and generation. The mathematical and data science techniques that power LLMs can also be turned to myriad other positive uses, such as drug discovery.[34]

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[31] CSIRO, *Artificial Intelligence foundation models: Industry enablement, productivity growth, policy levers and sovereign capability considerations for Australia*, March 2024, pp 22-25.

[32] Professor Nicholas Davis, HTI, *Answers to questions on notice (3)*, 21 May 2024 (received 26 June 2024), p. 1. As noted in Chapter 1, a 'foundation model' is a general purpose AI model that forms the basis of more specialised AI systems. Examples of such systems include GPT-4, AI21 Jurassic and BLOOM.

[33] Professor Nicholas Davis, HTI, *Answers to questions on notice (3)*, 21 May 2024 (received 26 June 2024), p. 3.

[34] Professor Nicholas Davis, HTI, *Answers to questions on (3)*, 21 May 2024 (received 26 June 2024), pp 3-4.

3.37 Professor Davis said that, of a number of potential benefits that could flow from developing a sovereign AI capability, two were of particular importance given the 'current state of AI awareness, adoption, and governance in Australia, and the fast-moving nature of foundation model technologies'.[35] These were:

- the potential for spurring specialised job creation and innovation; and
- advancing research and knowledge in the technical, strategic and organisational aspects of foundation model development and use.[36]

3.38 Professor Davis advised that a locally developed or deployed foundation AI model could also provide benefits relating to:

- **system and data privacy and security**: the model could be designed with increased security and system and data privacy;
- **data and system control**: the model could be operated with greater levels of control over, for example, data inputs, computational and power usage and environmental impacts;
- **reduced dependence on foreign providers**: the model would be less exposed to the risk of external influence or disruption by foreign providers.
- **nationally determined purposes**: the model could be designed or adapted to address specific national challenges and needs.
- **Australian law, culture and language**: the model would be better able to understand and generate text in Australia's most used languages; and could incorporate colloquial context and Australian legal norms.
- **trust and adoption of AI systems**: an Australian foundation model could increase public trust and encourage the adoption of AI more generally.[37]

3.39 Similarly, Professor Anton van den Hengel argued that the key benefits of developing an Australian LLM would be much broader than the utility of the model itself:

> The benefit from building a large language model is not only that we get a large language model. Having a large language model is a subsidiary benefit of the process of building a large language model. The reason to build a large language model is that it's one step on the path towards building the infrastructure for an AI industry.[38]

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[35] Professor Nicholas Davis, HTI, *Answers to questions on notice (3)*, 21 May 2024 (received 26 June 2024), p. 5.

[36] Professor Nicholas Davis, HTI, *Answers to questions on notice (3)*, 21 May 2024 (received 26 June 2024), p. 4.

[37] Professor Nicholas Davis, HTI, *Answers to questions on notice (3)*, 21 May 2024 (received 26 June 2024), p. 4.

[38] Professor Anton van den Hengel, Director, Centre for Augmented Reasoning, Australian Institute for Machine Learning, University of Adelaide; and Chair, Kingston AI Group, *Committee Hansard*, 16 July 2024, p. 3.

3.40 The CSIRO also noted that the development of sovereign AI models in Australia, using Australian data, would assist in the establishment of Australia's AI industry:

> Sovereign capability is an important consideration in the adoption of AI technology and the competitive interests of Australian workers and firms as next generation frontier/foundation AI models take hold. There is scope to build more of these models in Australia with Australian data. This will improve data security and make the models work better in Australian context. Understanding the gaps in our sovereign capability and identifying ways to fill these gaps can also help Australia's own AI industry emerge.[39]

3.41 The Accenture submission emphasised the importance of data quality to the performance of AI model performance, in calling for the Australian government to work with industry to explore ways of 'sharing of sovereign data to help incubate Australian-based model development and give Australian businesses a competitive advantage'.[40]

3.42 Beyond the direct benefits to the Australian AI industry of developing a sovereign foundation AI model, Professor van den Hengel observed that the development of an Australian LLM could have important revenue implications. Noting that profits from foreign-owned technologies used in Australia, such as Google, Facebook and Uber, are delivered to overseas companies, Professor van den Hengel observed there is a very real risk that products developed using foreign-owned AI models could disrupt important Australian industries, such as mining and agriculture, and see further offshoring of profits.[41]

3.43 Per Capita's Centre of the Public Square noted that foreign ownership of dominant companies like Google and Facebook had seen a transition of 'public communications infrastructure from publicly managed platforms to privately owned digital products' and warned of a similar market dominance developing in AI around a small number of foreign companies, notably Google, Microsoft and Meta. It therefore called for the development of sovereign AI capability in Australia through the building of 'critical infrastructure and systems' for AI in Australia.[42]

3.44 The CSIRO also cautioned about the potential risks to Australia of market domination of the AI industry by foreign companies:

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[39] CSIRO, *Submission 63*, p. 1.

[40] Accenture, *Submission 97*, p. 3.

[41] Professor Anton van den Hengel, Director, Centre for Augmented Reasoning, Australian Institute for Machine Learning, University of Adelaide; and Chair, Kingston AI Group, *Committee Hansard*, 16 July 2024, p. 2.

[42] Mr Jordan Guiao, Director of Responsible Technology, Centre of the Public Square, Per Capita, *Committee Hansard*, 21 May 2024, p. 13.

> Sovereign capability is important when it comes to AI because the vast bulk of AI tools Australians use are sourced from offshore. This is a great opportunity when these tools are readily available, work appropriately and are reasonably priced. However, this can rapidly change. There are concerns about market concentration and monopoly power associated with generative AI models (e.g. large language models). One firm can dominate the marketplace making it difficult for Australian firms to compete.[43]

3.45 Similarly, Xaana.AI observed that 'monopolistic control over AI technologies' by global tech giants stifles the growth and competitiveness of local AI firms…[and] undermines the development of a sovereign AI industry in Australia. It noted:

> Heavy reliance on international AI technologies might impede Australia's economic independence…[whereas] developing local AI solutions would not only retain economic benefits within the country but also foster innovation that is uniquely tailored to Australia's requirements, offering long-term advantages.[44]

3.46 Professor Nicholas Davis considered that the availability of an Australian foundation model could increase public trust in use of AI and spur its safe and responsible adoption.[45] The Insurance Council of Australia also commented on the potential for the development of sovereign Australian AI to foster public trust in the use and adoption of AI:

> …improving Australia's sovereign AI capabilities will also help to build Australian values into AI systems deployed here. As the Kingston AI Group states "AI systems are designed and based on programs reflective of the attitudes and value systems of their creators. This may lead to a mismatch where the importing country does not align with the value systems of the receiving country."
>
> Building in our values will help foster responsibility in AI supply chains and foster trust and transparency between deployers of AI including business and government and the consumers who interact with AI.[46]

3.47 La Trobe University observed that Australia's renewable energy resources would offer a natural advantage for operating computing HPC facilities with 'accelerated data and computing power for building sovereign AI capabilities':

> The natural resource advantage for Australia in building AI factories is the almost unlimited supply of renewable energy (solar, wind, hydrogen) for powering these factories, which could also incentivise leading frontier AI companies to invest in Australian infrastructure.[47]

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43   CSIRO, *Submission 63*, p. 1.

44   Xaana.Ai, *Submission 167*, p. 2.

45   ANU integrated Artificial Intelligence Network, *Submission 66*, p. 5.

46   The Insurance Council of Australia, *Submission 46*, p. 2.

47   La Trobe University, *Submission 186*, p. 1.

Cost of developing a sovereign AI model in Australia

3.48   In relation to the approach to developing sovereign AI models in Australia, the CSIRO 2024 AI report noted that developing sovereign AI capability could involve different approaches:

> Sovereign capability doesn't necessarily mean the whole AI model is developed and managed from within Australia; it's about our ability to manage the way the model is used and our ability to maintain socio-economic activity if the model is made too costly, inaccessible or abruptly changed in some way. Sometimes this might mean building and operating the model from within Australia; other times it may mean having the skills, resources and optionality to manage models built offshore.[48]

3.49   The infrastructure requirements and cost of developing a sovereign AI model in Australia would differ depending on whether it was done by independently developing a LLM or foundation AI model, or by fine-tuning a model developed elsewhere.[49]

3.50   For example, the evidence received by the inquiry suggests that the cost of independently developing a sovereign LLM in Australia would be significant. In particular, the training of AI models requires HPC facilities employing multiple servers housing multiple graphics processing units (GPUs). As an illustration, the committee heard that a single Nvidia H100, for example, a leading industry benchmark GPU, costs approximately AUD$40,000-50,000. The Nvidia DGX server, which houses eight H100 GPUs, costs approximately AUD$450,000.[50]

3.51   Overseas initiatives to establish collaborative AI research centres that provide access to HPC facilities, such as the US National Artificial Intelligence Research Resource (NAIRR) and EU AI factories, are therefore estimated to involve investments in the multi-billion-dollar range to deliver 'sizeable GPU systems that will house thousands to tens of thousands of GPUs, associated data centres, data storage and other ancillary equipment'.[51]

3.52   In the private sphere, foundation models such as OpenAI's ChatGPT have demanded large investments. While not publicly disclosed, it has been estimated that a cluster comprising 10,000 GPUs was used to train recent OpenAI ChatGPT models. If an OpenAI ChatGPT model AI was developed using a HPC cluster of 1,250 Nvidia DGX servers, the cost would be

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48   CSIRO, *Artificial Intelligence foundation models Industry enablement, productivity growth, policy levers and sovereign capability considerations for Australia*, March 2024, p. 19.

49   CSIRO, *Answers to questions on notice (10)*, 20 May 2024 (received 17 June 2024), p. [4].

50   CSIRO, *Answers to questions on notice (10)*, 20 May 2024 (received 17 June 2024), p. [4].

51   CSIRO, *Answers to questions on notice (10)*, 20 May 2024 (received 17 June 2024), p. [4].

approximately $563 million, and likely approaching $1 billion with the addition of ancillary costs.[52]

3.53   In contrast, the committee heard that an alternative approach of fine-tuning a pre-trained foundation model from commercial, open-source or international partners on sovereign datasets could be achieved with 50 Nvidia DGX servers for a cost of approximately $100 million including ancillary costs.[53]

Risks associated with developing a sovereign AI model in Australia

3.54   However, some inquiry participants observed that the building of sovereign AI capability, and particularly a sovereign AI model, in Australia is not without risk.

3.55   The Australian Research Data Commons, for example, noted that, while the policy rationale for developing sovereign capability is sound, the development of a sub-par model that was not competitive globally would not be able to deliver the benefits sought, and that Australia's relative lack of infrastructure and expertise means a wholly Australian manufactured option is out of the question.[54]

3.56   Monash University submitted that, with the most powerful LLMs residing in large technology companies, no large Australian LLM initiative exists that could compete with those companies; and called for Australia to advocate for the development of a global open LLM through an international consortium of public science and governments.[55]

3.57   Professor van den Hengel submitted that, while government investment would be required to drive development of an Australian foundation model, that investment should be directed towards incentivising and supporting the private sector, rather than government, to develop new models based on commercial imperatives.[56]

3.58   Similarly, Professor Nicholas Davis suggested that government should refrain from a 'moonshot-style effort' to create an Australian AI foundation model and should instead support a range of policies to promote the development and use of foundation models and AI technology more generally that promise significant benefits for Australia. Professor Davis suggested that independent analysis of the technical, economic and legal aspects of developing AI would be

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[52]   CSIRO, *Answers to questions on notice (10)*, 20 May 2024 (received 17 June 2024), p. [4].

[53]   CSIRO, *Answers to questions on notice (10)*, 20 May 2024 (received 17 June 2024), p. [4].

[54]   Australian Research Data Commons, *Submission 217*, p. 3.

[55]   Monash University, *Submission 180*, p. 2.

[56]   Professor Anton van den Hengel, Director, Centre for Augmented Reasoning, Australian Institute for Machine Learning, University of Adelaide; and Chair, Kingston AI Group, *Committee Hansard*, 16 July 2024, p. 3.

required to ensure it is developed in a lawful, safe and responsible way, and recommended that the government:

> …commission detailed, independent expert analysis on the desirability and feasibility of developing and extending Australia's artificial intelligence capabilities, including but not limited to foundation models.[57]

3.59 In a January 2024 report on the roles of government in the development of the Australian AI industry, titled *Making the most of the AI opportunity Research paper 1: AI uptake, productivity, and the role of government* (AI research paper), the Productivity Commission suggested that the private sector's development and uptake of AI in Australia will largely happen 'without direct government assistance'. However, the commission considered that, in addition to ensuring effective regulation of AI, government should 'lead by example in AI procurement and use, and by increasing the safe sharing of data that is needed for AI applications' and focus on policy interventions that effectively support safe AI uptake and productivity.[58]

3.60 Submitters noted there are areas where Australia has an existing competitive advantage that could be highly complementary to AI. For example, the Tech Council of Australia noted Australia's tech sector is already globally competitive in enterprise software, fintech, quantum computing and biotech.[59]

3.61 The Productivity Commission's AI research paper stated that Australia's role in the global AI value chain needs to be driven by comparative advantage, and that this advantage does not lie in activities like the development of general purpose AI models, which require extreme quantities of data and investment. Rather, Australia's focus should be on the development of smaller, more bespoke AI models, or on the applications or downstream value-adds developed on top of externally-developed general purpose AI models.[60]

Committee view

Developing sovereign AI capacity in Australia

3.62 AI technologies have been widely in use throughout the Australian economy for many years. However, with the advent of publicly accessible generative AI that can produce natural language, text, image and audio outputs, the range of

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[57] Professor Nicholas Davis, Co-Director, HTI Industry; and Professor, Emerging Technology, University of Technology Sydney, *Answers to questions on notice (3)*, 21 May 2024 (received 26 June 2024), p. 16.

[58] Productivity Commission, *Making the most of the AI opportunity Research paper 1: AI uptake, productivity, and the role of government*, January 2024, p. 1.

[59] TCA, *Submission 74*, p. 3.

[60] Productivity Commission, *Making the most of the AI opportunity Research paper 1: AI uptake, productivity, and the role of government*, January 2024, pp 5-7.

potential uses of AI has burgeoned dramatically, and inquiry participants broadly recognised that AI is a transformative technology that offers vast potential for productivity and gains and economic growth across all facets of Australian business and industry.

3.63   As set out in Chapter 2, separate to the question of regulating to address the risks of AI technology, the Australian government has implemented a range of policy initiatives in recent years designed to promote the responsible and ethical use of AI by government, business and industry. However, many number of inquiry participants identified the need for government to develop and implement policies to foster the development and growth of the Australian AI industry—referred to generally as Australia's 'sovereign AI capability'.

3.64   There were mixed views about whether the Australian government's support for sovereign AI capability should extend to the development of sovereign AI models, including a model developed directly by the Australian government. The committee heard that the development and training of foundation AI models on Australian datasets would produce AI systems that better reflect the Australian population and culture and thereby reduce the potential for bias and discrimination in applications based on those systems. Some submitters also noted the development of sovereign AI foundation models in Australia would support the development of the AI industry more generally, and particularly the high-performance computing facilities and skilled workforce that are required as the foundation of sovereign AI capability.

3.65   However, inquiry participants noted that, while the costs of developing a sovereign AI model depend on the approach taken, the development of foundation AI models carries significant risks due to their extremely high cost, the difficulty of competing with the global technology firms at the forefront of LLM development, and the real potential for commercial failure. In this regard, the evidence received by the inquiry suggested that government should seek to incentivise and support private sector development of sovereign AI in Australia generally, rather than pursue direct government involvement in developing a sovereign LLM.

3.66   In this regard, the committee notes that there is a range of policy options that government could consider, including in relation to the establishment of high-performance computing facilities and the making available of significant Australian datasets to support sovereign AI development. However, with respect to the latter, it is critical the Australian Government maintains confidence in the privacy and integrity of Government-held datasets. More generally, the committee considers that the government has a key role to play through measures aimed at increasing AI workforce training and skills.

3.67   The committee agrees with the conclusions of the Productivity Commission, among other submitters to this inquiry, that the Australian Government should

focus its resources on areas where there are existing areas of comparative advantage, including on bespoke AI models and downstream applications of general purpose models, rather than the development of an Australian Government-backed general-purpose model.

Recommendation 4

3.68 That the Australian Government continue to increase the financial and non-financial support it provides in support of sovereign AI capability in Australia, focusing on Australia's existing areas of comparative advantage and unique First Nations perspectives.

Chapter 4
Impacts of AI on industry, business and workers

4.1   This chapter considers the impacts of artificial intelligence (AI) on industry, businesses and workers, including its potential impacts on productivity, jobs and workplace conditions generally.

4.2   The chapter also considers the particular impacts of AI on:

- the creative industries, which are already dealing with significant disruption and issues arising from the use of AI, and particularly generative AI; and
- the healthcare sector, as an example of a high-risk sector in which the significant opportunities for beneficial uses of AI technology must be balanced against very serious risks.

Benefits and risks of AI for industry, business and workers

4.3   AI has for some years been used in a wide range of industry and business sectors. More recently, the potential applications of AI in these settings have increased markedly with the advent of large language models (LLMs) that support generative AI models such as ChatGPT-4, which can produce natural language outputs in response to user queries or inputs.

4.4   Many inquiry participants pointed to the broad adoption of AI by industry and business in Australia as well as globally, and noted AI's vast potential to promote further innovation, growth and productivity gains across all sectors of the economy.

4.5   However, many stakeholders, while acknowledging the potential benefits of AI, expressed serious concerns about the potentially negative impacts of AI on workplaces and the rights and conditions of workers, and the risk of AI having a disruptive effect on particular industries and professions.

Productivity

4.6   The committee heard that the application of AI technologies for uses in industry and business offers great potential for productivity improvements.[1]

4.7   The submission of the Productivity Commission (PC) observed:

> The contribution AI could make to the Australian economy is likely to be sizeable…[While it] is difficult to make a robust forward-looking estimate

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[1]   Productivity is a measure of the rate at which output of goods and services are produced per unit of input, such as capital, labour and raw materials: See: Productivity Commission, 'What is productivity', [What is Productivity? - Productivity Commission (pc.gov.au)](pc.gov.au) (accessed 18 October 2024).

of the productivity gains on offer from AI as trends in uptake are still forming and AI technologies are rapidly evolving…[one] estimate suggested generative AI could add up to $115 billion in productivity gains to the Australian economy by 2030 (a 5% uplift in [gross domestic product (GDP)].[2]

4.8 The Australian Chamber of Commerce and Industry (ACCI), while noting that AI is already improving business productivity, also highlighted estimates of AI's considerable impact on future productivity in Australia and globally:

McKinsey estimates that generative AI could contribute between USD 2.6 trillion and 4.4 trillion annually to the global economy. In the Australian context…another McKinsey study…found that adopting AI and automation could add an additional $170 billion to $600 billion to Australia's GDP by 2030…[3]

4.9 Mr Steven Worrall, Corporate Vice-President of Microsoft, spoke of the potential for substantial productivity and employment growth from the 'responsible development and adoption of AI'. Noting Australia's track record as 'a rapid adopter of technology', Mr Worrall stated:

Australia has an incredible foundation to build on. Forecasts predict that AI could create 200,000 new jobs and contribute up to $115 billion annually to our economy. This innovation and productivity gain that I'm hearing about from customers large and small, in both the public and the private sectors, from the use of AI is truly remarkable.[4]

4.10 The PC submission explained that AI's potential to improve productivity arises chiefly through its application to the 'augmenting and automating' of certain work tasks, which increases productivity by freeing up workers' time and thereby allowing workforces to be used more efficiently. 'Augmenting' a work task can be understood as typically involving AI-assisted human decision making, and 'automation' as being where AI does the decision-making itself, though usually with a human involved or 'in the loop'.[5]

4.11 Mr Bran Black and Ms Melanie Siva, CEOs of the Business Council of Australia and Google, respectively, have observed that AI boosts productivity by 'freeing up workers to focus on more creative and human elements of their jobs' and allowing workers to 'work smarter not harder'.[6]

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[2] Productivity Commission, *Submission 151*, p. 3.

[3] Australian Chamber of Commerce and Industry (ACCI), *Submission 37*, pp 3-4.

[4] Mr Steven Worrall, Corporate Vice-President, Microsoft Pty Ltd, *Committee Hansard*, 16 August 2024, p. 35.

[5] Productivity Commission, *Submission 151*, p. 3.

[6] Bran Black and Melanie Silva, 'How Australia can grab an AI advantage' (27 May 2024), *AFR Online* (accessed 11 September 2024).

4.12 The PC submission observed that, through augmentation and automation, 'AI has the potential to address some of Australia's most enduring productivity challenges—namely skill and labour gaps, and slow service sector productivity growth'.[7] It noted, for example:

> Generative AI technologies have great potential for application in the services sector which makes up about 80% of production and 90% of employment in Australia…In the health sector, there is scope for greater AI use that would improve aspects such as routine record keeping and clinical coding, medication alerts and treatment adherence, management of hospital bed capacity and identification of patients at risk of deterioration to improve prioritisation of resources. Many similar examples exist across other parts of the services sector.[8]

4.13 ACCI described the potential 'productivity, safety and health benefits' of job augmentation as an 'underappreciated opportunity', and considered that AI has more potential for job augmentation than job automation. The ACCI submission observed:

> According to the International Labour Organisation (ILO), only 2.3% of jobs worldwide could be fully automated today, whereas 13% of jobs could be boosted by AI. The ILO also found that generative AI is more likely to augment jobs by automating tasks, [rather than to]…fully automate a job, making it redundant. The complementing, rather than substitution, of jobs, will see benefits for job quality and work intensity.[9]

4.14 The joint submission from the RMIT Blockchain Innovation Hub and RMIT Digital also noted that, in contrast to job automation, job augmentation would not necessarily lead to job losses overall:

> …simply because generative AI increases worker productivity does not mean that robots will take our jobs *en masse*. Unlike technologies that purely automate, generative AI applications typically require a process between a prompting-human and the technology. Generative AI is applied as a process of co-production…Many of the productivity improvements through generative AI will come through replacing tasks not jobs. Co-production is not merely about automating processes but enhancing them through a deep understanding of the nuances involved in each task.[10]

4.15 ACCI argued further that increased use of AI by industry and business would lead to the creation of AI-related jobs. Its submission stated:

> …according to the World Economic Forum (2023), 50% of employers worldwide expect AI to foster job creation, with many new opportunities arising in the fields of AI development, machine learning specialists, and sustainability and business analysts. This will have a positive knock-on

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[7]   Productivity Commission, *Submission 151*, p. 3.

[8]   Productivity Commission, *Submission 151*, p. 3.

[9]   ACCI, *Submission 37*, p. 4.

[10]   Dr Darcy Allen, Professor Chris Berg and Dr Aaron Lane, *Submission 21*, pp 5-6.

effect on jobs which consist in social interactions: 92% of US-based executives agreed that people skills are more important than ever...[11]

Impact of AI on jobs and workplaces

4.16   However, some inquiry participants raised concerns about the potential for AI- to impact negatively on jobs and workplaces.

Job losses

4.17   The Victorian Trades Hall Council submission outlined the potential for automation to lead to job losses across many different industries and professions:

> Potentially most alarming is the prospect of employers using AI to destroy thousands of livelihoods through automation. For industries such as trucking, warehousing and logistics, the prospect of widespread job-loss has been raised as a concern for years. More recently, advances in generative AI have threatened the arts and creative fields, graphic design and writing, legal services, education and administrative services. As the capabilities of AI continue to advance in unpredictable and dynamic ways, health care, financial services, retail, transportation, engineering, science, banking, telecommunications, public administration and computer technology industries are all likely to face systematic disruption. Experts warn of rapid and extensive job losses throughout the workforce with little safety net.[12]

4.18   The Media, Entertainment & Arts Alliance (MEAA) argued that certain sectors, including 'finance, banking, advertising, administration, and customer service', are already reducing workforces by replacing workers with automation products.[13]

4.19   The submission of Ms Chelsea Bonner commented specifically on the impact of automation on 'creative industries such as fashion media and the arts', which she described as 'particularly vulnerable to disruption by AI technologies'. Her submission noted job losses in these industries would impact women in particular:

> …these sectors employ a significant percentage of female workers in roles that are now at risk of being automated. For instance, modelling, content creation, and administrative roles within these industries could see high displacement rates…

> The replacement of human models, performing artists and sex workers with AI-generated alternatives lead to job losses, disproportionately affecting women's employment and thereby their financial stability…The introduction of AI in these sectors will exacerbate these issues by reducing

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[11]   ACCI, *Submission 37*, p. 4.

[12]   Victorian Trades Hall Council (VTHC), *Submission 114*, p. 6.

[13]   Media, Entertainment & Arts Alliance (MEAA), *Submission 137*, p. 8.

the demand for human talent, thus further suppressing wages and job security for women.[14]

4.20   The Finance Sector Union of Australia (FSUA) commented more generally on the potential for job losses due to AI automation to impact disproportionately on certain types of jobs and vulnerable or disadvantaged groups:

> It is…clear that certain categories of jobs are far more susceptible to impacts from AI. These tend to be roles with relatively lower education and training requirements. This means that the impacts of AI may be disproportionately felt by people with particular education and experience levels, who may find it more difficult to obtain other employment. There is also a risk that these impacts will be felt more by people of lower socioeconomic groups, worsening inequality.[15]

4.21   The FSUA observed that it is unlikely that the workers whose roles are replaced by AI will be able to move into newly created AI-related roles.[16]

4.22   The MEAA commented that the potential impact of job losses due to automation was not only that it might create a 'class of unemployed workers' but also, more likely, that 'it will flood the pool of workers competing for low-skill and low-wage work, further driving down wages and conditions of an already precarious sector of the economy.[17]

4.23   A range of inquiry participants also highlighted the potential for automation to displace entry pathways into industries, such as by apprenticeships and trainee schemes, with low skilled work able to be increasingly undertaken by AI rather than by human employees beginning their careers.[18]

Workplace impacts

4.24   The committee heard that the use of AI in workplaces for various purposes also has the potential to impact negatively on employees.

4.25   Mr Joseph Mitchell, the Assistant Secretary of the Australian Council of Trade Unions (ACTU), noted that AI will likely affect almost every industry not only through potential job losses due to automation but also, for example, through the potential use of AI for workforce management and planning:

> In some industries, the introduction of AI is intended to lead to the automation of processes and tasks, creating the potential for job losses…and

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14   Ms Chelsea Bonner, *Submission 26*, p. [2.].

15   Finance Sector Union of Australia (FSUA), *Submission 116*, p. 5.

16   FSUA, *Submission 116*, p. 5.

17   MEAA, *Submission 137*, p. 8

18   See, for example: Dr Dilan Thampapillai, *Submission 90*, p. 1; and Screen Producers Australia (SPA), *Submission 141*, pp 2 and 8.

in almost every industry we are likely to see the potential for AI to manage the workforce and arrange the performance of work.[19]

4.26   Deakin Law School observed that AI is already widely used to automate recruitment, staff layoffs, rostering and surveillance of staff activity.[20] The Victorian Trades Hall Council (VTHC) raised significant concerns about the issue of AI-driven workplace surveillance, which it described as 'dehumanising, invasive and incompatible with fundamental rights'.[21] VTHC observed that AI has the potential to give employers 'a supernatural level of insight about workers' including, for example, their 'out-of-work activities…and likelihood to engage in industrial action'. It submitted:

> Legislation has not kept pace with the intrusive methods employers are using to surveil workers. Workplace surveillance includes but is not limited to keystroke monitoring, email monitoring, the collection of behavioural, social and emotional data, use of cameras and AI technology to track workers in workplaces (which is particularly common in warehouses and retail) and tracking outputs in real time. This then generates data which can be used to evaluate worker performance and inform critical choices relating to their employment.[22]

4.27   For example, Amazon—the world's largest retailer with a growing footprint in Australia—has used AI-powered surveillance cameras and wearables in delivery vans and warehouses in the United States for at least three years,[23] and earlier this year was fined €32 million by the French data protection authority for 'excessively intrusive' surveillance of warehouse workers.[24] When asked about its surveillance practices in Australia, Amazon said it does not use the technology subject to the French fine in Australia, and said it would support 'reasonable limits regarding surveillance.'[25]

4.28   The Shop, Distributive and Allied Employees Association (SDA) highlighted the potentially negative impacts on workers from the use of AI-led rostering systems, which could reduce the opportunity for consultation, disadvantage

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[19]   Mr Joseph Mitchell, Assistant Secretary, Australian Council of Trade Unions (ACTU), *Committee Hansard*, 21 May 2024, p. 42.

[20]   Deakin Law School, *Submission 110*, pp 6-7.

[21]   VTHC, *Submission 114*, p. 5.

[22]   VTHC, *Submission 114*, p. 5.

[23]   The Verge, 'Amazon delivery drivers have to consent to AI surveillance in their vans or lose their jobs', https://www.theverge.com/2021/3/24/22347945/amazon-delivery-drivers-ai-surveillance-cameras-vans-consent-form (accessed 11 October 2024).

[24]   Commission Nationale de l'Iformatique et des Libertés (CNIL), 'Employee monitoring: CNIL fined AMAZON FRANCE LOGISTIQUE €32 million', https://www.cnil.fr/en/employee-monitoring-cnil-fined-amazon-france-logistique-eu32-million (accessed 20 October 2024).

[25]   Amazon, *Answers to questions on notice (56)*, 9 September 2024 (received 9 October 2024), pp 2-3.

workers on casual and part-time arrangements and impact on workers with caring responsibilities:

> The use of apps or other electronic means for communicating rosters and roster changes doesn't provide for proper consultation with the employee, despite requirements to do so under legislation, Awards, and many of the Enterprise Agreements that our members work under. Lack of consultation has a significant impact on employee schedule control and a worker's ability to obtain a roster that enables them to meet caring responsibilities.
>
> It has also led to workers being forced to constantly check the app, especially for casuals and those part timers on low base contracts who need additional shifts to survive. The use of computerisation and apps also impinges on an employee's time outside of work, putting more pressure on them while caring.[26]

4.29 While expressing concern about the potential for AI to reinforce structural inequality and undermine human rights, Mrs Lorraine Finlay, the Australian Human Rights Commissioner, also noted AI's potential for positive impacts on workers and workplaces through uses that, for example, can increase workplace accessibility and workforce participation for people with a disability:

> [AI]…technologies can be used in ways that enhance worker rights in the workplace. If I can give one example…we refer to the potential of accessibility for Australians with disability in terms of the use that might be made of assistive technologies.[27]

4.30 The ACTU also noted that there were workplace uses of AI on the 'positive side of the ledger' that could 'offer a beacon to which we should aim to guide the development of AI'. These were generally the use of AI for augmentation or to 'complement rather than supplant human ingenuity and labour', such as the use of robot waiters programmed by people with disabilities to enable their work participation, and the use of AI to assist medical professionals to assess and interpret diagnostic scans.[28]

4.31 Mr Mitchell observed that, ultimately, whether the consequences of the adoption of AI in workplaces would be positive or negative would be determined by the 'choices that are made about how AI is regulated and the terms upon which it is adopted' in workplaces. He noted:

> AI will create new power dynamics in Australia and exaggerate existing ones in ways that could lead to worse outcomes if left unmitigated. It will create new challenges for workers, employers and policymakers to

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26   Shop, Distributive and Allied Employees Association, *Submission 41*, pp 4-5.

27   Mrs Lorraine Finlay, Human Rights Commissioner, Australian Human Rights Commission, *Committee Hansard*, 20 May 2024, p. 47.

28   Australian Council of Trade Unions, *Submission 64*, p. 6.

overcome. Some of those newly expressed power dynamics are playing out right now.[29]

Workforce consultation and training

Consultation

4.32 The submission of the ACTU observed that engagement and consultation with workers, described as 'worker voice', in relation to the use of AI in workplaces is being shown to mitigate the risks of it having negative impacts on workers:

> One trend that is emerging in relation to the adoption of AI in workplaces is…that worker voice mitigates several risks to working conditions associated with AI in workplaces. According to the data, workplaces where there is worker voice that have adopted AI–for example through works councils, trade union representation or health and safety structures–record a reduced probability of certain health and safety risks, such as exposure to heavy loads, painful positions, high noise, fumes vapours or chemical products or long working hours. This fits within a broader pattern of workplaces which are consulted about the adoption of AI being more likely to report that AI has had a positive impact.[30]

4.33 Similarly, the VTHC considered that 'workforce consultation and training is imperative', and cited the example of the Swedish mining industry, where the inclusion of workers in introducing automation had been 'improved workplace safety, protected jobs and streamlined production'. By comparison, 'rushed' efforts to introduce automation in the UK manufacturing sector without 'meaningful inclusion' of workers had resulted in 'an overestimation of the capabilities of AI and mass lay-offs only to have to rehire those workers a few months later'. The VTHC concluded:

> Direct engagement with workers is essential to limiting the disruptive effects of automation and building public trust in the digital transformation.[31]

4.34 Professor Nicholas Davis, Industry Professor of Emerging Technology and Co-Director of the Human Technology Institute at the University of Technology Sydney, described his organisation's research indicating that workplace consultation in relation to the use of AI is currently inadequate:

> Our research across nursing, retail and, indeed, the public service shows that, despite the fact that tech companies are saying that artificial intelligence offers the greatest opportunity for workplace productivity and economic uplift in Australia in decades, workers are invisible bystanders in this conversation. They are not consulted, they are not engaged and they are not then playing the two roles that are absolutely essential in this revolution,

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29 Mr Joseph Mitchell, Assistant Secretary, ACTU, *Committee Hansard*, 21 May 2024, p. 42.

30 ACTU, *Submission 64*, pp 6-7.

31 VTHC, *Submission 114*, p. 7.

which are tailoring and using the technology to get the best out of [it]… and, just as important, putting in place those practices and monitoring and governance systems to identify when people might be hurt and prevent that from happening.[32]

4.35 Mr Joseph Mitchell, Assistant Secretary of the ACTU, called for a whole-of-government approach that builds workforce consultation and participation into the frameworks and standards for using and managing AI in the workplace. Mr Mitchell stated:

> We need to seed workers' voices into that [framework] because workers are experts in their industry. They have a say and a right to have a say in the future of the work they do and the industries that they work within…

> When it comes to each workplace, the current frameworks for representation…need to be future proofed. We need to ensure…clear representation rights for workers around AI so that we have…transparency, consultation and negotiation around the impacts of AI in the workplace and on the work that we do…We want to make sure that [workers' rights] aren't eroded by the introduction of new technologies…[33]

4.36 A number of inquiry participants pointed to the regulation of occupational health and safety (OH&S) as providing a potential model for the use and management of AI in workplaces.[34] At the federal level, for example, the *Work Health and Safety Act 2011* provides a broad, risk-based framework for ensuring the health and safety of workers, workplaces and the general public, based around effective representation, consultation and cooperation between workers and employers.

4.37 Ms Elizabeth O'Shea, the Chair and Founder of Digital Rights Watch, commented on the 'parallels with occupational health and safety' in terms of the importance of consultation with workers around the introduction of AI to workplaces:

> In how we use these [AI] tools in the workplace, it's imperative that management…consider and engage with workers early, rather than imposing these tools on workers and then either being surprised that it doesn't work or being surprised that people are feeling exploited, further disenfranchised and as if they are not having their workplace rights enforced. In this early stage of the industry, there's a real opportunity here to impose [consultation] requirements on workplace uses of AI that are

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[32] Professor Nicholas Davis, Industry Professor of Emerging Technology and Co-Director, Human Technology Institute, University of Technology Sydney, *Committee Hansard*, 21 May 2024, p. 14.

[33] Mr Joseph Mitchell, Assistant Secretary, ACTU, *Committee Hansard*, 21 May 2024, p. 50.

[34] For example, see: Digital Sciences Initiative, University of Sydney, *Submission 174*, pp 4 and 5; Mr Greg Sadler, Chief Executive Officer, Good Ancestors Project, *Committee Hansard*, 16 August 2024, p. 48; and Mr Joseph Mitchell, Assistant Secretary, ACTU, *Committee Hansard*, 21 May 2024, p. 50.

consultative, for benefits in both directions: for people who work in these workplaces and for the objective of the workplace.[35]

4.38 Mr Peter Lewis, the Convenor of the Centre of the Public Square program for Per Capita, noted that OH&S-style schemes could introduce positive workplace cultures for managing the potential risks of AI across the workforce, which could help to overcome risk aversity.[36]

4.39 In an answer to a question on notice, the Human Rights Law Centre (HRLC) observed that the regulatory scheme for OH&S could be suitably applied to AI as both are fundamentally concerned with risk management and safety:

> The principles underlying Australia's Workplace Health and Safety (WHS) laws, which focus on protecting workers by requiring duty holders to eliminate or minimise risks, provides a valuable framework for developing a risk-based regulatory model for AI. Although WHS laws and AI regulation address different domains, both prioritise risk management and safety…
>
> By applying this risk-focused mindset, AI regulation can ensure that potential harms are addressed effectively, promoting safety and accountability in the development and deployment of AI technologies. This approach will foster a culture of continuous improvement and compliance, paralleling the proactive risk management seen in WHS laws.[37]

4.40 Reflecting this same OH&S perspective on AI, the VTHC called for amendments to model OH&S laws to include consideration of the risks to workers of the use of AI. Taking the example of AI-driven surveillance of workers, the VTHC submission stated:

> Workplace surveillance has also been shown to have a demonstrated impact on workers' occupational health and safety, leading to overwork, stress and burnout. For example, it is not uncommon for Amazon workers subject to surveillance in warehouses to receive warnings if they take too long to go to the bathroom or speak with their co-workers. Model occupational health and safety laws should be amended to recognise the risk to psychosocial health posed by AI-driven surveillance technologies.[38]

4.41 The HRLC further noted that OH&S-style regulation of AI in the workplace would be sympathetic with broader risk-based schemes of AI regulation, such as the European Union's AI Act, requiring 'AI developers and deployers to identify, assess, and mitigate risks associated with their systems'.

4.42 This point was also made by Australian vendors of AI products. Mr Michael Gately, the Chief Executive Officer of Trellis Data, noted that risk

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[35] Ms Elizabeth O'Shea, Chair and Founder, Digital Rights Watch, *Committee Hansard*, 16 July 2024, p. 20.

[36] Mr Peter Lewis, Convenor, Centre of the Public Square program, Per Capita *Committee Hansard*, 21 May 2024, p. 15.

[37] Human Rights Law Centre, *Answers to questions on notice (17)*, 16 July 2023 (received 30 July 2024).

[38] VTHC, *Submission 114*, pp 5-6.

assessment of AI fits neatly within the concepts of broader product liability and OH&S frameworks:

> The idea that AI is like a manufactured product and therefore fits under that manufacturing OH&S set of frameworks we already have is brilliant. That is exactly where we should be…[AI should be treated] as a product in the market so that if it causes harm—just like a defect in automobile manufacturing…[the manufacturer has to] remedy that and pay due [compensation] costs…That is entirely appropriate and will ensure that tech companies…do the right thing when they deploy these products, knowing that there is that liability that goes with it.[39]

4.43 Mr John Leiseboer, the Chief Technology Officer of Quintessence Labs, similarly agreed that 'OH&S is a very important requirement to be met when these sorts of products are being used in a workplace environment.'[40]

4.44 Mr Michael Harmer, the Chairman of Harmers Workplace Lawyers, also recently voiced his support for an OH&S-style solution to the risks posed by AI, during his remarks to the Australian Institute of Employment Rights' annual Ron McCallum debate, saying:

> Australian legislation should all move to the model of our safety legislation, all reasonably practical steps to ensure safety, not just safety, but fairness. And that should not just be under our workplace relations system, but under all our law because there is no aspect of prescriptive law that can keep up with the speed of technological AI change in this country.[41]

Training

4.45 In addition to workplace consultation, inquiry participants stressed the importance of workplace training to retrain and reskill workers whose jobs are replaced by AI.

4.46 The submission of the Australian Services Union, for example, called on government to:

> …ensure current and future workers receive relevant training so they can best participate in this ever-changing landscape. Workers whose roles may involve the use of AI in the future or whose future employment prospects might be diminished by the adoption of AI should be given every opportunity to receive comprehensive training or retraining.[42]

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[39] Mr Michael Gately, Chief Executive Officer, Trellis Data, *Committee Hansard*, 17 July 2024, p. 16.

[40] Mr John Leiseboer, Chief Technology Officer, Quintessence Labs, *Committee Hansard*, 17 July 2024, p. 16.

[41] Australian Institute of Employment Rights, '2024 Ron McCallum Debate', https://www.aierights.com.au/wp-content/uploads/2024/11/Ron-McCallum-Debate-2024-Transcript-31.10.2024.pdf (accessed 20 November 2024).

[42] Australian Services Union, *Submission 36*, p. 1.

4.47 Mr Bernie Smith, the Secretary of the New South Wales Branch of the SDA, acknowledged the inevitability of displacement of workers in particular sectors due to AI. Mr Smith noted that responses to dealing with technological change should focus on reskilling displaced workers to take up new jobs, potentially including the new jobs created by AI within their own organisation, rather than on redundancy processes.[43]

4.48 Similarly, Per Capita stated that AI is 'set to disrupt many industries, resulting in job losses or job displacements', and stressed the importance of retraining aimed at readying workers to move into AI-related roles:

> While some are counting on AI also creating a host of new jobs, we need to develop programs and initiatives that account for these in a real, tangible way, not just as a hopeful premise. There should also be training programs that help transition potentially displaced workers to ready them for more AI related roles.[44]

4.49 The Australian Chamber of Commerce and Industry also argued that retraining is a key element in successfully responding to the displacement of workers by the adoption of new technologies, emphasising its broader benefits for maintaining the competitive advantages of the Australian economy:

> [With past technological advances, the] capacity of economies to adopt greater automation and realise its benefits has depended on embracing retraining opportunities, and investment in research and education. Building capacity, and the adoption of new technologies, not only results in a more highly trained workforce, but ensures that a country can remain highly competitive externally, and safeguards against the possibility of jobs moving overseas.[45]

4.50 The submission of the Future Skills Organisation (FSO) indicated that, in relation to training more generally, 'the Australian training system is facing challenges keeping pace with changes brought by rapidly moving technologies such as AI'. The FSO noted figures suggesting that Australia's AI workforce has grown from around just 800 workers in 2014 to over 33,000 in 2023, with estimates of AI creating up to 200,00 jobs in Australia by 2030. The challenge of providing the training needed for AI-related jobs is also compounded by the increasing need more generally for a workforce that is digitally enabled.[46]

Impacts of AI on specific industries

4.51 The evidence to the inquiry shows that, for certain industries, the impacts of AI are already manifest. This is generally for industries in which the nature of the

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43 Mr Bernard (Bernie) Smith, Secretary, New South Wales Branch, Shop, Distributive and Allied Employees Association, *Committee Hansard*, 21 May 2024, p. 49.

44 Per Capita, *Submission 20*, p. 6.

45 ACCI, *Submission 37*, p. 4.

46 Future Skills Organisation, *Submission 238*, p. 2.

work is well suited to and is already being performed by AI, meaning they are already contending with the workforce and workplace impacts discussed above, as well as with more industry-specific issues that arise from the particular nature, character or context of the work performed in that industry. As an illustration of such matters, the following section considers the particular impacts of AI on the creative industries.

Creative industries

4.52 The creative industries can be understood generally as being those businesses for which art or creativity is central to the products and services that they produce. This includes a diverse range of business relating to, for example, music, games development, graphic design, architecture, book publishing, film and television, and fashion. Creative workers account for a significant proportion of the Australian workforce; for example, the Australian Copyright Council (ACC) identifies it represents more than one million workers across its 24 affiliates.[47]

4.53 The committee notes that generative AI in particular is able to augment and automate certain creative processes, and in this regard the creative industries are at the forefront of dealing with the impacts of introducing AI into the workplace. As noted in Chapter 1, generative AI refers to AI models like ChatGPT-4 which generate novel content such as text, images, audio or code in response to human prompts or inputs. Generative AI technologies are built on large language models (LLMs) that are developed by being trained on vast amounts of data.[48]

4.54 The submissions and evidence received from inquiry participants representing or involved with creative industries identified some opportunities and, more significantly, existential risks arising from the use of AI technology in those industries.

Opportunities for the use of AI in creative industries

4.55 A number of submitters and witnesses acknowledged potential benefits from the use of AI in the context of creative industries.

4.56 The submission from the National Association for the Visual Arts (NAVA) observed that, from 'aiding in the creative process to exploring new avenues for income generation, the utilisation of generative AI holds significant potential for artists worldwide'.[49] Similarly, Ms Chelsea Bonner commented that, used ethically, AI could contribute broadly to increased productivity across the range of businesses and services supported by the artistic and creative industries:

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[47] Australian Copyright Council (ACC), *Submission 173*, p. 1.

[48] Law Council of Australia, *Submission 152*, p. 7

[49] National Association for the Visual Arts (NAVA), *Submission 115*, p. [3].

…generative AI can produce content rapidly, from digital artwork to music and literary works, reducing the time and labour costs associated with these creative processes. For industries like advertising and media, AI can streamline production workflows, leading to considerable cost savings and increased output.[50]

4.57 The Copyright Agency submission pointed broadly to AI's potential to increase productivity and income-earning opportunities in the creative industries:

People working in Australia's creative industries welcome the benefits that a responsible Australian AI industry has the potential to deliver, including increased productivity, reductions in inequalities in a range of areas (including education) and opportunities to license their content to improve the quality and Australian-ness of locally developed AI tools.[51]

4.58 The Australia New Zealand Screen Association (ANZSA) submission noted that in the audiovisual industry AI has been used 'for many years' used to 'enhance aspects of the filmmaking process and entertain audiences', particularly in relation to special effects but also for other purposes:

AI has been used in a number of ways in production, such as to predict resource usage, optimisation of shooting schedules, and predicting complexity of VFX [or visual effects] shots. AI is also used in fairly routine post-production work like colour correction, detail sharpening, de-blurring, or removing unwanted objects. Some uses are more involved, like aging and de-aging an actor.[52]

4.59 A 2024 report by A New Approach outlined the following broad range of tasks that AI is already being applied to in the arts, culture and creative sector. These include:

- creation of arts and culture;
- discovery of content via search engines;
- preservation of language and heritage;
- automated content recommendation and moderation on digital platforms;
- automated speech recognition, captioning and transcription;
- machine translation of text and speech; and
- classification ratings in video and games.[53]

4.60 The evidence provided to the inquiry confirmed that there is already significant use of AI in the creative industries. For example, the MEAA cited a recent survey showing that 22 per cent of its members were already using AI in their work.[54]

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50   Ms Chelsea Bonner, *Submission 26*, p. [3].

51   Copyright Agency, *Submission 82*, p. 1.

52   Australia New Zealand Screen Association, *Submission 111*, p. [3].

53   A New Approach, *Friend, foe or frenemy: Foreseeable impacts of AI on arts, culture, and creativity* (October 2023), p. 7.

54   MEAA, *Submission 137*, pp 4-5 and 10-12.

Similarly, NAVA advised that 40 per cent of respondents to a 2023 survey indicated they had used AI for augmenting written tasks such as editing and grant applications, or for content development and ideation.[55]

4.61 In terms of AI's financial impacts, a 2024 Creative Australia survey of workers across the art sector found that, while AI is expected to increase income-earning opportunities for the creative industries generally, there were different expectations as to which artistic occupations those opportunities would flow. For example, 43 per cent of composers thought that AI would increase their income-earning opportunities personally, compared to only 29 per cent of writers who thought that it would increase theirs.[56] Notwithstanding the survey's results, the submissions of guilds and other groups representing creative workers overwhelmingly expressed concern about the risks posed by generative AI.

Risks of AI to the creative industries

4.62 Despite evidence of significant use of AI already in some creative industries, and its potential to improve productivity and income-earning opportunities in some areas, many inquiry participants raised very significant concerns about the risks of AI to the creative sector.

4.63 A survey of Australian Writers Guild members found 94 per cent of respondents believed that their livelihoods as creative workers would be negatively impacted by AI technology, and 95 per cent expressed concerns about the reduction in quality of stage and screen projects.[57] These findings were echoed by surveys in other creative professions, including over 90 per cent of production designers expressing concern about the impact of AI on their livelihoods and those of their crews,[58] and 82 per cent of music creators saying AI may mean they can no longer make a living from their work.[59]

Impacts of augmentation and automation

4.64 As with the impacts on workplaces more generally, discussed above, many workers in the creative industries are concerned that the ability of AI to augment and automate creative processes will negatively affect the employment and income-earning opportunities in their industry.

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[55] NAVA, *Submission 115*, p. 3.

[56] Creative Australia, David Throsby and Katya Petetskaya, *Artists as Workers: An Economic Study of Professional Artists in Australia* (6 May 2024), p. 135.

[57] Australian Writers' Guild (AWG), S*upplementary submission 177.1*, p. 2.

[58] Australian Production Design Guild, *Submission 176*, p. 2.

[59] APRA AMCOS, 'AI and Music Report', https://www.apraamcos.com.au/about-us/news-and-events/ai-in-music-report (accessed 20 November 2024).

4.65 The Australian Society of Authors (ASA), for example, observed:

> AI-content is cheap to make since no compensation need be paid to writers or artists. An increase in AI-generated books and articles will make the challenges of discoverability and dilution of audiences even tougher for professional writers. An abundance of cheap AI-generated content will lead to a consumer expectation about how much books should cost, putting downward pressure on the cost of human-created content. The richness and diversity of Australian literature is at risk.[60]

4.66 Screen Producers Australia (SPA), while recognising the great opportunities of generative AI for the screen industry, cautioned:

> Broad and aggressive adoption of these systems could have a large and negative impact on the labour market within the screen industry, removing employment opportunities for creatives and crew members, while also removing career entry pathways into the industry.[61]

4.67 Accordingly, the SPA called for the adoption of AI systems by production companies 'in a way that empowers the creatives and crew they employ, rather than replace them…[so that all] participants in the screen industry ecosystem…benefit from the opportunities these AI systems present'.[62]

4.68 The ASA and NAVA submissions also both highlighted the particular risk of generative AI to First Nations creators, with the ASA noting its ability to be used to 'produce and perpetuate inauthentic and fake art, and [to] appropriate Aboriginal and Torres Strait Islanders' art, design, stories and culture without reference to Traditional cultural protocols'.[63] NAVA observed:

> First Nations artists in Australia are already harmed by the physical reproduction of Aboriginal and Torres Strait Islander arts and crafts by non-Indigenous people on a large scale, [and] generative AI platforms offer a faster and easier method of output.[64]

4.69 Similarly, the National Aboriginal and Torres Strait Islander Music Office (NATSIMO) stated that a large proportion of Aboriginal and Torres Strait Islander communities make a living from their art, and that the devaluation of this work by generative AI would have wide-ranging harm on these communities:

> If that economic value is lost, the impacts are potentially enormous – on health, on mental health, and in many other areas. These concerns are not

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[60] Australian Society of Authors (ASA), *Submission 139*, p. 6.

[61] SPA, *Submission 141*, p. [3].

[62] SPA, *Submission 141*, p. [3].

[63] ASA, *Submission 139*, p. 6.

[64] NAVA, *Submission 115*, p. [4].

just limited to community members practicing in the creative space – everything is connected.[65]

Copyright

4.70 Copyright is a type of intellectual property that is owned by the authors of original artistic works in fixed expressions or mediums such as books, plays, paintings, photos, songs, sound recordings and computer programs. In simple terms, copyright ownership provides artists with the exclusive economic rights to perform, licence and sell their work.[66] As noted in the submission of the Australian Copyright Council (ACC), licensing the use of works by the copyright holder is a key source of income that sustains artists and the creative industries more generally:

> Charging fees or receiving royalties in exchange for permission (or a 'licence') are among the more common ways that copyright owners derive income from their creative material. In this context, copyright is the framework which supports and incentivises the creation of new copyright materials.[67]

Copyright protection for works created with assistance from AI

4.71 A number of inquiry participants commented that presently there is a lack of clarity under Australia's copyright framework as to the extent of protection that it affords to works created by humans but with the assistance of AI. The Screen Producers Australia submission explained:

> Copyright can only subsist in material that is created by a human author. Therefore, materials created through a process with little or no human input, lack authorship and are not protected by Australian copyright law. However, *The Copyright Act 1968* (Cth) is silent on the level of human authorship required to give rise to copyright protection.[68]

4.72 The BSA Software Alliance submission observed that, if the use of AI to augment or facilitate creative or artistic works was to disqualify a work from copyright protection, this could undermine the system of copyright protection and the creative industry more generally:

> Copyright plays a key role in businesses' ability to protect creative material, including software code. The use of AI should not prevent a work developed in conjunction with human creativity from being eligible for copyright protection. If copyright protection is not available simply because AI was used in the creative process, it will limit the responsible use of AI and the purpose of copyright laws. As a result, the portions of the work that are

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[65] National Aboriginal and Torres Strait Islander Music Office, *Submission 179*, p. [4].

[66] Attorney-General's Department, 'Copyright basics', Copyright basics | Attorney-General's Department (accessed 22 October 2024).

[67] ACC, *Submission 173*, p. 3.

[68] SPA, *Submission 141*, p. [6].

> influenced by human creativity should be protected by copyright laws. Lack of copyright protection may also cause innovators to seek out jurisdictions with laws and policies that are more protective of intellectual property.[69]

Use of copyrighted materials to train AI models

4.73 A significant issue in relation to copyright arises where copyrighted materials are used to 'train' AI models.

4.74 To develop a large language model (LLM) on which generative AI systems like ChatGPT-4 are built, the LLM is trained by being fed vast amounts of content, such as text or images, to develop its predictive capacity to the point where it can generate natural language text or, depending on its design, other outputs such as images or music. The content that can be used for training LLMs is diverse and can be sourced from, for example, books, articles, images and large datasets. In a practice known as 'scraping', content that may include copyright material is often taken directly from the web for the purposes of training AI models.[70]

4.75 The submission of the Australian Writers' Guild Authorship Collecting Society, the Australian Screen Editors Guild, the Australian Production Design Guild and the Australian Cinematographers Society (the Guilds and Cinematographers) observed that AI companies 'have conceded that their models rely on the unauthorised and unremunerated use of copyrighted work' with OpenAI, for example, stating that stating it would be 'impossible to train today's leading AI models without using copyrighted materials'.[71]

4.76 Appearing at a hearing of the inquiry, Ms Lucinda Longcroft, Director, Government Affairs and Public Policy, Australia and New Zealand, Google, conceded the company uses copyrighted work to train its AI products without authorisation or remuneration, arguing that the exclusion of such works from AI training datasets could significantly impair the utility of AI:

> …copyright law in most parts of the world…[persists for] at least 70 years after the death of an author or after it's published. If we were to exclude works that are still under copyright…that would mean that data relating to modern events or cultural or social issues such as LGBTQI rights, for example, would be excluded from those datasets. It is predictable that the models would then show bias or have gaps or ignorance about those interests and about that large and important part of our society. We train

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[69] BSA Software Alliance, *Submission 19*, p. 6.

[70] ACC, *Submission 173*, p. 4.

[71] AWG, AWG Authorship Collecting Society, Australian Screen Editors Guild (ASEG), Australian Production Design Guild (APDG) and Australian Cinematographers Society (ACS), *Submission 117*, p. 4.

our models on that large corpus of publicly available data in order to ensure that they are providing the most socially beneficial uses in their outputs.[72]

4.77 When directly asked whether Amazon uses copyrighted work to train its AI products without authorisation or remuneration, the company refused to answer the question but assured the committee it takes the issue very seriously, despite a former executive recently alleging the company instructed its LLM teams to ignore copyright laws:[73]

> We don't disclose specific sources of our training data, but as a rightsholder ourselves, we take IP related concerns seriously and respect the rights of artists and creators.[74]

4.78 Meta is currently subject to numerous lawsuits in the United States for training its AI products on a database of over 200,000 pirated books, including up to 18,000 Australian works. When asked to confirm whether Meta trains its AI products on copyrighted data without authorisation or remuneration, Meta said its LLM has exploited so much data that it would be too hard to tell:

> The scale of data required to train generative AI models makes the documentation and disclosure of individual training data infeasible. Given the massive scale of data involved, it is impossible to definitively know whether specific publicly-available data is protected by copyright or not.[75]

4.79 Some of the big tech platforms developing LLMs also act as content publishers; for example, Google publishes copyrighted content on YouTube and YouTube Music, and Amazon does likewise on Kindle and Audible. When asked whether they use the copyrighted content on these platforms to train their AI models, both Google and Amazon declined to respond.[76]

4.80 Creative industry stakeholders raised concerns that the use of copyright material to train AI without authorisation amounts to a breach of copyright. The ACC submission, for example, stated:

> The ingestion [into an AI system] of third-party copyright material (i.e. copyright material that the AI developer did not create) without the licence of copyright owners, may constitute an infringement of copyright.[77]

[72] Ms Lucinda Longcroft, Director, Government Affairs and Public Policy, Australia and New Zealand, Google, *Committee Hansard*, 16 August 2024, pp 25-25.

[73] The Register, 'Ex-Amazon exec claims she was asked to ignore copyright law in race to AI', https://www.theregister.com/2024/04/22/ghaderi_v_amazon/ (accessed 20 October 2024).

[74] Amazon, *Answers to questions on notice (56)*, 9 September 2024 (received 9 October 2024), p. 7.

[75] Meta, *Answers to questions on notice (59)*, 27 September 2024 (received 24 October 2024), p. 12.

[76] Google, *Answers to questions on notice (53)*, 9 September 2024 (received 20 September 2024), p. 6; Amazon, *Answers to questions on notice (56)*, 9 September 2024 (received 9 October 2024), p. 7.

[77] ACC, *Submission 173*, p. 4.

4.81　The ACC noted that a core right of a copyright holder is the right to reproduce their work, and that the 'large scale reproduction of copyright material' for training AI models therefore 'exposes AI developers to liability for copyright infringement'. While Australia's copyright framework includes 'fair use' exceptions for copyright infringement if material is used for research or study; criticism or review; or parody or satire, and that use is 'fair in all the circumstances', the ACC considered that the practice of scraping copyright material is 'unlikely to fall under any of these exceptions, or be considered as a fair use of that material:

> In terms of the requirement that the dealing be 'fair'…[the Australian courts are unlikely to find that] a dealing is 'fair' where the 'scraping' of copyright material is used to develop a technology that produces something that effectively competes with the copyright owners' material, and without the licence of or remuneration to, the copyright owner.[78]

4.82　The view that the use by AI of copyright material to train AI without permission of copyright holders constitutes a breach of copyright was strongly supported by creative industry stakeholders. For example, the combined submission from the Guilds and Cinematographers stated:

> Generative AI 'scrapes', 'mines', 'listens to', 'trains on', or to use another word, copies, existing artistic work either used without the consent of the authors or which has been pirated and illegally published online. In both these cases, an unauthorised reproduction of copyrighted work has occurred and therefore an author's copyright has been infringed.[79]

Remuneration of copyright holders

4.83　Noting the importance of copyright as a source of income to sustain artists and the creative industries, many creative industry stakeholders pointed to the financial consequences of the unauthorised use of copyrighted to train AI. The Australian Recording Industry Association (ARIA), for example, observed:

> [The use]…of copyright materials… to train AI models without authorisation and compensation…[is] to the detriment of artists and rightsholders whose works have been used by AI developers.[80]

4.84　The Guilds and Cinematographers submission noted, with specific reference to the screen industry, that the scraping of copyrighted work to train AI circumvents the usual requirement for artists to receive 'fair remuneration and an appropriate credit' for the use of their work.[81] For this reason, the Australian Publisher Association submitted that 'the illegal ingestion of copyrighted

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78　ACC, *Submission 173*, p. 4.

79　AWG, AWG Authorship Collecting Society, ASEG, APDG and ACS, *Submission 117*, p. 4.

80　Australian Recording Industry Association (ARIA), *Submission 166*, p. 1.

81　AWG, AWG Authorship Collecting Society, ASEG, APDG and ACS, *Submission 117*, p. 7.

content to train AI constitutes an existential threat to the 'sustainability both of AI and of the creative industries on which AI depends.[82]

4.85 Further, the Guilds and Cinematographers submission argued that copyright holders should also be entitled to remuneration for outputs generated by an AI system that rely on the copyrighted material on which it was trained. It argued:

> Since any 'successful' AI output requires successful (human) input, the commercial success of any AI generated content is also directly tied to the substantive success of the original works that are scraped by the model. In simpler terms: generative AI could only 'write' a successful screenplay because it is replicating successful screenplays written by people…Therefore, an original author who consents for their work to be used should be entitled to ongoing payments when their work is used by generative AI platforms to produce outputs that are commercially exploited.[83]

4.86 Accordingly, the Guilds and Cinematographers called for an opt-in system to require AI developers to seek the permission of copyright holders to train AI systems on copyrighted material; as well as the requirement for remuneration and royalties to be paid in relation to any AI-generated outputs based on that material.[84]

4.87 Ensuring that the use of copyright material to train AI systems is captured within Australia's copyright framework was generally supported by many inquiry participants. ARIA, for example, submitted:

> A regulatory framework that prioritises transparency and accountability, regarding the content used for training AI models, is essential for ensuring adherence with copyright and other laws, including the enforcement and licensing of rights...[85]

4.88 Similarly, the MEAA submitted:

> …the ongoing and prior use of creative work [by AI] must be subject to consent and compensation, as well as the ability to opt out. Text and Data Mining (TDM) exceptions should be strictly limited, and any existing exemptions should be revised around this new technology and require informed consent by owners of IP rights, particularly with any content being used for self-training purposes. This should include voice and sound data including music and visual art.[86]

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[82]   Australian Publisher Association, *Submission 138*, p. [1].

[83]   AWG, AWG Authorship Collecting Society, ASEG, APDG and ACS, *Submission 117*, p. 7.

[84]   AWG, AWG Authorship Collecting Society, ASEG, APDG and ACS, *Submission 117*, pp 7-9.

[85]   ARIA, *Submission 166*, p. 1.

[86]   MEAA, *Submission 137*, p. 5.

4.89   In contrast, some inquiry participants considered that the use of copyright material by AI should not constitute a breach of copyright or provide a basis for remuneration of copyright holders.

4.90   For example, the submission from the Schools and TAFE Copyright Advisory Group (CAG) noted that in jurisdictions such as the US copyright laws allow for the training of AI on copyright materials without breaching copyright. In this regard, CAG considered that Australia's copyright framework is a barrier to the development of the AI industry in Australia:

> …in the United States, AI developers are relying on the fair use exception as a defence to claims of copyright infringement by rightsholders in material used to train AI models…[whereas no] equivalent fair use exception exists in Australia…The result is that Australia has a much stricter and less flexible copyright framework than other jurisdictions, which in CAG's view imposes significant impediments to the development, operation and use of AI systems in Australia.[87]

4.91   This argument was rejected by the Copyright Agency, which highlighted there is 'a vast range of content available for lawful use by AI developers, including under efficient and fair licensing arrangements.' It also noted the UK recently rejected calls to broaden its AI exception to its copyright laws, that Japan is considering scaling back its AI exception and that, under the more permissive US regime, there are more than 24 copyright cases in train against AI developers.[88]

4.92   Ms Nicole Foster, Director of Global AI/(machine learning (ML) Public Policy for Amazon Web Services, claimed that the more restrictive copyright regime in Australia could operate as a barrier to AI systems being developed and trained on data that is culturally relevant and representative of Australian society.[89] Ms Foster considered that the 'availability of content [for training AI] is going to be…key in ensuring that non-dominant cultures are represented' in AI technologies.[90] Nevertheless, when asked whether Amazon's concern for Australian cultural representation would extend to remunerating Australian creators for the work taken from them without authorisation, Amazon declined to respond.[91]

4.93   In light of the effect of more restrictive copyright law on AI development, some inquiry participants called for Australia's copyright laws to be amended to

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[87]   Schools and TAFE Copyright Advisory Group, *Submission 92*, p. 7.

[88]   Copyright Agency, *Submission 82*, p. 3.

[89]   Ms Nicole Foster, Director, Global AI/ML Public Policy, Amazon Web Services, *Committee Hansard*, 16 August 2024, p. 10.

[90]   Ms Nicole Foster, Director, Global AI/ML Public Policy, Amazon Web Services, *Committee Hansard*, 16 August 2024, p. 11.

[91]   Amazon, *Answers to questions on notice (56)*, 9 September 2024 (received 9 October 2024), pp 10-11.

allow the use of copyrighted material for AI training. The CAG submission, for example, called for 'reforms to Australian copyright law…to level the playing field with other jurisdictions'.[92]

4.94 However, other inquiry participants opposed such calls. The Guilds and Cinematographers submission, for example, stated:

> We are strongly opposed to any suggestion that 'generative' AI systems should be allowed to use copyrighted works without permission from, or remuneration being paid to, the authors of those works.[93]

4.95 Similarly, ARIA submitted:

> Australian copyright law should continue to incentivise creativity and prioritise human artistry, creativity and labour. Existing fair dealing provisions should not be changed to enable training of AI applications and systems without consent and transparency to the detriment of creators and rightsholders.[94]

4.96 It was noted by a number of inquiry participants that copyright holders had experienced significant difficulties trying to ascertain whether their material had been used to train AI systems or to challenge its use for such purposes;[95] and, accordingly, that transparency would be a critical element if copyright law is to effectively regulate and capture the use of copyrighted material by AI. The MEAA, for example, stated:

> …it is crucial that summaries of training datasets are made publicly available so that creatives can ascertain whether their work has been used in the training process. If not, it will not be possible to know the extent of use.[96]

4.97 The submission of the Attorney-General's Department (AGD) noted that the issues identified by AI and creative industries stakeholders in relation to Australia's copyright framework are 'complex, global, and contested'. It advised that AGD is consulting on copyright issues with stakeholders, including through a series of copyright roundtables held in 2023, and the Copyright and Artificial Intelligence Reference Group (CAIRG), which was established in December 2023 to 'better prepare for future copyright challenges emerging from AI' and advise government on the key copyright policy problems and potential solutions.[97]

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[92] Schools and TAFE Copyright Advisory Group, *Submission 92*, p. 7.

[93] AWG, AWG Authorship Collecting Society, ASEG, APDG and ACS, *Submission 117*, p. 4.

[94] ARIA, *Submission 166*, p. 1.

[95] See, for example: NAVA, *Submission 115*, p. 3.

[96] MEAA, *Submission 137*, p. 5.

[97] Attorney-General's Department, *Submission 154*, p. 3.

4.98 While stakeholders generally approved of the work of CAIRG as an ongoing consultation mechanism with the creative sector,[98] some suggested that the impacts of AI on the creative industries requires more far-reaching whole-of-government approach.[99]

Copyright in relation to output of generative AI models

4.99 A further issue in relation to copyright arises in relation to the outputs of generative AI models. As noted in the ACC submission:

> If generative AI reproduces a 'substantial part' of existing copyright material in the output, depending on the nature of the (text or image) prompt [input by the user], the user may be liable for copyright infringement.[100]

4.100 The ACC noted that in such cases the owner of the generative AI platform may also be liable for copyright infringement on the basis that they 'had the power to put in place measures to prevent an infringement of copyright and failed to take reasonable preventative steps to do so' (authorisation liability). In addition, copyright offences could apply to the distribution of AI-generated outputs that substantially reproduce copyright materials.[101]

4.101 The MEAA submission noted that, while the outputs from generative AI are meant to be 'synthetic', meaning they are 'not meant to closely resemble the materials they themselves were trained on', it expressed concern that in some instances 'AI models have been known to produce outputs that contain copyrighted material:

> …several audit studies have shown that AI models–through the use of selective prompts–can generate copyrighted material originally used in training [which has resulted in a number of lawsuits]…[102]

4.102 Ms Nicole Foster, Director of Global AI/ML Public Policy for Amazon Web Services, however, advised the committee that AI products could be designed to operate with protections such as 'memory suppression…to prevent the [AI] models…from outputting any copyrighted content'.[103] In support of this, Amazon, like other developers, indemnifies users of its generative AI products from intellectual property claims from third parties. However, the fine print of the indemnification terms includes a range of exclusions, including where the

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98 See, for example: Copyright Agency, *Submission 82*, p. 4; Australian Publishers Association, *Submission 138*, p. 2; and ASA, *Submission 139*, p. 10.

99 See, for example: Australian Publishers Association, *Submission 138*, p. 2

100 ACC, *Submission 173*, p. 5.

101 ACC, *Submission 173*, p. 5.

102 MEAA, *Submission 137*, p. 6.

103 Ms Nicole Foster, Director, Global AI/ML Public Policy, Amazon Web Services, *Committee Hansard*, 16 August 2024, p. 6.

user generates content that it should 'know or reasonably should know may infringe or misappropriate another party's intellectual property rights',[104] suggesting that whatever protections Amazon has in place do not truly stop infringing content from being produced.

4.103 The Screen Producers Australia submission suggested that production companies are 'abstaining' from using AI for some purposes given the current potential for copyright infringement by the use of AI-generated outputs.[105]

AI deepfakes or mimicry of artists

4.104 This issue of AI outputs potentially infringing copyright is further complicated by the potential for AI to generate 'deepfakes' of artists or outputs that closely mimic or resemble the style of copyrighted material on which it has been trained. The MEAA submission noted:

> Another issue occurs when the output is not directly reproduced from training materials but clearly mimics the style or likeness of a creator or performer. For example, many are concerned about the capacity of AI to produce work 'in the style of' particular actors, performers, musicians, artists, or writers.[106]

4.105 The Guild and Cinematographers submission observed that, drawing on the body of an artist's work, AI has the capacity to produce 'new' works that mimic the creative elements that constitute an artist's distinctive style:

> For some of our best-known creative practitioners, their existing corpus of work has a distinctive 'voice' (which will incorporate audio-visual as well as written elements) and this forms part of their commercial appeal as a creative. It is intrinsic to their future work, and a key factor in their ongoing and future engagement. AI can be used to replicate an individual creative's artistic or 'authorial voice' (and future works in this voice) simply by requesting an output in the style of a particular author or artist.[107]

4.106 In relation to AI's capacity to create deepfakes of music—songs or music that strongly resembles the style and sound of an artist or band—the submission of the Australasian Performing Right Association and Australasian Mechanical Copyright Owners Society (APRA AMCOS) commented on the 'ever-increasing quality of the audio being generated' and the 'speed at which deepfake music is going viral', noting that:

> …it is abundantly clear that deepfake music is using unauthorised datasets to train AI models to produce imitations of popular artists. The protected creative work of human practitioners is being used without permission to

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[104] Amazon Web Services (AWS), 'AWS Service Terms', 19 November 2024, https://aws.amazon.com/service-terms/, clause 50.10.2.

[105] SPA, *Submission 141*, p. 2.

[106] MEAA, *Submission 137*, p. 6.

[107] AWG, AWG Authorship Collecting Society, ASEG, APDG and ACS, *Submission 177*, p. 5.

generate AI content that directly damages and dilutes an artist's profile, brand, market, and economic livelihood.[108]

4.107 In addition to the issue of AI being trained on artists' work without authorisation or payment, APRA AMCOS warned that the ease and low cost of producing deepfake music could have broader commercial and financial implications for music artists.

> Deepfake music can be cheap to create and is royalty-free, which runs the risk of incentivising music streaming platforms to allow deepfake music since no compensation need be paid to writers, performers, publishers, or record labels…[109]

4.108 AI deepfakes also pose significant threats for voice actors, with AI able to quickly and easily clone human voices off small samples. The Australian Association of Voice Actors (AAVA) submission stated:

> The emergence of AI technology threatens to undermine [Voice Actors] work by enabling the creation of synthetic clones of their voices, without their consent. Disreputable companies are right now stealing current Voice Actor work and feeding it into AI machine learning to breathe life into a clone of the human artist.[110]

4.109 Inquiry participants also noted that, unlike copyright protection of artistic works, the legal protections afforded to a person's likeness, or to the intrinsic character or qualities of their voice or appearance, are less clear and accessible. On this matter, Mr Joseph Mitchell, Assistant Secretary of the Australian Council of Trade Unions, told the committee:

> The theft of voice, body and movement is something acutely felt by creative workers. You should not need the power and resources of Scarlett Johansson to sue OpenAI for the theft of her voice. For creative workers in Australia, the ownership of their creative and cultural capital is paramount and must be protected by law.[111]

4.110 The AAVA submitted that deepfakes of artists' voices 'not only jeopardises…[their] economic interests' but also 'raises profound ethical concerns regarding the unauthorised use of their likeness.' It observed:

> A Voice Actor's sound, their timbre, their tone is to them like a line of code is to Microsoft–it is their property…[112]

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[108] Australasian Performing Right Association and the Australasian Mechanical Copyright Owners Society (APRA AMCOS), *Submission 169*, p. 3.

[109] APRA AMCOS, *Submission 169*, p. 3.

[110] The Australian Association of Voice Actors (AAVA), *Submission 38*, p. 4. See also: Mr Joseph Mitchell, Assistant Secretary, ACTU, *Committee Hansard*, 21 May 2024, p. 42.

[111] Mr Joseph Mitchell, Assistant Secretary, ACTU, *Committee Hansard*, 21 May 2024, p. 42.

[112] AAVA, *Submission 38*, p. 4. See also: Mr Joseph Mitchell, Assistant Secretary, ACTU, *Committee Hansard*, 21 May 2024, p. 42.

Healthcare sector

4.111 In addition to the concerns outlined above about the potential impacts of AI on workers and workplaces, the introduction of AI poses particular challenges in high-risk settings, in which the significant opportunities for beneficial uses of AI must be weighed against the possibility of potentially very serious harms or consequences.

4.112 To illustrate such matters, the following section considers the evidence received by the inquiry in relation to the use of AI in the healthcare sector.

Opportunities for use of AI in the healthcare sector

4.113 The submission of the Department of Health noted that, while AI is already used in the healthcare sector for some purposes, the 'rapid development of commercial AI solutions reveals opportunities for generative AI to solve urgent and emerging challenges in the Australian health system'. It noted that a research report released by the Productivity Commission (PC) in May 2024, titled *Leveraging digital technology in healthcare* (2024 PC healthcare report), found that the healthcare sector 'has the most potential to benefit from AI adoption'.[113]

4.114 Inquiry participants identified a wide range of potential uses of AI in healthcare. Professor Steve Robson, the President of the Australian Medical Association, observed:

> There is no doubt the rollout of artificial intelligence as a routine part of medical care has the potential to deliver extraordinary innovation in health care in Australia. It's likely to be transformative for patients, doctors, all health professionals and probably the entire economy.[114]

4.115 The Queensland Nurses and Midwives' Union (QNMU), for example, pointed to 'significant opportunities in the appropriate application of AI in healthcare':

> …AI-enabled health technologies have the potential to reshape healthcare delivery, improve patient outcomes, and enhance the efficiency of healthcare…There are already examples of AI tools being used to improve healthcare delivery, such as the early detection of Alzheimer's disease, melanoma and skin lesions and analysing medical images to detect anomalies.[115]

4.116 Similarly, the Department of Health submission stated:

> The safe adoption of AI has the possibility to solve urgent and emerging challenges in our health system and alleviate the pressure on our healthcare

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[113] Department of Health (DOH), *Submission 182*, p. 3. See also: Nuvento, *Submission 45*, p. 3; Computing Research and Education Association, *Submission 50*, p. 3; UTS Faculty of Engineering and Information Technology, *Submission 62*, pp 3-4; and Commonwealth Scientific and Industrial Research Organisation, *Submission 63*, p. 3.

[114] Professor Steve Robson, President, Australian Medical Association, *Committee Hansard*, 17 July 2024, p. 53.

[115] Queensland Nurses and Midwives' Union (QNMU), *Submission 107*, p. 4.

workforce. AI technology could address increased expectations for personalised health services, improved access to care, rising costs and the growing complexity of care for people with chronic conditions.[116]

4.117 AI can also be applied to aspects of healthcare administration. For example, in hospitals and medical practices, AI could be used to predict pre-admission rates, allocate hospital beds; schedule appointments; register patients; draft referral letters and care plans; and manage patient billing.[117]

4.118 The Department of Health noted that AI also has potential applications on the consumer side of the healthcare sector:

> For consumers, AI might assist in navigating an increasingly complex health system, allow for real time language translation into a preferred language and use of health care outside of traditional business hours. Populations with the greatest potential to benefit from AI include people in regional communities, shift workers and those who speak languages other than English who may have difficulty using services.[118]

4.119 The 2024 PC healthcare report noted that the rapidly increasing scope of applications for AI could 'free up the health workforce and prioritise resources to enhance the quality of care'. The report stated that AI has the potential to 'enhance productivity in almost every aspect of the healthcare sector', including keeping well, early detection and diagnosis of disease, decision-making, treatment, end of life care, [and] research and training.[119]

4.120 Given its potential benefits, some inquiry participants cautioned about being too slow to adopt AI in the healthcare sector. The Australian Centre for Health Engagement, Evidence and Values, for example, noted that Australia has 'lagged the world' in the development and implementation of AI in healthcare.[120] The Royal Australian and New Zealand College of Radiologists (RANZCR) submission, noting AI's potential to address workload pressures in their profession, warned of the potential for missed opportunities:

> The safe implementation of AI could prove to be a contributing factor in assisting radiologists and other medical specialists in managing their increasing workloads effectively. Failure to implement AI technology in radiology practices not only poses risks but also represents missed opportunities for enhancing patient outcomes, streamlining healthcare delivery, and providing healthcare workers with the required tools to do a better job.[121]

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[116] DOH, *Submission 182*, p. 3.

[117] DOH, *Submission 182*, p. 3.

[118] DOH, *Submission 182*, p. 3.

[119] Productivity Commission, *Leveraging digital technology in health care*, p. 7.

[120] Australian Centre for Health Engagement, Evidence and Values (ACHEEV), *Submission 80*, p. 2.

[121] Royal Australian and New Zealand College of Radiologists, *Submission 40*, p. 1.

4.121 The Australian Nursing and Midwifery Federation (ANMF) suggested that uptake of AI systems in Australia is 'inhibited' by 'a lack of trust in confusing, often untranslatable, models; data security and privacy concerns; health inequity concerns due to underlying data biases; and poor government regulation',[122] and the evidence of most health-sector stakeholders stressed the need to address the significant risks of AI before it is implemented in healthcare settings.

Risks of AI in the health care sector

4.122 The Department of Health noted that 'health care is recognised as a high-risk use case for AI'.[123] It observed:

> The application of AI in health care presents heightened ethical, legal, safety, security and regulatory risks. The risks for health care are heightened because of the direct effect [sic] on patient safety...[124]

4.123 Healthcare-sector stakeholders acknowledged that the potential benefits of AI come with 'enormous challenges'.[125] The Australian Centre for Health Engagement, Evidence and Values, for example, observed that 'healthcare and public health, while potentially offering pathways to benefit, are also high-risk and high-stakes areas for any application of AI'.[126]

Privacy and data security

4.124 As noted in Chapter 2, AI technologies involve the use of significant amounts of personal data, from the large data sets used to train and operate AI systems, to the personal information that is entered into AI systems and used to generate outputs for various purposes.

4.125 The QNMU observed:

> …significant risks attach to the use of personal healthcare information and patient data to train and use AI systems for healthcare applications…[including the] privacy of the underlying data upon which AI applications are trained, but also concerns around the use of information entered into AI systems (e.g., medical records).[127]

4.126 The ANMF outlined the potential risks of misuse or mishandling of personal information used by or contained in AI systems:

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122 Australian Nursing and Midwifery Federation (ANMF), *Submission 30*, p. 11.

123 DOH, *Submission 182*, p. 3.

124 DOH, *Submission 182*, p. 6.

125 Professor Steve Robson, President, Australian Medical Association, *Committee Hansard*, 17 July 2024, p. 53.

126 ACHEEV, *Submission 80*, p. 1.

127 QNMU, *Submission 107*, p. 5.

…in the context of health care…[there are] serious concerns regarding the privacy of personal medical data. The sharing of large health data repositories to inform systems, such as machine learning, is often done without the permission or knowledge of patients, and with advanced AI tools that are capable of identifying individuals even in de-identified datasets, concerns and hesitancy to provide information are warranted. Further, personal clinician or patient use of AI tools, particularly free and open-source AI, if not used with appropriate precautions can result in personal health data becoming publicly available.

The risks of AI tools that contain clinical data being hacked and used for malicious purposes also pose serious risks to patients' privacy and well-being. Further, companies' data mining and selling private patient data for profit is of major concern.[128]

4.127 The QNMU considered that 'ensuring that sensitive patient information remains confidential and [is] used responsibly is essential to building trust in AI technologies', and expressed its support for 'privacy law reforms to strengthen existing frameworks to address data privacy risks and harms related to AI'.[129]

4.128 Similarly, the Consumers Health Forum submitted:

Data safety and privacy are of paramount importance for consumers. AI is bound to collect extensive amounts of data when utilised in clinical settings, and consumers have the right to know where and how this data is stored and used.

…Specific legislation that safeguards data collected and used by AI throughout its entire lifecycle, from data collection to storage to data elimination, needs to be implemented…[and legislation] must clearly state who can access data collected via AI and how data is collected, stored and used.[130]

Automation and accountability

4.129 Inquiry participants raised concerns about the potential impacts of automation in the healthcare sector, including in relation to its impact on jobs and career pathways, the traditional relationship of care between health professionals and patients, and the accountability of health professionals for decision-making.

4.130 The submission of the ANMF noted that automation in the healthcare sector would 'create workforce redundancies' leading to loss of employment and income for workers. It observed:

The wider implementation of AI will require the reskilling of the workforce as jobs become gradually replaced by autonomous AI systems and new jobs are developed. This will necessitate strategic planning in how AI systems

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[128] ANMF, *Submission 30*, p. 10.

[129] QNMU, *Submission 107*, p. 5.

[130] Consumers Health Forum, *Submission 93*, p. 9.

are implemented throughout the workforce and investments to support those affected.[131]

4.131 While noting the potential for AI and automated systems to increase access to affordable healthcare, the ANMF cautioned that automation in pursuit of cost-saving could in fact increase the inequity of the healthcare system:

> Artificial intelligence as a method for increasing equitable access, a common selling point for such systems in the healthcare setting, raises several concerns. While such systems are highly regarded for their affordability and offering opportunities for those who are disadvantaged to have some level of care, these systems should not replace a person's access to human practitioners as a means of cost-saving. Unnecessary gatekeeping of human practitioners through the design of autonomous systems to service the health needs of the disadvantaged should not restrict access to human/preferred care and perpetuate inequities. The adoption of AI technologies in healthcare and beyond should not be such that those with greater means and resources stand to benefit more than those with less.[132]

4.132 Others noted the importance of maintaining the human element of healthcare. The QNMU, for example, observing that the nursing and midwifery professions are 'deeply rooted in values of empathy, compassion, and the ability to form meaningful connections with patients', commented:

> The introduction of AI-driven technologies could lead to a loss of the human element, potentially affecting patient satisfaction and overall wellbeing…AI must be used to complement and support professional roles, without compromising the human connection that remains irreplaceable in healthcare delivery and central to the nursing and midwifery professions.[133]

4.133 Similarly, Ms Annie Butler, the Federal Secretary of the Australian Nursing and Midwifery Federation, emphasised the importance of retaining the essential human aspect of the healthcare experience for patients:

> …if you're in hospital… you don't often remember the machines and all the things that were done to you. You often remember the hand that touched you…[Our concern is therefore] about making sure we don't allow AI to dehumanise the delivery of care and take away the thing that matters so often most people, particularly to elderly residents in nursing homes…[We should use AI] as a copilot and never allow it to take over so that the clinician remains at the forefront guiding the overall delivery of care and an entire patient journey.[134]

4.134 The QNMU also opposed the development or use of AI 'solely…for the exclusive substitution or replacement of professional roles':

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[131]   ANMF, *Submission 30*, pp 13-14.

[132]   ANMF, *Submission 30*, p. 10.

[133]   QNMU, *Submission 107*, p. 5.

[134]   Ms Annie Butler, Federal Secretary, ANMF, *Committee Hansard*, 17 July 2024, p. 54. See also: ANMF, *Submission 30*, pp 7-8.

> …AI must never replace human-delivered care and clinical decision making, but rather be used as a tool to contribute to quality improvement and clinical care optimisation.[135]

4.135 In addition to such concerns about 'dehumanising' healthcare work, the Australian Centre for Health Engagement noted that automation creates the risk of deskilling healthcare workers, which could 'compromise decision making across various stages of clinical management, and potentially undermine patient safety'.[136]

4.136 Automation was also seen as raising significant questions of accountability around healthcare decision-making, particularly where decisions lead to mistakes or poor outcomes. The Department of Health referred to the problem of 'automation bias'—being the 'tendency for humans to over-rely on, and delegate responsibility to, decision support systems'—creating a risk for patients where AI systems make errors and 'complicating accountability'.[137] On this issue, the QNMU submitted:

> It remains unclear who would be responsible for any errors or adverse events caused by the AI systems and how to establish a clear framework for liability and regulation…[138]

4.137 Given this, the QNMU called for 'clinical and regulatory oversight of AI system outputs' 'to ensure AI system recommendations are safe, appropriate, and relevant to the patient'.[139]

Bias, discrimination and error

4.138 As noted in Chapter 2, a major and widely recognised risk of AI is the capacity of AI systems to generate results or decisions that are biased or erroneous. The problem of bias can arise from AI design or bias within the data used to train an AI system, and lead to discriminatory outcomes where human decisions are based on the outputs of that system.

4.139 The ANMF submission observed that, while AI can match or even outperform human practitioners in performing certain tasks—for example in diagnosing certain illnesses—the accuracy of such systems is highly dependent on the quality or representativeness of the data on which the AI system is trained. It explained:

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[135] Australian Centre for Health Engagement, Evidence and Values, *Submission 80*, p. 3.

[136] ACHEEV, *Submission 80*, p. 3.

[137] DOH, *Submission 182*, p. 7.

[138] QNMU, *Submission 107*, p. 6.

[139] QNMU, *Submission 107*, p. 6.

> If the dataset [used by an AI model] lacks a diversity of presentations across a diverse sample set…the model has the potential to develop biases and inaccuracies among certain groups.[140]

4.140 The Department of Health submission noted that AI bias in healthcare settings can lead to worse care and health outcomes for certain groups:

> …biased algorithms can lead to exacerbation of inequities, existing social inequalities, and disparities in patient care, especially in underrepresented populations. For example, a machine learning algorithm was found to be less accurate at the detection of melanoma in darker skinned individuals, as it had mainly trained on fair skinned patients. AI may also predict greater likelihood of disease because of gender or race when those are not causal factors.[141]

4.141 Similarly, the ANMF noted that AI systems are influenced by bias towards underrepresented populations in health research generally, which 'must be addressed prior to the wider implementation of AI models based on this data':

> As white people have been the primary reference group in clinical assessments, AI models based on this data will reflect these biases. Historical data, on which AI models are based, are racially biased. For example among women with breast cancer, black women had a lower likelihood of being tested for high-risk mutations compared with white women, leading to an AI algorithm that depends on genetic test results being more likely to mischaracterize the risk of breast cancer for black patients than white patients. Discrimination in medical research also includes dangerous prejudices against gender and sexually diverse people which must be unpacked and disentangled from data sets before they are implemented into AI systems.[142]

4.142 Further, the Department of Health noted the potential for AI to produce not just biased but completely erroneous outputs, which can also have significant consequences for patient safety and health outcomes:

> In some cases, [AI] outputs can be entirely wrong, commonly referred to as hallucinations. This may pose serious patient safety risks when AI software is used to give clinical decision-making support, for example differential diagnosis or disease screening tools. AI algorithm failure could lead to incorrectly categorising a patient resulting in unnecessary, delayed or ineffective treatment.[143]

4.143 Given the significant consequences of AI bias, discrimination and error in healthcare settings, the ANMF and others emphasised the 'need for guidelines for the development and rigorous testing of AI models before their

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[140] ANMF, *Submission 30*, pp 8-9.

[141] DOH, *Submission 182*, p. 7.

[142] ANMF, *Submission 30*, pp 8-9.

[143] DOH, *Submission 182*, p. 7.

implementation',[144] as well as incorporating 'a human in the loop…during the design and use of AI technologies'.[145]

Transparency

4.144 As noted in Chapter 2, the need for transparency in the development and operation of AI systems is a 'a key principle at the highest levels of international governance and for industry when it comes to responsible AI adoption',[146] and the evidence of healthcare sector stakeholders revealed a broad consensus on the need for transparency of AI systems used in healthcare settings to mitigate the significant potential risks to patient safety.

4.145 For example, the Department of Health noted the importance of healthcare providers being informed of any limitations in the data used to train or operate AI systems to allow them to understand potential biases of the system and avoid discriminatory and unsafe outcomes for patients.[147]

4.146 Stakeholders also stressed the need for healthcare practitioners to be able to understand the algorithms or 'logic' by which AI system outputs are produced, especially when used to support decision-making in clinical contexts. The QNMU, for example, considered that AI should be subject to 'greater testing, transparency and oversight' to allow practitioners to verify or validate the reliability of the algorithms used to generate outputs:

> AI standards must require transparency and accessibility for health practitioners and users to be informed about AI supported clinical decision[s], including the right to access information about how an AI-assisted decision was made, where that decision affects them.[148]

4.147 Similarly, the Department of Health stated:

> Data standardisation, stewardship and interoperability are important steps in optimising data quality for trusted AI outputs…Achieving transparency in AI systems through responsible disclosure is essential to ensure that users understand what the system is doing and why. Understanding processes and input data helps consumers and healthcare providers to build confidence in the technology. The requirements for transparency in health care are crucial since the decisions directly affect people's lives.[149]

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144 ANMF, *Submission 30*, p. 9. See also, for example: QNMU, *Submission 107*, p. 6.

145 DOH, *Submission 182*, p. 7.

146 Tech Council of Australia, *Answers to questions on notice (15)*, 21 May 2024 (received 19 June 2024), p. 1.

147 DOH, *Submission 182*, p. 7.

148 QNMU, *Submission 107*, p. 6.

149 DOH, *Submission 182*, p. 7.

Regulation of AI in the healthcare sector

4.148 In light of the risks outlined above, healthcare sector stakeholders identified the need for government to develop a regulatory framework to ensure the safe, ethical and effective use of AI in healthcare settings, with current regulatory arrangements acknowledged as being insufficient. QNMU, for example, noted:

> The deployment and application of AI remains largely unregulated and there is lack of transparency regarding the ethical principles of how AI technologies are developed and no real nationally coordinated governance and regulatory arrangements in place to ensure the ongoing efficacy and ethical safeguards of AI.[150]

4.149 The submission of the Department of Health cited studies showing low levels of confidence in Australia and overseas regarding the use of AI in healthcare due to its potential risks, noting that 'if patients and clinicians do not trust AIs, their successful integration into clinical practice will ultimately fail'.[151]

4.150 While generally acknowledging the difficulty of ensuring that AI 'regulation is future-proofed and can meet unforeseen challenges without restraining innovation',[152] inquiry participants called for strong and comprehensive regulation of AI in the healthcare sector due to its significant potential risks for human health and care outcomes. The QNMU, for example, stated that AI requires a 'higher burden of regulatory compliance due to the potential risks and harms to patient health', calling for a comprehensive regulatory framework to address the range of risks presented by AI:

> Regulatory frameworks should ensure appropriate implementation of ethical principles pertaining to AI in healthcare, including elimination of biases, maintaining privacy of patient and practitioner data and the establishment of national governance and accreditation frameworks…[Regulatory] frameworks or guidance must ensure that the rights of patients are protected, and improved health outcomes are achieved. This will require AI to be developed and regulated to ensure specific and appropriate safeguards, such as human intervention during decision-making processes and upholding that health professionals are the ultimate decision makers for clinical care.[153]

4.151 The ANMF submitted that the 'complexity' of regulating AI highlights the need for national standards for 'the governance of healthcare-based AI systems to ensure their capability to translate to safe and effective clinical services',[154] and

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[150] QNMU, *Submission 107*, p. 7.

[151] DOH, *Submission 182*, p. 4.

[152] QNMU, *Submission 107*, p. 3.

[153] QNMU, *Submission 107*, p. 3.

[154] ANMF, *Submission 30*, p. 11.

called for the development of such safeguards 'in consultation with consumers, industry, peak bodies, and other key stakeholders'.[155]

4.152 The importance of consultation with the healthcare industry in the development of the regulatory scheme for AI was a strong theme in the evidence of inquiry participants, with the QNMU, for example, also calling for consultation to 'better evaluate the opportunities, impacts and regulatory requirements specific to the healthcare environment'.[156]

4.153 In this regard, the Department of Health submission pointed to ongoing consultation with the healthcare sector on regulating AI, which commenced with the government's *Safe and responsible AI in Australia* discussion paper released in June 2023. The department noted that a number of submissions to the consultation had 'advocated for a risk-based approach to regulation that ensures the ethical implementation of AI in healthcare…and supports national governance establishment'.[157] Support for a risk-based regulatory approach was also expressed in some submissions to the inquiry, with the Consumers Health Forum (CHF), for example, calling for Australia to adopt a risk-based regulatory framework for AI similar to the approach taken by the European Union's Artificial Intelligence Act.[158]

Committee view

4.154 The evidence received by the inquiry has shown that, while AI is already used in many industries, the generative AI systems like ChatGPT-4 that have come to such prominence in recent years have the potential for myriad new uses in the workplace, and to drive significant improvements to the productivity of Australian businesses and workers. These productivity gains will be delivered through the use of generative AI to both augment and automate work tasks, thereby freeing up workers to be employed more efficiently and to undertake higher value tasks.

Job losses and training

4.155 However, the committee heard significant concerns about the potential for the use of AI in workplaces to impact work and jobs. AI will primarily be used to support and augment existing jobs by automating or streamlining specific tasks; however, there will also be some job losses where entire roles are able to be fully automated by AI. While the committee acknowledges that there will be high growth in the AI-related jobs that support the development and deployment of AI in workplaces and beyond, AI automation will tend to replace jobs that

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[155] ANMF, *Submission 30*, p. 4.

[156] QNMU, *Submission 107*, p. 3.

[157] DOH, *Submission 182*, p. 5.

[158] Consumers Health Forum, *Submission 93*, p. 7.

require lower education and training requirements or that are particularly well suited to being performed by generative AI systems. In this regard, the committee notes with concern that job losses flowing from the use of AI in the workplace are likely to have a disproportionate impact on vulnerable groups, such as women and people in lower socioeconomic groups.

4.156 Further, the automation of low-skilled jobs has the potential to disrupt entry pathways into industries through apprenticeships and trainee schemes, thereby undermining the career prospects of young people and the longer-term viability of workforces, as well as contributing to the problem of social inequality more generally.

4.157 Given the likelihood of job losses arising from the adoption of AI in workplaces, inquiry participants called strongly for government to ensure that robust policies, programs and supports are in place to provide for the training and reskilling of workers whose jobs are replaced or impacted by AI.

Workplace impacts

4.158 The committee is also concerned about evidence regarding the impacts of AI on workers' rights and working conditions, particularly where AI systems are used for workforce planning, management and surveillance in the workplace. The committee notes that such systems are already being implemented in workplaces, in many cases pioneered by large multinational companies seeking greater profitability by extracting maximum productivity from their employees. The evidence received by the inquiry shows there is considerable risk that these invasive and dehumanising uses of AI in the workplace undermine workplace consultation as well as workers' rights and conditions more generally.

Workforce consultation

4.159 Given the potential impacts of AI on workplaces and workers, many inquiry participants stressed the importance of consultation with workforces in relation to proposed uses of AI in the workplace. Submitters and witnesses noted that consultation with workers reduces the potential for AI to negatively impact on workers, increases the prospects of AI systems being safely and successfully introduced to workplaces, and provides for appropriate transparency and consultation where the implementation of AI will lead to the replacement of jobs and job losses.

4.160 However, the committee heard that consultation with workforces around AI is presently insufficient, with a lack of a nationally consistent framework for ensuring transparency, consultation and negotiation with workers in relation to the use and management of AI in the workplace. A number of inquiry participants suggested that the regulation of AI in the workplace could be profitably informed by Australia's approach to regulating OH&S, which is done through nationally consistent laws establishing a risk-based framework for effective representation, consultation and cooperation between workers and

employees in relation to OH&S. As the introduction and use of AI in workplaces is fundamentally a matter of risk management and safety, the committee considers that there is significant merit to developing OH&S-style approaches to the regulation of AI in the workplace.

4.161 In addition to workplace consultation, inquiry participants pointed to the need for government to ensure that Australia has robust policies and supports in place to ensure that workers are consulted prior to any redundancies or restructures and to provide for training and reskilling of workers whose jobs are replaced.

Impacts of AI on creative industries

4.162 While much of the evidence received by the inquiry addressed the prospective or anticipated impacts of AI on Australian industry, business and workers at a general level, a significant body of evidence was received identifying the impact that AI is already having on the creative industries in Australia.

4.163 In this regard, the committee notes that generative AI may be well-suited to augmenting and automating certain tasks in the creative industries, particularly tasks that are auxiliary to the primary creative process, that could deliver some efficiency and productivity gains .

4.164 However, creative industry stakeholders almost unanimously expressed grave concerns about the impact of generative AI on jobs, career pathways, the quality of creative outputs and the health of the creative industry labour market generally.

Copyright

4.165 A particularly pressing concern for the creative industry is the issue of copyright infringement arising from the use of copyrighted materials to train AI systems. The committee heard that copyright is a fundamental source of income that sustains artists and the creative industries more generally, providing creators of artistic works with the exclusive economic rights to perform, sell and license the use of their works to third parties.

4.166 The committee heard that, as copyright can only apply to works created by human authors, at present there is a lack of clarity in Australia's copyright laws regarding the extent of copyright protection, if any, that is afforded to works created by humans with the assistance or augmentation of AI. Creative industry stakeholders therefore called for copyright law to be clarified as to the extent of copyright protection afforded to works created with assistance from AI.

4.167 A more far-reaching and entrenched concern in relation to copyright arises in relation to the use of copyrighted materials to train AI system without the permission or authorisation of the copyright holder. The committee heard that it is widely accepted that large amounts of copyrighted material have been used without permission to train the foundation or LLMs on which generative AI

systems like ChatGPT-4 are built. While in countries like the US the use of copyrighted materials in this way may not infringe the copyright holders' rights—although this notion is being challenged by dozens of lawsuits brought by US creative workers—such uses are likely to amount to a breach of copyright under Australia's more stringent copyright laws.

4.168 However, the committee heard that a lack of transparency around precisely what materials are used to train AI models has made it difficult for Australian copyright holders to ascertain if their works have been used to train AI models, and therefore to pursue compensation for any such infringement of their copyright. In addition, this issue is further complicated by the question of whether and to what extent copyright holders should be entitled to financial compensation for the outputs of generative AI systems that are based on copyrighted material.

4.169 The views of inquiry participants on how to resolve the issues relating to copyright were mixed. The majority of creative industry stakeholders, particularly those directly representing creative workers and rightsholders, called for increased transparency and disclosure around the materials used to train AI, and for Australia's existing copyright and royalty schemes to continue to be used and adapted, as necessary, to ensure that copyrighted materials cannot be used to train AI or formulate the output of AI systems without the permission and remuneration of copyright holders.

4.170 On the other hand, some stakeholders— predominantly those representing AI developers, and production companies who stand to profit from the automation of creative work—were concerned that Australia's more stringent copyright protections in relation to the use of copyrighted materials to train AI would stifle the development of AI systems in Australia, and therefore recommended that the copyright law be amended to provide an exemption for such uses.

4.171 The committee notes that the impacts of AI on copyright, and particularly the use of copyrighted material to train AI systems, raise complex legal matters relating to the objects and design of Australia's copyright framework and the development of AI systems and the AI industry in Australia. The committee recognises that the resolution of these issues involves important policy questions, and notes that consultation with the creative industries is presently occurring through the Copyright and Artificial Intelligence Reference Group (CAIRG) that has been stood up by the Attorney-General's Department.

Deepfakes or mimicry of artists

4.172 The capacity of AI to produce deepfakes or outputs that closely resemble artists' copyrighted work or style was another significant issue raised by creative industry stakeholders. The committee heard that AI can generate deepfakes or outputs that convincingly reproduce the style of an artist with relative ease, and

without the payment of any compensation or remuneration, thereby undermining artists' brands and livelihoods.

4.173 In the case of certain creative professions, such as voice artists, the ability of AI systems to copy or deepfake a person's voice not only creates the potential for devastating loss of earnings, but also raises significant moral concerns about the commercial appropriation of intrinsic aspects of a person's being or likeness.

Impacts of AI on the healthcare sector

4.174 The inquiry also received a considerable amount of evidence regarding the potential opportunities and risks of the use of AI in the healthcare sector. The committee heard that the healthcare sector can potentially realise some of the greatest benefits from the use of AI, including in relation to medical research, preventative health, diagnostics, chronic disease management, medical administration and patient access to medical services.

4.175 However, inquiry participants recognised that the risks of AI in healthcare are correspondingly high due to the potential for adverse outcomes to adversely affect patient safety and health outcomes. In this regard, the concerns raised by submitters and witnesses about the specific risks of AI in the healthcare sector illustrate how the general risks of AI discussed in Chapter 2 can apply in high-risk settings. Key risks identified by healthcare sector stakeholders included: data security; automation and accountability; bias, discrimination and transparency.

4.176 In terms of regulating AI in healthcare settings, there was broad agreement among inquiry participants that the current regulatory arrangements in Australia are insufficient to manage the risks of AI in healthcare, with some noting that low levels of public and stakeholder confidence in the management of AI's risks represent a barrier to the successful integration of AI into healthcare settings. Accordingly, the committee identified widespread support for strong and comprehensive risk-based regulation of AI, based on appropriate industry consultation and evaluation to ensure that regulatory arrangements are well calibrated to address the respective opportunities and risks of AI in healthcare settings.

Regulating the impacts of AI on industry, business and workers

4.177 As set out in Chapter 2, since 2019 the Australian government has implemented a number of policy proposals and initiatives seeking to introduce frameworks and guidance for industry, business and government on the responsible and ethical development and implementation of AI. These include, for example:

- the release of the AI Ethics Framework in November 2019, setting out principles to guide businesses and government in the responsible design, development and implementation of AI; and

- the establishment of the National Artificial Intelligence Centre in 2021 to support and accelerate Australia's AI industry, including by helping small and medium businesses to adopt AI by addressing barriers to the implementation of AI technology.

4.178 In June 2023, the government commenced the consultation on safe and responsible AI in Australia, designed as the vehicle to inform a comprehensive policy response to the regulation of AI in Australia. Following an interim government response in January 2024, the government released its *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings* in September 2024 (the high-risk AI proposals paper),[159] confirming the government's commitment to a risk-based approach to AI focused on regulating AI in high-risk settings, seeking views on proposed principles for assessing whether AI systems should be classified as high risk, and proposing three options for implementing mandatory guardrails for AI for further public consultation.

4.179 The committee notes that the high-risk AI proposals paper broadly recognised the potential risks to industry, business and workers of AI systems in the workplace. The proposals paper noted that using AI systems in employment settings can have 'substantial impacts on a person's opportunities…[including] in recruitment and hiring, promotions, transfers, pay and termination',[160] as well as the risk of inequitable impacts where AI is implemented without sufficient consultation with workers:

> Adopting AI in the workplace can also affect workers, who may feel excluded from discussions around how AI is integrated into business contexts. When a poorly designed AI system is adopted at scale, it can cause systemic social inequality and marginalisation of groups including women, people of colour and people with disabilities.[161]

4.180 The committee further notes that the government's proposed principles for assessing whether AI systems should be classified as high risk would allow consideration of a number of the workplace impacts and risks identified by inquiry participants. These include:

- the risk of adverse impacts to an individual's rights recognised in Australian human rights law without justification, in addition to Australia's international human rights law obligations (principle (a)), which could

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[159] Department of Industry, Science and Resources (DISR), *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024.

[160] DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024, p. 27.

[161] DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024, pp 13-14.

allow assessment, for example, of AI's impacts on AI bias leading to discriminatory outcomes in employment recruitment;[162]

- the risk of adverse impacts to an individual's physical or mental health or safety (principle (b)), which could allow assessment, for example, of the impacts of AI-driven worker surveillance on the mental health of workers, and the impacts of AI bias on different cultural groups or physiologies;[163]
- the risk of adverse impacts to groups of individuals or collective rights of cultural groups (principle (d)), which could allow assessment, for example, of AI bias in healthcare settings on vulnerable and marginalised groups; and
- the risk of adverse impacts to the broader Australian economy, society, environment and rule of law (principle (d)), which could allow assessment, for example, of deepfakes on particular creative professions.

4.181 The high-risk AI proposals paper stated that an assessment of whether a proposed workplace use of AI should be considered high risk would require consideration of:

- the type of impact it would have on people;
- any potential discriminatory impacts on people from a particular cohort;
- any society-wide impacts based on the scale of the deployment; and
- the severity and extent to which the risks are likely to occur.[164]

4.182 Workplace uses of AI that could be considered to be high risk based on assessment by the proposed principles could include, for example, 'an automated CV scanning service' that determines an individual's suitability for a job', an 'automated rostering system' that does not take into account an employee's caring duties, and an automated AI system for evaluation of worker performance'. In contrast, an AI system that automatically pre-fills payroll information based on work attendance data would be unlikely to classified as high risk by reference to the proposed principles.[165]

4.183 The proposition that the use of AI in automating payroll processes is inherently lower risk is concerning given the severe infringement on workplace rights and economic security that could arise if an employee's payroll is incorrectly processed. This highlights the risks of attempting to pick and choose elements

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[162] DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024, p. 20.

[163] DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024, p. 21.

[164] DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024, p. 27.

[165] DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024, p. 27

of AI use in the workplace that should or should not be subject to consultation, transparency and accountability requirements.

4.184 The committee believes the use of AI in the workplace presents unique challenges, because the nature of the relationship between employers and employees is unique, by way of the imbalance of bargaining power and asymmetry of information available to workers about how AI dictates and influences their working life.

4.185 In the high-risk AI proposals paper, the Australian Government asks whether it should adopt a principles-based approach or a more explicit list-based approach to defining uses of AI as high-risk or not. The committee believes that, regardless of the approach chosen, it should be patently clear any use of AI which may impact people's rights at work are within the scope of the definition.

Recommendation 5

4.186 That the Australian Government ensure that the final definition of high-risk AI clearly includes the use of AI that impacts on the rights of people at work, regardless of whether a principles-based or list-based approach to the definition is adopted.

4.187 The committee also believes Australia's industrial framework must be updated for the impending AI era. Australia has a longstanding and uncontroversial tripartite approach to OH&S regulation, in which there are positive duties on employers to identify and minimise risk; provisions requiring adequate workforce consultation, cooperation and representation; and compliance enforcement mechanisms including the right to cease work where there is a serious and imminent risk to safety.

4.188 The proposition that this existing approach to OH&S regulation could be applied to manage the workplace risks posed by AI was supported by a broad range of stakeholders, including trade unions, local AI vendors, not-for-profit organisations, workplace lawyers and think tanks.

Recommendation 6

4.189 That the Australian Government extend and apply the existing work health and safety legislative framework to the workplace risks posed by the adoption of AI.

4.190 There are numerous issues relating to the use of AI at work that require serious regulatory consideration which, due to time constraints, have not been explored in sufficient detail in this committee but are currently being examined by the House Standing Committee on Employment, Education and Training's Inquiry into the Digital Transformation of Workplaces. These issues include the loss of jobs and the related need for training and reskilling; the impact of algorithmic management of work; and whether new workplace rights—for example, rights

protecting employees from excessive workplace surveillance—are required to respond to the changing nature of work.

4.191 While the appropriate regulatory response to these issues is outside the scope of this inquiry, the principles outlined in the high-risk AI proposals paper of consultation, transparency and accountability should inform the Australian Government's regulatory approach.

Recommendation 7

4.192 That the Australian Government ensure that workers, worker organisations, employers and employer organisations are thoroughly consulted on the need for, and best approach to, further regulatory responses to address the impact of AI on work and workplaces.

4.193 There is no part of the workforce more acutely and urgently at risk of the impacts of unregulated AI disruption than the more than one million people working in the creative industries and related supply chains. If the widespread theft of tens of thousands of Australians' creative works by big multinational tech companies, without authorisation or remuneration, is not already unlawful, then it should be. This question is complicated by the absolute lack of transparency that LLM developers have adopted in Australia and around the world.

4.194 The notion put forward by Google, Amazon and Meta—that the theft of Australian content is actually for the greater good because it ensures the representation of Australian culture in AI-generated outputs—is farcical. Big tech companies are not investing billions of dollars in AI as a philanthropic exercise, but because of the enormous commercial potential that it represents. If the platforms are interested in supporting Australian creators, they should begin by fairly licencing their work in line with Australia's existing copyright framework.

4.195 This hypocrisy was best highlighted by a comment made by Google's Product Director for Responsible AI, Ms Tulsee Doshi, at the committee's hearing on 16 August 2024, at which she was asked why Google is refusing to be transparent about its training data. Ms Doshi responded: 'we need to always make sure that we're balancing the needs and privacy of our users and also recognising the importance of protecting IP and information that contributes to industry competitiveness.'[166] In the same breath, Google says that it cannot be transparent about the copyrighted data it has taken to train its AI products, because it needs to protect its own IP.

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[166] Ms Tulsee Doshi, Product Director, Responsible AI, Google, *Committee Hansard*, 16 August 2024, p. 22.

4.196 The committee supports the ongoing detailed consultation that is taking place on these issues through the CAIRG, and urges the Government to heed the calls by creative workers, rightsholders and their representative organisations to ensure AI developers are transparent about their exploitation of copyrighted works, and that such works are appropriately licenced and paid for, in line with existing copyright frameworks. The optimal approach to ensuring remuneration for AI-generated commercial outputs that have relied on copyrighted inputs also warrants further investigation.

Recommendation 8

4.197 That the Australian Government continue to consult with creative workers, rightsholders and their representative organisations through the CAIRG on appropriate solutions to the unprecedented theft of their work by multinational tech companies operating within Australia.

Recommendation 9

4.198 That the Australian Government require the developers of AI products to be transparent about the use of copyrighted works in their training datasets, and that the use of such works is appropriately licenced and paid for.

Recommendation 10

4.199 That the Australian Government urgently undertake further consultation with the creative industry to consider an appropriate mechanism to ensure fair remuneration is paid to creators for commercial AI-generated outputs based on copyrighted material used to train AI systems.

Chapter 5
Automated decision-making

5.1   This chapter considers automated decision-making (ADM).

5.2   As outlined in Chapter 1, ADM describes the use of computer systems to automate all or part of an administrative decision-making process. This can include using ADM to:

- make a decision;
- make an interim assessment or decision leading up to the final decision;
- recommend a decision to a human decision-maker;
- guide a human decision-maker through relevant facts, legislation or policy; and
- automate aspects of the fact-finding process which may influence an interim decision or the final decision.[1]

5.3   The benefits of ADM include 'the potential to increase the efficiency, accuracy and consistency of decisions',[2] freeing up time which would otherwise be spent on administrative tasks. Submissions received by the inquiry provided a number of examples of how ADM is currently used including, for example, by governments for the allocation of government services, by medical practitioners to assist in diagnostics, and in recruitment to assist with the evaluation and selection of candidates.

5.4   This chapter considers:

- the risks around the use of Artificial Intelligence (AI) in connection with ADM in relation to bias and discrimination; transparency; and accountability; and
- the views of inquiry participants on approaches to regulating ADM, and the Australian Government's current policy initiatives relevant to AI in the context of ADM.

Background

5.5   ADM has existed since before the advent of artificial intelligence (AI). The Commonwealth Ombudsman *Automated Decision-Making Better Practice Guide* notes that ADM can range from 'traditional rules-based systems…[such as] a system which calculates a rate of payment in accordance with a formula set out

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[1]   Commonwealth of Australia, Department of Industry, Science and Resources (DISR), *Safe and responsible AI in Australia*, Discussion Paper, June 2023, p. 6.

[2]   Commonwealth of Australia, Attorney-General's Department (AGD), *Government Response: Privacy Act Review Report*, p. 11.

in legislation…[to] more specialised systems which use automated tools to predict and deliberate, including through the use of machine learning'.[3]

5.6   While ADM systems may therefore not necessarily involve the use of AI, ADM and AI share a number of policy considerations and concerns including risks in relation to bias, discrimination and error; transparency; and accountability.

5.7   With the potential for AI-driven ADM systems increasing as AI becomes more capable and prevalent, one of the challenges for governments in Australia and worldwide is to ensure that regulation of AI addresses the risks of AI generally as well as specifically in connection with its use for ADM.

5.8   In findings that are likely to be broadly applicable to all Australian governments, a 2024 report on the use of ADM by the NSW government found that ADM is used across 'every NSW state government portfolio'; and that, while there is currently limited use of generative AI, there is 'considerable interest' in its potential for use by government, including by 'incorporating [AI's] predictive analytics into existing structured decision-making processes'.[4]

Bias and discrimination

5.9   Many inquiry participants commented on the potential for bias in ADM systems to produce discriminatory and unfair outcomes. Mrs Lorraine Finlay, the Human Rights Commissioner, Australian Human Rights Commission, noted that, 'despite the perception that AI based decision-making is inherently objective and free from human prejudice and error', AI technology has the potential to replicate human error, often at large scale.'[5] The Deakin Law School submission also commented on the capacity of AI systems, including ADM, to replicate discriminatory outcomes at larger scales:

> AI is pervasive in nature as it allows algorithms to be applied to large groups of similarly-situated applicants…[meaning that] human rights violations that may ordinarily be limited to a small cohort of affected individuals tend to be amplified and become systemic in nature.[6]

5.10   The ARC Centre of Excellence on Automated Decision-Making and Society (ARC Centre) explained that the risk of AI bias is 'well known' and arises from biases in the data used to train AI models:

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[3]   Commonwealth Ombudsman, *Automated Decision-Making Better Practice Guide*, 8 November 2019, p. 2.

[4]   ARC Centre of Excellence on Automated Decision-Making and Society (ARC Centre), *Submission 146*, pp 5-6.

[5]   Mrs Lorraine Finlay, Commissioner, Australian Human Rights Commission (AHRC), *Committee Hansard*, 20 May 2024, p. 42.

[6]   Deakin Law School, *Submission 110*, p. 10.

> AI draws inferences from patterns in existing data. When biases are embedded in the data used to train models, models tend to perpetuate those biases...[7]

5.11 The submission of Associate Professor Alysia Blackman advised that biases in the data used to train AI can arise due to issues with the data, including 'poor quality or inappropriate data', 'out-of-date data', and data that 'over- or under-represents certain groups'. Bias can also arise from the design of the algorithm used by an AI system, or in the way that the algorithm is applied to a task.[8]

5.12 Many inquiry participants identified concerns about the potential for bias in AI systems to lead to discriminatory outcomes. In the context of ADM, the automation of administrative decision-making can impact large numbers of people from vulnerable and disadvantaged groups. The Queensland Nurses and Midwives Union, for example, noted that, in the context of medical decision-making, bias in ADM systems arising from unrepresentative datasets has 'the potential to unintentionally reinforce and amplify existing societal disadvantage', including racial and gender biases:[9]

> …[AI] models trained on aggregated data may result in homogenised outputs that fail to consider biological, cultural, religious, and other differences and exacerbate inequities already experienced by marginalised...For example, AI healthcare models that lack sufficient data on Aboriginal and Torres Strait Islander populations may misdiagnose patients or suggest inappropriate care options...[10]

5.13 A number of submissions provided examples of AI bias in connection with ADM in the employment and recruitment sphere.[11] Associate Professor Alysia Blackman, for example, cited the example of an Amazon recruitment tool designed to review job applicants' resumes to determine which applicants were most likely to be successful recruits. Due to the over-representation of men in the resumes on which it was trained, the tool was found to systematically discriminate 'against women applicants for software development and technical jobs', due to the tool having 'learnt' that male applicants were to be preferred.[12]

5.14 The submission of the Shop, Distributive and Allied Employees' Association (SDA) outlined concerns about the use of ADM in relation to rostering. While

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[7] ARC Centre, *Submission 146*, p. 6.

[8] Associate Professor Alysia Blackman, *Submission 75*, [p. 1].

[9] Queensland Nurses and Midwives' Union (QNMU), *Submission 107*, p.4.

[10] QNMU, *Submission 107*, p.6.

[11] See, for example: ASU, *Submission 36*, p. 2; Australian Council of Trade Unions (ACTU), *Submission 64*, p. 7; Ms Elizabeth O'Shea, Chair and Founder, Digital Rights Watch (DRW), *Committee Hansard*, 16 July 2024, p. 19; EY, *Submission 163*, p. 3. For more discussion of the use and impacts of AI in employment contexts, see Chapter 4.

[12] Associate Professor Alysia Blackman, *Submission 75*, [p. 1].

such systems may be intended to operate objectively and 'avoid issues of preferential treatment by managers',[13] the SDA noted that the system impacted more harshly on workers with caring responsibilities and casual and part-time workers.'[14] Accordingly, the SDA recommended that such systems be required to comply with the relevant industrial instruments 'governing rostering, such as Awards and Enterprise Agreements, and not result in discriminatory outcomes'.[15]

5.15 The Victorian Trades Hall Council submission recommended that the government 'ban the use of [ADM]…in industrial relations and employment law matters,' including 'a total ban on using artificial intelligence to hire, fire, discipline or promote workers'.[16]

5.16 Submitters and witnesses also raised concerns about the use of ADM in medical and healthcare settings. For example, Suicide Prevention Australia expressed concern that 'generative AI could inadvertently perpetuate social biases and stereotypes…[through] datasets which are not diverse or representative of diverse population groups', which could 'have significant repercussions and potentially reduce access to care or increase stigma':

> Research indicates that stigma and discrimination can increase the risk of suicide. It is critical that all AI-generated data and tools which have the potential to guide decision-making promote equality and support diversity and inclusion. The Government should work with technology companies to ensure that AI-generated content does not entrench disadvantage and perpetuate bias and stereotypes which could potentially increase suicide risk among minority groups.[17]

5.17 While the majority of inquiry participants highlighted the potential harms of bias in AI and ADM systems, Professor Anton van den Hengel argued that AI bias is more transparent and therefore more amenable to correction than human bias. He noted:

> Humans are inherently biased. The difference between machines and humans is that you can ask a machine how biased it is and it will give you the true answer…The advantage of AI is that its decision-making process is transparent. It is based on the data, and [while] we do have to be

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[13] Shop, Distributive and Allied Employees' Association (SDA), *Submission 41*, p. 4.

[14] SDA, *Submission 41*, p. 4.

[15] SDA, *Submission 41*, p. 5.

[16] Victorian Trades Hall Council, *Submission 114*, p. 4.

[17] Suicide Prevention Australia, *Submission 123*, [pp 2-3]. For more discussion of the use and impacts of AI in healthcare contexts, see Chapter 4.

> careful...[there] are really good technological ways to address these problems that don't exist with humans.[18]

5.18 Similarly, Monash University pointed to AI's potential as a tool to 'tackle bias', arguing that patterns of bias in AI systems are 'more easily identifiable and thus…able to be remedied quicker'.[19]

5.19 However, the ARC Centre suggested that the correction of bias in AI systems remains a challenge:

> Bias is a real and important risk from AI systems, but risk mitigation has so far tended to focus on technical solutions and de-biasing toolkits. Merely trying to control bias at the level of output has not yet proven effective, and even the largest technology companies struggle to deal with it credibly…[20]

Transparency

5.20 The evidence received by the inquiry revealed a broad consensus that transparency is a key requirement for ADM systems to mitigate the risk of bias and discrimination, and to ensure that a person affected by a decision made or supported by ADM has the capacity to know that an ADM system was used to make the decision, to understand the decision and to challenge and seek review of that decision.

5.21 In this regard, some submitters and witnesses felt that the current policy framework does not provide for sufficient transparency of the data, algorithms and other inputs used to arrive at decisions using ADM systems.[21]

5.22 The problem of a lack of transparency in AI or ADM systems is often referred to as the 'black box' issue. For example, referring to the specific context of healthcare, the Department of Health and Aged Care submission noted that 'black-box decision-making' by AI systems, in which the process or reasoning by which a decision is reached is unclear, leads to a lack of trust in and understanding of decisions:

> Many AI algorithms are 'black box technologies', which have internal mechanisms that are non-transparent and difficult to interpret or explain.

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[18] Professor Anton van den Hengel, Director, Centre for Augmented Reasoning, Australian Institute for Machine Learning University of Adelaide, and Chair, Kingston AI Group, *Committee Hansard*, 16 July 2024, p. 8.

[19] Monash University, *Submission 180*, p. 3.

[20] ARC Centre, *Submission 146*, pp 8-9.

[21] See, for example: AI Institute NSW, *Submission 59*, p. 3; Associate Professor Alysia Blackman, *Submission 75*, [pp 2-3]; Ms Kimberly La, Secondee Lawyer, Human Rights Watch (HRW), *Committee Hansard*, 16 July 2024, p. 29, Mandala, *Submission 125*, [p. 4]; Professor Farah Magrabi, Professor, Australian Institute of Health Innovation (AIHI), Macquarie University, *Committee Hansard*, 17 July 2024, p. 50.

> This results in both low trust and understanding of AI-made recommendations.[22]

5.23 Professor Steve Robson, President of the Australian Medical Association, commented that the making of decisions assisted by 'black box' models of AI can make decision-making uncertain and therefore more difficult, and emphasised the importance ensuring that people using AI as a 'co-pilot' in decision-making understand the 'strengths and limitations' of the ADM system.[23]

5.24 The Australian Securities and Investments Commission, discussing the use of AI and ADM in relation to credit assessments, noted that a lack of transparency can also impact the ability of people adversely affected by ADM to challenge or object to decisions:

> AI-powered credit scoring can use both conventional and unconventional data sources (e.g. social media activity and mobile phone use) to evaluate credit worthiness. These practices can unfairly discriminate and risk financial exclusion for the most vulnerable, particularly with opaque AI systems making it difficult to challenge outcomes.[24]

5.25 The Law Council of Australia (LCA) called for ADM systems to be made transparent to 'ameliorate the risk of black-box decisions…impacting vulnerable groups',[25] and outlined the importance of transparency as follows:

> Transparency is critical for the responsible use of ADM by Australian organisations, both in the public sector and private sector. Individuals should know when and how ADM is being used in any way which significantly affects their human rights, their legitimate expectations to be informed of how and why they are being singled out for differentiated treatment, and their legitimate expectation that an automated decision is reasonable having regard to the circumstances in which it is made and the impact that this automated decision might reasonably be expected to have on affected humans and the environment.[26]

5.26 The LCA argued further that, given the complexity of AI and ADM systems, mere transparency of such systems is not in itself sufficient, and that mitigating the risks of data- or algorithm-based bias and discrimination requires the provision of 'meaningful and intelligible explanation' of how an AI system was developed and designed to operate:

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22 Department of Health, *Submission 182*, p. 6.

23 Professor Steve Robson, President, Australian Medical Association (AMA), *Committee Hansard*, 17 July 2024, p. 6.

24 Australian Securities and Investments Commission (ASIC), *Submission 67*, p. 16.

25 Law Council of Australia (LCA), *Submission 152*, p. 13.

26 LCA, *Submission 152*, p. 26.

> [The risk of discriminatory outcomes]…are not mitigated simply by the subject of the decision being informed that AI was used. Rather, effective mitigation also requires meaningful and intelligible explanation about how the AI was deployed. This should include disclosure of the data sets on which it was trained, how the inputs are made into outputs, the rules on which the system operates, how biases have been mitigated, and other details relevant to the circumstances.[27]

5.27   Professor Edward Santow observed that 'interpretability' of AI and ADM decisions, as a feature of transparency, should encompasses both the ability to understand the reasoning by which an AI or ADM system arrives at a decision, as well as whether that decision complies with any [relevant] technical or legal requirements.[28] The NSW Council for Civil Liberties observed that existing laws governing administrative decision-making may need to be updated to ensure that ADM decisions can be interrogated to ensure they are consistent with natural justice principles and legal requirements.[29]

5.28   Digital Rights Watch (DRW) submitted that AI developers should be required to 'declare the data sources for their foundational models as well as any subsequent data or instruction sets [used for] training and fine-tuning the model'.[30] It considered that this is particularly important given the widespread practice of AI developers training AI on personal information originally collected for a different purpose and often sourced from the 'data broker industry'.[31]

5.29   Further, some submitters noted that, as AI systems can continue to evolve or change after development, additional monitoring and evaluation is needed even after an AI or ADM system is deployed.[32] The LCA, for example, recommended:

> ADM processes should undergo random audits conducted by a human to ensure any errors or potential for biases are identified, particularly for those demographics which may be unable to easily seek legal assistance.[33]

5.30   However, calls for transparency around the development of foundational or large language models (LLMs) were resisted by some submitters on the basis of

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[27]   LCA, *Submission 152*, p. 11.

[28]   Professor Edward Santow, Director, Policy and Governance, Human Technology Institute, University of Technology Sydney, *Committee Hansard*, 21 May 2024, p. 18.

[29]   NSW Council for Civil Liberties, *Submission 113*, p. 13.

[30]   HRW, *Submission 156*, p. 7.

[31]   HRW, *Submission 156*, p. 6.

[32]   See, for example: Tech Council of Australia (TCA), *Submission 74*, Appendix B, pp 1-2; Australian Council of Social Service (ACOSS), *Submission 118*, pp 4-5; Dr Sandra Johnson, Private Capacity, *Committee Hansard*, 17 July 2024, p. 43.

[33]   LCA, *Submission 152*, p. 13.

commercial concerns. Mr Simon Bush, Chief Executive Officer, Australian Information Industry Association, for example, stated:

> In terms of open source [transparency] for the larger LLMs, if someone has invested tens of billions of dollars in a capability and it is embedded into their software, I don't think it is fair to suggest that that should be available for everyone to get that algorithm.[34]

5.31 The NSW Council for Civil Liberties, while acknowledging that private entities could have a proprietary interest in AI systems, argued that government should be held to higher standards of transparency:

> While private entities have an interest in retaining proprietary ownership over the codes, models, or data in their use of AI, Government agencies should be held to higher standards of transparency and accountability for the purposes of upholding civic society and individual protection.[35]

5.32 Mrs Rachael Greaves, Chief Executive Officer, Castlepoint Systems, in discussing risk-based approaches to regulation of AI observed that transparency considerations, or whether to operate an AI system as a 'black box' or 'clear box' system, may differ depending on the attendant risks of the purpose for which the system is used:

> We use explainable AI, which is clear box…but we don't operate in the cultural, media and arts space. If we did, we might use a…[black box] system because the impacts and the risks of not being able to explain it aren't high…[36]

5.33 A number of inquiry participants questioned whether generative AI should be used at all in connection with ADM, based on the fact that generative AI systems are predictive systems that will always have the potential to produce outputs or decisions that are unable to be explained.

5.34 Professor Jie Lu AO noted that, unlike machine learning models of AI, which generate consistent outputs from consistent inputs, generative AI can produce 'new' or different content from the same input.[37] The Existential Risk Observatory submitted that, as generative AI will therefore 'make decisions that its creators are unable to explain',[38] generative AI technology is unable to be

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[34] Mr Simon Bush, Chief Executive Officer, Australian Information Industry Association (AIIA), *Committee Hansard*, 21 May 2024, p. 28.

[35] NSW Council for Civil Liberties, *Submission 113*, p. 13.

[36] Mrs Rachael Greaves, Chief Executive Officer, Castlepoint Systems, *Committee Hansard*, 17 July 2024, p. 8.

[37] Professor Jie Lu AO, Director, Australian Artificial Intelligence institute, and Associate Dean, Research Excellence, Faculty of Engineering and Information Technology, University of Technology Sydney, *Committee Hansard*, 21 May 2024, p. 34.

[38] Existential Risk Observatory (ERO), *Submission 28*, p. 3.

entirely transparent and should be prohibited from use 'in critical infrastructure and government services'.[39]

5.35 Castlepoint Systems also considered LLMs to be too high-risk for use in ADM in regulatory or other contexts where a wrong decision could have serious consequences for individuals:

> There are certainly uses of LLMs…where the decisions that arise could not reasonably cause harm…However, we don't believe there are applications for LLMs in those more regulatory and sensitive contexts, where a wrong decision could cause harm to an individual. Our position is that if the algorithm can't be explained, traced or understood end to end, then it's less likely to be able to be contested. Therefore, if harm does arise to individuals, it's going to be harder to unpick [the decision]…and to solve the problem.[40]

Review of ADM decisions

5.36 As noted above, the requirement for transparency of AI systems is related not only to navigating the risks of bias and discrimination but also to the ability of a person affected by an ADM decision to challenge and seek review of that decision.

5.37 Broadly speaking, inquiry participants called for government to ensure that ADM decisions are subject to the principles of natural justice and administrative law which underpin the ability of persons affected by a decision to appeal administrative decisions. The Australian Council of Social Services (ACOSS) submission, for example, called for ADM to be 'reviewable and procedurally fair', and specifically for a person affected by an ADM decision to be provided with the following:

- reasons for the decision, including a reasonably comprehensible and technically accurate explanation of how artificial intelligence has been used in the decision,
- a reasonable opportunity to challenge the decision through a procedurally fair process, in which the person is informed about and supported to understand how to challenge the decision, and
- information about supports available to the person to assist them in challenging the decision, or about how to access other relevant options or support services where the decision is adverse to the person.[41]

5.38 The LCA noted that, from an administrative law perspective, ADM conducted by 'black box' AI systems are problematic as they can prevent people affected

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[39] ERO, *Submission 28*, p. 3. For further discussion of transparency and generative AI, see also: Dr Stefan Hajkowicz, Research Consultant, Commonwealth Scientific and Industrial Research Organisation, *Committee Hansard*, 20 May 2024, p. 3.

[40] Mrs Rachael Greaves, Chief Executive Officer, Castlepoint Systems, *Committee Hansard*, 17 July 2024, p. 13.

[41] ACOSS, *Submission 152*, p. 7.

by discriminatory outcomes from understanding or questioning decisions. The LCA considered that effective mitigation of this risk requires 'meaningful and intelligible explanation about how the AI was deployed' including:

> …disclosure of the data sets on which it was trained, how the inputs are made into outputs, the rules on which the system operates, how biases have been mitigated, and other details relevant to the circumstances.[42]

5.39　The LCA cited the 2021 report of the NSW Ombudsman on the use of AI and ADM as an example of work already undertaken to ensure the use of ADM by public sector agencies within the framework of 'core administrative law principles such as procedural fairness'.[43] The LCA called for:

> …comprehensive regulatory reform to ensure that the use of automated decision making (ADM), including by the Australian Government, is transparent, capable of review, and consistent with administrative law principles…[44]

Accountability

5.40　Many inquiry participants raised concerns about accountability in relation to AI systems and ADM.[45] Accountability in this context involves the question of human involvement with ADM systems; and liability or responsibility for the outcomes and consequences of ADM decisions, especially when those decisions lead to harm.

Human involvement with ADM

5.41　AI systems, including ADM, can be automated to perform actions or produce outputs without any human involvement or, alternatively, to produce outputs that are augmented by varying degrees of human oversight or involvement, sometimes referred to as the 'human in the loop'.

5.42　In the context of ADM, the evidence of inquiry participants broadly supported human involvement in, and accountability, for ADM decisions,[46] and this was particularly so in settings where the consequences of decisions can have significant impacts on the rights or wellbeing of individuals.

42　LCA, *Submission 152*, p. 11.

43　LCA, *Submission 152*, p. 11.

44　LCA, *Submission 152*, p. 6.

45　See, for example: Financial Services Union, *Submission 116* p. 5; Dr Fabian Horton, Chair, Futures Committee, LCA, *Committee Hansard*, 16 July 2024, p. 45.

46　See, for example: ACOSS, *Submission 118*, pp 5-6; Australian College of Midwives, *Submission 119*, p. 4; Dr Elizabeth Coombs, *Submission 121*, p. 9; Mr Simon Bush, Chief Executive Officer, AIIA, *Committee Hansard*, 21 May 2024, p. 28; Mr David Masters, Head of Global Public Policy, Atlassian, *Committee Hansard*, 17 July 2024, p. 23.

5.43 A number of submissions noted the importance of ensuring that ultimate responsibility for ADM in medical and healthcare settings resides with humans. The Australian Medical Association, for example, submitted:

> AI must never compromise medical practitioners' clinical independence and professional autonomy. The ultimate decision on patient care should always be made by a clinician to protect against algorithmic error and safeguard patient interests.[47]

5.44 The Royal Australian and New Zealand College of Radiologists emphasised that, while ADM can assist, decisions around healthcare must be primarily made by doctors in consultation with their patients:

> Whilst AI can enhance decision making capability, final decisions about care are made after a discussion between the doctor and patient, considering the patient's presentation, history, options and preferences.[48]

5.45 Dr Sandra Johnson observed that clear lines of responsibility and accountability are needed for instances where 'harm occurs', noting that a 'strong legal framework' around the use of ADM in healthcare is required to 'ensure safety and reliability for patients and the community' and provide clear lines of accountability:[49]

> …the medical profession needs a legal backup framework and support so that the doctor is not held accountable for machines that have been allowed into the country, allowed into the hospital or allowed into the clinical practice when the doctor didn't fully understand issues related to the algorithms, the data gathering and so on.[50]

5.46 In relation to legal practice, the LCA also argued that lawyers should retain ultimate involvement with and responsibility for decision-making if using AI-driven ADM:

> …AI is [usually] part of a decision-making process or decision chain where it may or may not be reliable for the reliance that a human places upon it…The requirement to practise law is a requirement imposed on humans, and those humans should be exercising discretion appropriately to give reliable and accurate legal advice, whether it's influenced or assisted by AI or not.[51]

5.47 In relation to government use of ADM, the NSW Civil Liberties Council recommended that all public sector uses involve a human in the loop and provide for persons affected to 'speak to a natural person' in relation to decisions

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[47] AMA, *Submission 83*, p. 1.

[48] Royal Australian and New Zealand College of Radiologists, *Submission 40*, [p. 3].

[49] Dr Sandra Johnson, Private Capacity, *Committee Hansard*, 17 July 2024, p. 43.

[50] Dr Sandra Johnson, Private Capacity, *Committee Hansard*, 17 July 2024, p. 46.

[51] Professor Peter Leonard, Member, Media and Communications Committee, Business Law Section, LCA, *Committee Hansard*, 16 July 2024, p. 46.

made.[52] The LCA, however, submitted that that some government decisions 'should only be made by humans', and noted that 'greater clarity is needed over which government decisions are, and are not, currently subject to AI/ADM, across a range of portfolios'.[53]

5.48 The LCA observed in the same vein that administrative law also needs to develop a principled basis for determining what types of decisions are appropriate to involve ADM, and for administrative agencies to clearly identify where ADM is being employed:

> There is a gap in existing administrative law principles that needs to be filled, to ensure that administrative decision-makers think carefully about when it is appropriate to incorporate algorithmic decision-making into decision-making processes, and there is a need for a significant uplift in capabilities of administrative agencies to evaluate the extent to which they are using automated systems.[54]

5.49 As an example of standards that could be applied to the use and oversight of AI-driven ADM, Professor Peter Leonard, a member of the Media and Communications Committee of the LCA, advised:

> [Such standards could]…require, for example, that automated systems are, demonstrably, at least as reliable as humans in making decisions for which they will be relied upon, and to ensure that the humans in the loop have the right skills to evaluate the reliability of the algorithms or AI on which they depend, so they're not just any humans in the loop but humans that understand the limitations of…outputs of automation, presented to them to guide their decisions.[55]

Liability for decisions made using ADM

5.50 The evidence received by the inquiry demonstrated a range of views regarding the question of liability for harms arising from the use of AI and ADM systems.

5.51 Mrs Lorraine Finlay, Human Rights Commissioner, Australian Human Rights Commission, noted that there is currently no legal framework and therefore a lack of legal clarity in relation to liability for harms arising from the use of ADM. Mrs Finlay submitted:

> It is absolutely critical that there is a clear answer given by the Australian government in any [AI] legislation put forward from simply a rule-of-law perspective of making sure that people understand where legal liability lies

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[52] NSW Council on Civil Liberties, *Submission 113*, p 10.

[53] LCA, *Submission 152*, p. 13.

[54] Professor Peter Leonard, Member, Media and Communications Committee, Business Law Section, LCA, *Committee Hansard*, 16 July 2024, p. 49.

[55] Professor Peter Leonard, Member, Media and Communications Committee, Business Law Section, LCA, *Committee Hansard*, 16 July 2024, p. 49.

and can therefore take approaches that mitigate the risk [of using AI systems]...[56]

5.52 The Tech Council of Australia observed that the attribution of liability for AI systems is difficult due to the distribution of responsibilities across the 'tech stack' that develops and deploys an AI system:

> Within the tech stack, we can speak about developers, about folks who are creating the software, but within that you also have different actors who are involved—not just developers of applications but you might have developers of API services, so they may be completely different entities. So [there is a]…distributed chain of responsibility…[Due to] the distributed nature of the entities…[and] people that work in the model, it's really hard to answer that question [of ultimate liability].[57]

5.53 Ms Anna Jaffe, Director of Regulatory Affairs and Ethics, Atlassian, commenting on the distribution of responsibilities for developing and deploying AI, advised that 'liability [for harm arising from the use of an AI product] should…attach along the chain to the person or entity that was responsible for doing or not doing the thing that they should have done to avoid the harm'.[58]

Developer liability

5.54 However, a number of inquiry participants suggested that liability for AI and ADM systems should rest with the developers and/or vendors of such systems. The LCA, for example, argued that consumer and product laws should apply to ADM systems, requiring AI products to be fit, safe and reliable for the purpose which they are intended.[59] Similarly, Castlepoint Systems argued that vendors should be liable in cases where users and workers make wrong decisions based on automated decisions and inputs of AI systems:

> …as we roll out AI more broadly and users and workers rely on decisions and inputs from AI processes is that, if they make wrong decisions informed by those processes, then they should be in some way protected from culpability.[60]

5.55 Dr Sandra Johnson submitted that, in the healthcare sector, developers of AI and ADM systems should be subject to processes for approval of products in relation to safety and reliability are required; and suggested that the remit of existing

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[56] Mrs Lorraine Finlay, Human Rights Commissioner, AHRC, *Committee Hansard*, 20 May 2024, p. 47.

[57] Mr Ryan Black, Acting Chief Executive Officer, TCA, *Committee Hansard*, 21 May 2024, p. 58.

[58] Ms Anna Jaffe, Director of Regulatory Affairs and Ethics, Atlassian, *Committee Hansard*, 17 July 2024, p. 21.

[59] Professor Peter Leonard, Member, Media and Communications Committee, Business Law Section, LCA, *Committee Hansard*, 16 July 2024, p. 47.

[60] Mrs Rachael Greaves, Chief Executive Officer, Castlepoint Systems, *Committee Hansard*, 17 July 2024, p. 14.

product safety bodies like the Therapeutic Goods Association could be expanded to include AI systems for use in healthcare settings.[61]

5.56 The LCA noted, however, that it may be difficult to establish legal liability in relation to the foundational models or LLMs that form the basis of many AI applications. Professor Peter Leonard, a member of the LCA Media and Communications Committee, observed that, because of the range of potential uses for foundational models, it may be difficult to ascertain that its developer should have anticipated particular uses and their attendant risks.[62] Professor Keith McNeil, who appeared at a hearing of the committee in a private capacity, outlined this difficulty with reference to medical settings:

> If you have a company that develops an algorithm specifically for use in medicine, that is one thing that you could pretty well regulate in terms of its outcomes. But, if you use something 'off label', as we say—ChatGPT, for instance, which was never designed to be a medical tool; it just happens to be useful in some areas—[then that is more difficult to regulate] because these algorithms won't necessarily be developed specifically for medical use...[63]

5.57 The ARC Centre observed that consumer law may not be sufficient in its current scope noting, for example, that consumer guarantees would likely apply to 'downstream [AI-driven] app providers' but not to 'upstream' developers of foundation AI systems such as LLMs. The ARC centre submission suggested that key consumer law concepts such as 'product liability' may need to be expanded, for example, to capture manufacturers of AI products, including in relation to ongoing software updates to foundational AI systems.[64]

User liability

5.58 In contrast, other submitters suggested that liability for errors or harms arising from the use of AI systems should reside with the user or business employing the AI or ADM system. Mr Joseph Longo, Chair, Australian Securities and Investments Commission, while noting that business will need to build their expertise in relation to AI, observed that the attribution of legal responsibility to businesses would be practical from a regulatory perspective, as businesses are best placed to assess the risks of using AI in the context of their own market and operations.[65]

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[61]   Dr Sandra Johnson, Private Capacity, *Committee Hansard*, 17 July 2024, p. 52.

[62]   Professor Peter Leonard, Member, Media and Communications Committee, Business Law Section, LCA, *Committee Hansard*, 16 July 2024, p. 50.

[63]   Professor Keith McNeil, Private Capacity, *Committee Hansard*, 17 July 2024, p. 52.

[64]   ARC Centre, *Submission 146*, p. 8.

[65]   Mr Joseph Longo, Chair, ASIC, *Committee Hansard*, 21 May 2024, p. 8.

5.59 A number of submitters and witnesses from healthcare backgrounds, for example, preferred that clinicians remain responsible for decisions made with the assistance of ADM, reflecting their ultimate responsibility for the care of patients.[66] Similarly, the Australian Council of Trade Unions (ACTU) considered that employers should be liable for any harmful or discriminatory impacts of 'decisions that are made with the assistance of AI'.[67]

Regulation of AI in the context of ADM

5.60 Many inquiry participants considered that regulation of AI requires specific consideration of ADM in relation to the issues discussed above, namely bias and discrimination; transparency; and accountability. However, there was a range of views expressed about the most effective approach to be taken by government.

5.61 At a broad level, the LCA called for comprehensive regulatory reform to ensure that the use of…[ADM], including by the Australian Government, is transparent, capable of review, and consistent with administrative law principles'. In terms of the approach to regulating ADM, the LCA recommended:

> …consideration of the regulatory models adopted by other jurisdictions and to determine an optimal and bespoke approach for Australia that reflects the nuances of Australia's pre-existing constitutional and regulatory framework, and different local market environment.[68]

5.62 The ACOSS submission emphasised the importance of consultation with affected groups over proposed uses of AI by government:

> Any government use of automation or AI technology that impacts people's basic needs or rights should be developed through a genuine co-design process with: people affected by the technology, advocacy and community sector organisations representing people affected, and multidisciplinary experts…[69]

> Co-design should continue throughout all different stages of the development of the AI technology to be used in the government service, including research, design, data input, training and piloting of the model…[70]

Rights-based regulation of ADM

5.63 A number of submitters and witnesses drew on rights-based concepts and principles in their suggestions for ensuring the responsible use of ADM. The

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[66] Professor Keith McNeil, Private Capacity, *Committee Hansard*, 17 July 2024, p. 45.

[67] Mr Joseph Mitchell, Assistant Secretary, ACTU, *Committee Hansard*, 21 May 2024, p. 48.

[68] LCA, *Submission 152*, p. 6.

[69] ACOSS, *Submission 118*, p. 2.

[70] ACOSS, *Submission 118*, p. 2.

LCA noted that, despite Australia not having a 'comprehensive, human rights-based framework at the Commonwealth level', the general concept of a principles- or rights-based approach to assessing the potential impacts of AI on individuals could nevertheless inform Australia's approach:

> In the absence of a comprehensive, human rights-based framework at the Commonwealth level, there should be a principled approach to mitigate risks, such as bias in the input data, automatic bias and algorithmic bias, particularly the impacts on the human rights of vulnerable populations, as well as intrusions on the right to privacy. Framing these considerations through the lens of harm minimisation (that is, considering the potential harms to humans and regulating accordingly) may be one way to [mitigate the risks of AI]…[71]

5.64 The Deakin Law School (DLS) submission noted that an advantage of using rights-based approaches to assessing the impacts of ADM is that it allows for broader or systemic consideration of its impacts through public interest litigation, which can ultimately provide 'greater recourse to individuals to challenge automated decisions on broader rights-protective grounds'.[72] DLS cited in particular a recommendation of the Australian Human Rights Commission (AHRC) report on *Human Rights and Technology* calling on the government to:

> …introduce legislation requiring a human rights impact assessment be undertaken before the Government adopts AI to make administrative decisions, including whether it complies with international human rights law obligations, is subject to appropriate review by human decision makers, and is authorised and governed by legislation.[73]

5.65 Commenting on the AHRC's proposed approach, ACOSS noted that human rights assessment of ADM could 'build on the strengths of similar existing processes in parliamentary human rights compatibility assessments', and that the standards for such assessments could be based on existing standards:

> To be useful, the standards for [rights-based] assessment of ADM…could follow but need to be more detailed than existing high-level guiding principles, such as Australia's AI Ethics Principles, or the OECD's AI Principles…The Commonwealth Ombudsman's guidelines for automated decision-making could be an example and a starting point for the kind of more detailed features needed in standards for impact assessment. For example, these guidelines provide guidance on managing risks of automated decision-making in cases of discretionary decisions…[74]

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[71] LCA, *Submission 152*, p. 12.

[72] Deakin Law School, *Submission 110*, p. 12.

[73] Deakin Law School, *Submission 110*, p. 7. See also: AHRC, *Human Rights and Technology*, Final Report, March 2021, p. 55.

[74] ACOSS, *Submission118*, pp 4-5.

5.66   Similarly, Associate Professor Alysia Blackham, who appeared before the committee in a private capacity, pointed to Australia's anti-discrimination schemes as a potential model for regulating AI and ADM.[75]

5.67   Noting the potential for 'biased, discriminatory or other harmful outcomes', the DRW submission called for the Australian government to introduce a strong human rights framework through the 'creation and enactment of a federal Human Rights Act'. DRW considered that a legislated federal human rights framework would, inter alia, 'ensure that human rights are proactively considered in any new legislation related to AI' and provide a 'powerful tool' for individuals to challenge and seek remedies for violations of their rights 'facilitated by AI and ADM technologies'.[76]

5.68   In addition to a legislated human rights framework, DRW called for the creation of a 'separate but complementary Charter of Digital Rights and Principles, which could specifically focus on the application of human rights to existing and emerging technologies'. DRW pointed to the European Union's Declaration on Digital Rights and Principles as an example of such an approach.[77]

5.69   Dr Caitlin Curtis considered that the articulation of AI-specific rights could 'complement' and 'guide' regulation of AI and ADM as part of a 'dual approach' to create a 'a cohesive, human-centred framework to establish and articulate public expectations and rights with respect to AI systems'. Dr Curtis cited the US AI Bill of Rights and Australia's AI Ethics Framework as models on which Australia could draw to articulate AI-specific rights. In the context of ADM these could include, for example:

- a right to fair employment, retraining and education to ensure that AI-driven automation and decision-making do not result in unfair or discriminatory outcomes in workplaces; and
- a right to transparency and non-discrimination in ADM to guarantee workers access to explanations of ADM decisions affecting employment; and prevent bias and discriminatory outcomes in relation to workplace matters such as recruitment, pay and job assignments.[78]

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[75]   Associate Professor Alysia Blackham, Private Capacity, *Committee Hansard*, 16 July 2014, p. 38. See also: Professor Julian Thomas, Director, ARC Centre, *Committee Hansard*, 16 July 2024, p. 40.

[76]   DRW, *Submission 156*, pp 4-5.

[77]   DRW, *Submission 156*, p. 4.

[78]   Dr Caitlin Curtis, *Submission 187*, p. 6.

AI regulatory body

5.70 A number of inquiry participants urged government to consider the establishment of a specific regulatory body to provide oversight of AI, including the use of AI for ADM.[79]

5.71 The AHRC, for example, suggested:

> When integrating AI into both government and private sector business models and service, the risk of both automation and algorithmic bias should be mitigated. The establishment of a national AI Commissioner, an independent statutory body tasked with assisting the broad adoption of AI in Australia, would support organisations in their efforts to mitigate the risks associated with these biases.[80]

5.72 ACOSS considered that a body dedicated to the oversight of AI is necessary due to the diffusion of responsibility for AI across government and the need for continuous evaluation of ADM systems:

> Currently, information and policy development about the different uses of AI technology by government services are spread across multiple agencies and reports, and [there is] no well-communicated or dedicated government function for monitoring, evaluating and improving the use of AI technology across government.[81]

5.73 Further, ACOSS noted that such a body would be in keeping with recommendation of the Robodebt Royal Commission for establishment of a body 'with the power to monitor and audit…[ADM] processes'.[82]

5.74 DLS also considered that there is a 'need to establish a specialist AI oversight body in Australia, such as an AI Safety Commissioner'. DLS cited the example of the EU AI Office, established as a specialist body for oversight of AI in preference to reliance on more general legal frameworks such as privacy and consumer protection laws.[83]

5.75 DRW suggested that a 'bespoke' AI regulator should have a range of powers to 'supervise the use of AI systems'. In addition to information gathering powers, DRW submitted that such a regulator should:

> …have the capacity to impose fines and remedies, and prohibitions on the use of AI systems where they do not meet safety standards…We also suggest [consideration of granting the regulator powers]…to order the retraining of algorithmic technology where there have been identified problems with data provenance, and more general, new powers to restrain

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[79] See, for example: DRW, *Submission 156*, p. 13.

[80] AHRC, *Submission 71*, p. 7.

[81] ACOSS, *Submission 118*, p. 12.

[82] ACOSS, *Submission 118*, pp 12-13.

[83] Deakin Law School, *Submission 110*, p. 11.

the use of AI which has given rise to documented and directly unfair outcomes.[84]

5.76 In contrast to calls for establishment of a dedicated AI regulator, other inquiry participants suggested that existing regulatory bodies could be tasked with regulation of AI in specific regulatory contexts.

5.77 The Actuaries Institute, for example, called for the federal government to review existing regulatory bodies' functions in relation to AI to provide clarity on AI and ADM regulation and to instruct 'all relevant regulators…to issue guidance [on AI and ADM] as needed'. The institute considered that, separate to consideration of other policy responses, this approach could be taken quickly to ensure that guidance on regulation of AI is in place:

> While there are also the options of changing regulation or waiting for case law to emerge, we specifically call for guidance, as this can be created relatively quickly and can be targeted towards both hypothetical and real situations. Guidance may be used to clarify any apparent conflicts in regulation across jurisdictions, or to align on language, terminology and interpretation, to reduce any potential confusion for practitioners that seek to interpret and abide by the regulation.[85]

5.78 A similar view was expressed by Professor Edward Santow, the Director of Policy and Governance at the UTS Human Technology Institute. Professor Santow called for 'uplift' to Australia's 'regulatory ecosystem' to equip regulators with the tool to apply existing laws and regulations to the regulation of AI.[86]

5.79 As an example of a regulator-specific approach, Professor Enrico Coiera, Director of the Centre for Health Informatics at Macquarie University, noted that the Therapeutic Goods Administration could be given the role of undertaking pre-market assessment of AI systems and tools for use in clinical settings, with bodies such as the Australian Commission on Safety and Quality in Health Care undertaking ongoing post-market surveillance and assessment of such systems.[87]

International approaches to regulating ADM

5.80 A number of inquiry participants considered international approaches to the regulation of AI and ADM as being instructive for Australia in developing its own regulatory response.

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84 DRW, *Submission 156*, p. 12.

85 Actuaries Institute, *Submission 33*, p. 3.

86 Professor Edward Santow, Director, Policy and Governance, Human Technology Institute, University of Technology Sydney, *Committee Hansard*, 21 May 2024, p. 14.

87 Dr Enrico Coiera, Director, Centre for Health Informatics, AIHI, Macquarie University, *Committee Hansard*, 17 July 2024, p. 44.

5.81 The Community and Public Sector Union (CPSU) submission, for example, urged the government to consider the approaches of other jurisdictions to the governance and risk management of AI 'to ensure a consistent approach to AI regulation' between Australia and significant international schemes.[88]

5.82 Examples of work being done internationally to address and mitigate the risks of AI and ADM included the following:

General Data Protection Regulation (EU)

5.83 The EU General Data Protection Regulation (May 2018) provides an individual right not to be subject to a decision based 'only on automated processing', where that decision is legally binding or significantly affects them.[89]

5.84 The data protection regulation requires an affected individual to be provided with a range of information including in relation to the logic involved in the decision-making process, the right to obtain human intervention, and the right to contest the decision.[90]

5.85 Where ADM involves the use of certain categories of personal data, the data protection regulation requires the explicit consent of the affected individual, or the decision to be necessary for reasons of substantial public interest.[91]

Directive on Automated Decision-Making (Canada)

5.86 Canada's Directive on Automated Decision-Making (April 2019) is intended to ensure the use of AI consistently with the core principles of administrative law such as transparency, accountability, legality and procedural fairness.

5.87 The directive requires that certain high-risk use of ADM by government involve human review, with the level of risk being determined by reference to factors including rights, health and the economic interests of individuals or communities.[92]

5.88 The ARC Centre noted that the directive is process-based regulation rather than product-based regulation and commented:

> Generally, these processes make it more likely that AI systems will be fairer, more transparent, and that there is more accountability around automated

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[88] Community & Public Sector Union (CPSU), *Submission 219*, p. 5.

[89] ACOSS, *Submission 118*, p. 6; and CPSU, *Submission 219*, p. 5.

[90] European Commission, 'Are there restrictions on the use of automated decision-making?, Are there restrictions on the use of automated decision-making? - European Commission (accessed 13 November 2024).

[91] European Commission, 'Are there restrictions on the use of automated decision-making?, Are there restrictions on the use of automated decision-making? - European Commission (accessed 13 November 2024).

[92] ACOSS, *Submission 118*, p. 6.

> decisions. The Directive is technology neutral, being mainly concerned with the automation aspect of decision-making regardless of the technology used (AI or other forms of automation).[93]

5.89 The ARC Centre considered that the directive provides an appealing blueprint for AI regulation in Australia, although raised a note of concern about the absence of prohibitions on particularly high risk uses or harmful outcomes.[94]

Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence (US)

5.90 The United States Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence' (October 2023) instructs various federal agencies to audit and report on their use of AI.

5.91 With regard to ADM specifically, the executive order specifies minimum risk management practices for US government uses of AI that impact on individual rights or safety. Relevantly for ADM, these include:

> …conducting public consultation; assessing data quality; assessing and mitigating disparate impacts and algorithmic discrimination; providing notice of the use of AI; continuously monitoring and evaluating deployed AI; and granting human consideration and remedies for adverse decisions made using AI…[95]

Artificial Intelligence Act (EU)

5.92 The European Union *Artificial Intelligence Act* (EU AI Act) (March 2024) establishes a risk-based approach to regulation of AI that includes the explicit prohibition of particularly high risk or harmful applications of AI, such as for social scoring, biometric categorisation and individual profiling.

5.93 In relation to ADM, the ARC Centre submission observed that the EU AI Act relies on standards produced by standards bodies for the implementation of regulatory requirements, and commented:

> One problem with this approach (especially for Australia, that has not relied significantly on standards in governance historically) is that the questions that arise in AI regulation bring up very difficult questions of human rights and the public interest.[96]

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[93] ARC Centre, *Submission 146*, p. 11.

[94] ARC Centre, *Submission 146*, p. 11.

[95] The White House, 'Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence', https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence/ (accessed 13 November 2024).

[96] ARC Centre, *Submission 146*, p. 12.

5.94 The ARC Centre observed, accordingly, that the use of standards may be less effective to, for example, establish requirements to prevent harmful outcomes from the use of ADM systems.[97]

5.95 The submission of DRW indicated support for the EU AI Act approach of prohibiting 'very high-risk AI applications'. However, it noted that the EU scheme also relies on industry self-regulation for identifying high-risk applications of generative AI systems, raising concerns about 'problematic incentives'.[98]

Existing government policy

5.96 As set out in Chapter 2, the Australian government has implemented a range of policy proposals and initiatives seeking to introduce frameworks and guidance for industry, business and government on the responsible and ethical development and implementation of AI. As set out below, a number of these policy proposals and initiatives are relevant to the regulation of AI and ADM.

Consultation on safe and responsible AI in Australia

5.97 In June 2023, the government commenced the consultation on safe and responsible AI in Australia, designed as the vehicle to inform a comprehensive policy response to the regulation of AI in Australia. Following an interim government response in January 2024, the government released its *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings* in September 2024 (the high-risk AI proposals paper),[99] confirming the government's commitment to a risk-based approach to AI focused on regulating AI in high-risk settings, seeking views on proposed principles for assessing whether AI systems should be classified as high risk, and proposing three options for implementing mandatory guardrails for AI for further public consultation.

5.98 In relation to ADM specifically, the high-risk AI proposals paper indicated that the government is developing a framework for the use of ADM which will include but is not limited to ADM systems involving AI. The high-risk proposals paper indicated broadly that the framework would include requirements in relation to compliance with administrative law principles and ensuring transparency and accountability around ADM decisions.[100]

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97   ARC Centre, *Submission 146*, p. 12.

98   DRW, *Submission 156*, p. 13.

99   DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024.

100   Commonwealth of Australia, DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024, p. 57.

5.99 In its submission to the inquiry, the Attorney-General's Department (AGD) advised that the development of the framework remains ongoing:

> The department is developing a whole of government legal framework to support automated decision-making systems for delivery of government services, which may include systems run by AI…The framework will consider safeguards that can be put in place to mitigate potential risks associated with the use of automated systems in administrative action, including bias, discrimination and error.[101]

5.100 The AGD submission noted that the development of the framework also relates to the government's response to a recommendation of the Robodebt Royal Commission for 'legislative reform to introduce a consistent legal framework in which automation in government services can operate', which has been accepted by the Australian Government. The recommendation called for the framework to identify a number of specific elements, including:

- a clear path for individuals affected by decisions to seek review;
- where ADM is being used, clear information to be provided explaining in plain language how the process works; and
- ADM business rules and algorithms to be made available to independent expert scrutiny.[102]

5.101 The government response to the report of the Robodebt Royal Commission confirmed that the government would consider 'legislative reform to introduce a consistent legal framework' for automation in government services with review pathways and transparency about ADM.[103]

5.102 However, in its appearance before the committee, AGD advised that it had not yet undertaken a comprehensive audit of the extent of the use of ADM at the Commonwealth government level.[104]

Government response to the Privacy Act review

5.103 In September 2023, the government published its response to the Privacy Act Review report (February 2023). The government acknowledged the report's 'concerns about the transparency and integrity of decisions made using ADM systems';[105] and agreed to the following proposals intended to address these concerns:

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[101] AGD, *Submission 154*, p. 5.

[102] Department of the Prime Minister and Cabinet (PM&C), *Royal Commission into the Robodebt Scheme: Government Response*, November 2023, p. 21.

[103] PM&C, *Royal Commission into the Robodebt Scheme: Government Response*, November 2023, p. 21.

[104] Mr Stephen Still, Assistant Secretary, Transparency and Administrative Law Branch, Integrity Frameworks Division, AGD, *Committee Hansard*, 16 August 2024, p. 59.

[105] AGD, *Privacy Act Review Report: Government Response*, September 2023, p. 11.

- the development of privacy policies setting out the types of personal information to be used in substantially automated decisions which have a legal or similarly significant effect on an individual's rights;
- the inclusion of high-level indicators of the types of decisions with a legal or similarly significant effect on an individual's rights in the privacy Act, supplemented by Office of the Australian Information Commissioner guidance; and
- the introduction of a right for individuals to request meaningful information about how ADM decisions with legal or similarly significant effect are made; and a requirement for information to be included in privacy policies about the use of personal information for ADM decisions with legal or similarly significant effect.[106]

Interim guidance on the use of generative AI tools

5.104 In July 2023, the Digtial Transformation Agency published the *Interim guidance on government use of public generative AI tools*, which, inter alia, provide the following guidance to Australian Public Service (APS) staff in relation to ADM:

- generative AI tools must not be the final decision-maker on government advice or services;
- outputs from generative AI tools must be critically examined to ensure advice and decisions reflect consideration of all relevant information and do not incorporate irrelevant or inaccurate information; and
- noting that generative AI tools may have biases may disproportionly impact some groups, such as First Nations people, people with disability, lesbian, gay, bisexual, transgender, queer and intersex (LGBTIQI) communities and multicultural communities, consideration should be given to whether there are processes in place to ensure that outcomes are fair and meet community expectations.[107]

AI Ethics framework

5.105 In November 2019, the Department of Industry, Science and Resources AI Ethics Framework released the AI Ethics framework, which is intended to assist businesses and government to responsibly and ethically design, develop, and implement AI.

5.106 The framework includes eight voluntary AI Ethics Principles, which broadly relate to the considerations around the use of ADM outlined above. The ethics principles include, for example, ensuring that AI systems do not result in unfair discrimination; are transparent and explainable; allow people to challenge the

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[106] AGD, *Privacy Act Review Report: Government Response*, September 2023, p. 32.

[107] Digital Transformation Agency, *Interim guidance on government use of public generative AI tools*, November 2023.

use or outcomes of an AI system; and are subject to human oversight and accountability for the use and outcomes of AI systems.[108]

Committee view

5.107 The evidence received by the inquiry suggests that, while ADM is already used widely by governments in the context of administrative decision-making, the advances in AI technology, and particularly the advent of generative AI, will see AI increasingly integrated within ADM processes.

5.108 While ADM offers productivity gains through increased efficiency and consistency of administrative decision-making, it is widely understood as raising policy considerations around ensuring fairness, transparency, accountability and contestability for individuals impacted by ADM decisions. In Australia, this is ensured in relation to human decision-making by the administrative law system, and so in a general sense the policy challenge for ADM is to ensure that it conforms with the principles that underpin human decision-making.

5.109 However, given the key risks of AI, the application of AI to ADM systems raises significant issues. The committee notes that, while concerns about bias and discrimination; transparency; and accountability arise generally in connection with any use of AI, they are compounded in the context of administrative decision-making where decisions can have major impacts on the rights and interests of individuals.

Bias and discrimination

5.110 In this regard, the committee heard that the potential for bias in AI systems is well recognised and understood as being a consequence of biases in the data on which AI systems are developed and trained, or as flowing from the design or application of the algorithms used by AI systems. Biases in AI systems can result in the outputs of the system favouring or under-representing certain groups, leading to discriminatory outcomes.

5.111 Where such outcomes impact already vulnerable or disadvantaged groups, AI can unintentionally reinforce existing social inequality, and the committee notes the concerns of inquiry participants that the use of AI-driven ADM by governments could replicate discriminatory outcomes at a large scale if not implemented with sufficient safeguards.

Transparency

5.112 The committee heard that transparency is a key requirement for AI systems to address potential issues of bias and discrimination, as it allows for the

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108 DISR, *Australia's AI Ethics Principles*, www.industry.gov.au/publications/australias-artificial-intelligence-ethics-framework/australias-ai-ethics-principles (accessed 4 September 2024).

identification of biases in training data or in the operation or 'logic' of the algorithm used by AI systems.

5.113 However, as there are currently no transparency requirements in relation to AI, ADM systems generally operate as 'black box' systems in which the process or reasoning by which a decision is produced is opaque. Inquiry participants noted that the inability to understand or interrogate the internal processes of ADM systems undermines the ability of decision-makers as well those affected by ADM-assisted decisions to rely on, or place trust in, ADM outcomes.

5.114 The committee notes evidence suggesting that there are significant technical considerations in relation to making AI and ADM systems transparent. Given their highly technical nature, meaningful transparency of AI systems requires intelligible explanations about the development of the AI system, the data on which it is trained, the algorithm and rules by which the system operates, and any other factors relevant to how the system arrives at a decision. The committee notes that, given its predictive nature, providing for meaningful transparency of systems based on generative AI may raise particular challenges in the context of ADM.

5.115 Further, noting that government decision-making is subject to the requirements of administrative law and may be subject to a range of other legal requirements depending on the context, it must also be possible to determine that ADM decisions are arrived at in compliance with all relevant legal and technical requirements.

5.116 In addition to the technical challenges of providing meaningful transparency around AI-driven ADM, the committee notes the views of some stakeholders that enforced transparency of AI systems should take account of the proprietary interests of AI developers, particularly in the case of private companies that make significant investments to produce foundational AI models.

Review of ADM decisions

5.117 A number of inquiry participants noted that 'black box' ADM systems are inimical to the administrative law and natural justice principles which provide that individuals affected by administrative decisions should be able to challenge and seek review of those decisions. This is because, without the ability to understand the basis and reasoning by which algorithm-based decisions are reached, affected persons are likely to be frustrated in seeking to challenge decisions.

5.118 In this regard, there were strong calls for ADM to be reviewable and consistent with administrative law principles that support individuals' ability to challenge and seek review of decisions. In particular, inquiry participants called for comprehensive regulatory reform to ensure that ADM is subject to requirements for the giving of reasons, including meaningful and accessible technical information about any use of AI, as well as procedurally fair processes to inform

and support individuals in relation to challenging and seeking review of ADM decisions.

Accountability

5.119 In terms of accountability for ADM more generally, inquiry participants broadly supported retaining human involvement in and responsibility for ADM decisions, particularly where decisions significantly impact on the rights or safety of individuals. Retaining the 'human in the loop' was seen as critical to guarding against AI bias and discriminatory outcomes, ensuring that ADM is used to augment rather than supplant the professional skill and judgement of human decision-makers, and ensuring clear lines of accountability where ADM decisions lead to harm.

5.120 However, the committee heard that there is a need for greater legal and regulatory clarity around the use of ADM by government in terms of the requirement for human involvement as well as what decisions ADM should and should not be used for. Similarly, in professional settings such as healthcare and legal practice, inquiry participants called for the implementation of stronger legal frameworks and standards to ensure the safe, reliable and accountable use of ADM.

5.121 The committee notes evidence that, in developing legal and regulatory schemes governing the use of ADM, the attribution of liability for harms arising from the use of ADM can be complicated by the distribution of responsibilities across the 'tech stack' that develops and deploys AI systems for myriad uses in industrial, professional and private settings.

Regulation of AI in the context of ADM

5.122 While inquiry participants broadly agreed that the regulation of AI should explicitly address the issues identified in relation to the use of ADM, there were different views expressed about the most effective approach to be taken by government.

5.123 A number of groups supported the implementation of rights-based approaches to regulating AI and ADM, in which, for example, human rights principles or legal standards provide a framework for assessing the impacts of ADM as well as providing the basis for challenging, and seeking remedies for any harms arising from, ADM decisions.

5.124 Other inquiry participants supported specific regulatory approaches to ADM. While some groups, for example, called for the establishment of an AI-specific regulatory body to provide oversight of the use of AI and ADM in the public and private sectors, others suggested that, instead, existing regulatory schemes and laws should be reviewed and reformed as necessary to provide for sector-specific regulation of ADM.

5.125 The committee also received a range of evidence concerning international approaches to the regulation of ADM, including in the United States, the European Union and Canada. The committee notes that approaches in these overseas jurisdictions reflect concern for the core policy considerations around the use of ADM revealed in the evidence to this inquiry—namely bias and discrimination; transparency; and accountability—and seek to introduce measures that could be broadly described as informed by administrative law and natural justice principles.

5.126 The committee acknowledges there is already extensive work underway to address the risks presented by the increasing use of AI in ADM processes. The review of the Privacy Act made three recommendations regarding ADM regulation, which have all been agreed to by the Attorney-General. The committee supports the implementation of these recommendations, particularly Proposal 19.3, which calls for the introduction of a right for individuals to request meaningful information about how substantially automated decisions with legal effect are made. The committee agrees that it is essential that significant ADM decisions, including those involving AI, are transparent and explainable, and that those impacted by such decisions have a right to obtain explanations.

Recommendation 11

5.127 That the Australian Government implement the recommendations pertaining to automated decision-making in the review of the Privacy Act, including Proposal 19.3 to introduce a right for individuals to request meaningful information about how substantially automated decisions with legal or similarly significant effect are made.

5.128 The committee notes the government's commitment to the development of a policy and legal framework for the use of ADM by government that will include requirements for compliance with administrative law principles and consideration of safeguards for the use of ADM, including in relation to bias and discrimination; transparency; and accountability. The consultation process, which started shortly before the finalisation of this report, follows on from recommendations 17.1 and 17.2 of the Robodebt Royal Commission, which called for reform of the legal framework in which ADM operates in government services, and the establishment of a body to monitor such decisions. These recommendations were accepted by the Australian Government and are supported by the committee.

5.129 The development of the ADM framework takes place in the wider context of the government's commitment to risk-based regulation of AI, and ongoing consultation on the principles for assessing high-risk AI applications and preferred model for implementing mandatory guardrails around such uses. The guardrails outlined in the proposals paper cover many of the issues raised with

the committee and discussed in this chapter, including guardrail 3 concerning bias and discrimination in datasets, guardrail 5 concerning human oversight of AI processes, guardrail 6 concerning AI-enabled decisions, guardrail 7 concerning procedures to challenge or review the outcomes of AI processes, and guardrail 8 concerning transparency. The committee supports the inclusion of these matters within the guardrails applying to high-risk uses of AI.

Recommendation 12

5.130 That the Australian Government implement recommendations 17.1 and 17.2 of the Robodebt Royal Commission pertaining to the establishment of a consistent legal framework covering ADM in government services and a body to monitor such decisions. This process should be informed by the consultation process currently being led by the Attorney-General's Department and be harmonious with the guardrails for high-risk uses of AI being developed by the Department of Industry, Science and Resources.

Chapter 6
Impacts of AI on the environment

6.1   The environmental impacts of artificial intelligence (AI) are significant and arise across the AI lifecycle, from the development and training of AI models; the deployment of AI systems for various uses in industry, business and society; and the building, decommissioning and renewal of the Information Technology (IT) infrastructure and equipment that support and comprise AI technology.[1]

6.2   This chapter sets out the evidence received by the inquiry and the committee's views regarding:

- the environmental impacts of AI in relation to energy use; greenhouse gas emissions; water use; and land and resources;
- capturing, reducing and regulating the environmental impacts of AI; and
- environmentally positive uses of AI.

Energy use

Data centres

6.3   A number of submitters and witnesses raised concerns about the high energy use of the infrastructure that is needed to develop and operate AI technologies.

6.4   In particular, the training and refining of AI models requires the running of high-performance computers and significant data storage in dedicated facilities. The Department of Industry, Science and Resources (DISR) noted:

> AI is inextricably linked with data, which is the building block that powers machine learning and large language models. Training and using AI systems depends on massive amounts of computational resourcing, physical hardware and infrastructure. This means AI can be responsible for consuming large amounts of energy...[2]

6.5   Australia's Chief Scientist, Dr Catherine Foley, commented on the large amount of energy needed to train generative AI models:

> …[training] a model like GPT-3…[is estimated] to use about 1½ thousand megawatt hours…[which is] the equivalent of watching about 1½ million hours of Netflix.[3]

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[1]   ARC Centre of Excellence for Automated Decision-Making and Society (ARC Centre), *Submission 146*, p. 14. See also: Department of Industry, Science and Resources (DISR), *Safe and responsible AI in Australia*, interim response, 17 January 2024, p. 10.

[2]   DISR, *Submission 160*, p. 19.

[3]   Dr Catherine Foley, Australia's Chief Scientist, Australian Government, *Committee Hansard*, 20 May 2024, p. 16.

6.6   While acknowledging the difficulty of quantifying the global energy use of AI, DISR noted the significant global impact of data centres:

> …data centres currently represent 1 – 1.5% of electricity use globally…with estimates suggesting a single data centre may consume energy equivalent to heating 50,000 homes for a year.[4]

6.7   Mr Sean Sullivan, Deputy Secretary, Department of Climate Change, Energy, the Environment and Water, cited the example of International Energy Agency estimates that data centres accounted for approximately 13 to 14 per cent of Ireland's total electricity use in 2020, and was projected to grow to 40 to 50 per cent by 2030.[5]

6.8   In Australia, data centres could currently account for around 5 per cent of energy use, with some projections suggesting this could grow to between eight and 15 per cent by 2030.[6]

6.9   Commenting on predictions of 'considerable potential growth in [energy] consumption from…data centres', Dr Dylan McConnell, who appeared before the committee in a private capacity, questioned whether Australia's current energy planning processes were adequately taking such predictions into account:

> …going off these projections, the current planning and preparedness of the grid is insufficient...[as we] haven't been taking into account these extreme levels of growth.[7]

6.10 Mr Sullivan noted that the Australian Energy Market Operator (AEMO) is conducting a consultative process on future AI data centre energy requirements, considering upper limit and baseline cases:

> Demand management is part of that future and has been built into a lot of the models. I take the evidence that AEMO is trying to improve its forecasting models with respect to the use of data centres…AEMO does that on a regular basis with respect to trying to improve both its Integrated System Plan for transmission and its energy demand models.[8]

AI-generated outputs

6.11 In addition to the energy used by high-performance computing facilities and data centres to train and refine AI models, the use of AI applications to generate content also uses significant amounts of energy. While the energy used to

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4   DISR, *Submission 160*, p. 19.

5   Mr Sean Sullivan, Deputy Secretary, Department of Climate Change, Energy, the Environment and Water (DCCEEW), *Committee Hansard*, 17 July 2024, p. 31.

6   Dr Ascelin Gordon, Senior Lecturer, RMIT University, *Committee Hansard*, 17 July 2024, p. 36.

7   Dr Dylan McConnell, Private Capacity, *Committee Hansard*, 17 July 2024, p. 29.

8   Mr Sean Sullivan, Deputy Secretary, DCCEEW, *Committee Hansard*, 17 July 2024, p. 31.

generate a response to a single AI query may be relatively small, the total energy used to respond to millions of AI queries a day may, on some estimates, be greater than the energy used for training and refining AI models.[9]

6.12 Google noted that the energy use of an AI application relative to other digital services such as a simple Google search depends on a number of factors:

> Energy use of all…digital services varies at the time of service based on the complexity of the computation required for a given query or query chain, and over time based on the efficiency of algorithms and chips used to enable these services…[and] changes in user behaviour over time…[10]

6.13 However, the energy used by AI applications, particularly for generative AI, is clearly significantly greater relative to other technologies. Dr Ascelin Gordon, Senior Lecturer at RMIT University, noted estimates that a single ChatGPT query generating text could use between ten and 90 times as much energy to process as a simple Google search, with a query generating an image being 'probably 20 times more energy intensive. The energy intensity of generating video was likely to be 'orders of magnitude higher' again.[11]

6.14 Dr Kate Crawford cited estimates that ChatGPT alone uses the energy equivalent of 33,000 US households per day, with 'future generative AI models potentially using the energy equivalent of entire nation-states'. Dr Crawford observed:

> Recently OpenAI CEO Sam Altman admitted that the AI economy is heading for an energy crisis...[warning] that the next wave of generative AI systems will consume vastly more power than expected, and that energy systems will struggle to cope.[12]

6.15 The ARC Centre of Excellence for Automated Decision-Making and Society (ARC centre) submission observed that the energy demands of AI would likely lead to competition for energy between AI services, businesses and public requirements.[13]

Greenhouse gas emissions

6.16 In addition to the challenges that it represents globally for energy consumption and future planning of energy systems, AI energy use derived from fossil fuel

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[9] Nestor Maslej et al, *The AI Index 2024 Annual Report*, AI Index Steering Committee, Institute for Human-Centered AI, Stanford University, April 2024, p. 156.

[10] Google, *Answers to questions on notice (34)*, 16 August 2024 (received 6 September 2024), p. 5.

[11] Dr Ascelin Gordon, Senior Lecturer, RMIT University, *Committee Hansard*, 17 July 2024, p. 35.

[12] Dr Kate Crawford, *Submission 84*, p. 1; University of Washington, *Q&A: UW researcher discusses just how much energy ChatGPT uses*, 27 July 2023; and Justine Calma, *The environmental impact of the AI revolution is starting to come into focus*, The Verge, 10 October 2023.

[13] ARC Centre, *Submission 146*, p. 14.

sources contributes to global greenhouse gas (GHG) emissions, and therefore to the anthropogenic warming of the planet and accelerating climate change.

6.17 Some estimates suggest that the share of global GHG emissions from the entire information and communications sector is currently around 1.4 per cent, increasing to around 14 per cent by 2040.[14]

6.18 The DISR submission cited estimates that the share of GHG emissions specifically from the operation of data centres is currently 0.6 per cent of annual global GHG emissions,[15] while Science and Technology Australia put this figure at one percent, potentially increasing to 14 percent of annual global GHG emissions by 2040.[16] Google provided a lower estimate of the GHG emissions of 'cloud and hyperscale data centres', at around 0.1 to 0.2 per cent of global GHG emissions 'based on the most recent global estimates as of 2022'.[17]

6.19 Google noted that its data centres comprise a 'large part' of its energy use and thus its GHG emissions, acknowledging that AI's 'intensive computation method' had led to a significant increase in its GHG emissions in recent years.[18]

6.20 Similarly, Microsoft acknowledged that its AI models and services had led to increases in its energy use and therefore GHG emissions, including a 30 per cent increase in its GHG emissions since 2020 due largely to its data centres.[19]

Water use

6.21 Another significant environmental impact of AI technology is due to the significant amounts of water used by high performance computing facilities and data centres for cooling the energy-intensive graphics processing units (GPUs) that provide the massive computing power required by AI. In some cases, water might also be used in connection with on-site generation of the electricity needed to power the facilities.

6.22 In terms of the water use attributable to AI applications, the Monash University submission cited estimates that in Europe a single ChatGPT-3 query uses a tablespoon of water.[20] The submission of the ARC Centre cited a slightly higher estimate in Australia of every 26 ChatGPT-3 queries using approximately 500ml

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[14] ARC Centre, *Submission 146*, p. 14. See also: Goldman Sachs, *AI is poised to drive 160% increase in data center power demand*, 14 May 2024.

[15] DISR, *Submission 160*, p. 19.

[16] Science and Technology Australia, *Submission 161*, p. 9.

[17] Google, *Answers to questions on notice (34)*, 16 August 2024 (received 6 September 2024), p. 4.

[18] Ms Lucinda Longcroft, Director, Government Affairs and Public Policy, Australia and New Zealand, Google, *Committee Hansard*, 16 August 2024, p. 19.

[19] ARC Centre, *Submission 146*, p. 14.

[20] Monash University, *Submission 180*, p. 3.

of water (roughly four times higher).[21] In global terms, Dr Kate Crawford cited studies suggesting that annual AI demand for water could be half that of the United Kingdom by 2027.[22]

6.23 The ARC Centre observed that the increasing speed of development and frequency of use of AI are likely to 'significantly heighten the demand for and use of…water for computing for the purposes of AI'.[23] As with energy, the increasing water demands of AI could lead to competition between AI services, businesses and public requirements in places where water resources are scarce.[24]

6.24 In this regard, Dr Kate Crawford noted that Google and Microsoft had reported 'spikes in their water usage during the deployment of their chatbots', leading to populations near data centres expressing concern about impacts on residential water supplies:

> For example, in West Des Moines, Iowa, a giant AI hyperscale data centre was built to serve OpenAI's most advanced model, GPT-4. During peak times in summer, the custom-built facility of over 10,000 GPUs draws about 6% of all the water used in the district, which also supplies drinking water to the city's residents.[25]

6.25 Dr Crawford observed that, given the occurrence and frequency of drought in Australia, it is essential that Australia's AI policy approach accounts for risks associated with its water usage.[26]

6.26 Mr Mark Stickells AM, Chief Executive Officer, Pawsey Supercomputing Research Centre, provided an example of a sustainable approach to water use by the Pawsey supercomputing centre. Mr Stickells noted that the centre had been designed with reference to principles of environmental sustainability, including in relation to water use. The centre uses water drawn from an aquifer for cooling the computing systems, which is then recharged back to the aquifer, amounting to the recycling of several million litres of water per year.[27]

Impacts on land use and resources

6.27 As set out above, AI has significant environmental impacts that arise directly from the energy use (and associated GHG emissions) and water required by the

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21 ARC Centre, *Submission 146*, p. 14.

22 Dr Kate Crawford, *Submission 84*, p. 2.

23 ARC Centre, *Submission 146*, p. 14.

24 ARC Centre, *Submission 146*, p. 14.

25 Dr Kate Crawford, *Submission 84*, p. 2.

26 Dr Kate Crawford, *Submission 84*, p. 2.

27 Mr Mark Stickells AM, Chief Executive Officer, Pawsey Supercomputing Research Centre (PSRC), *Committee Hansard*, 17 July 2024, pp 36-37.

high-performance computing facilities and data centres that support the development of AI models and the and operations of AI applications.

6.28 In addition to these impacts, inquiry participants identified a range of other environmental impacts on land use and resources arising from the associated processes and industries that are critical not just to AI technology but also to the technology industry more broadly.

6.29 The ARC Centre submission noted that, in addition to the land requirements for high-performance computing facilities and data centres, land is also required for the mining and processing of the key resources needed by the technology industry; the manufacturing plants that produce the computing and other equipment for developing and platforming digital technology applications; and the infrastructure, such as communications equipment and undersea cables, that provide the connectivity for digital technologies.[28]

6.30 The ARC Centre also noted that the AI industry would be an 'increasing contributor to Australia's existing waste and recycling challenge'. It observed:

> The underlying logic of AI uptake also almost necessarily involves increasing proliferation and regular upgrading and replacement (and hence production and waste) of hardware from graphics processing units in data centres to the proliferation of business, home and personal mobile devices that incorporate AI applications.[29]

6.31 Dr Kate Crawford highlighted the mining of critical minerals as a particularly concerning aspect of AI's environmental impacts.[30] In addition to contributing to land use and waste management pressures, the mining of critical minerals such as lithium has direct environmental impacts, including on habitat and species.

Capturing, reducing and regulating the environmental impacts of AI

Capturing the environmental impacts of AI

6.32 A number of inquiry participants pointed to the need to more fully capture the impacts of AI on the environment, including through greater transparency and the development of standards to support better measurement and reporting of AI's environmental impacts.

6.33 The UNSW AI Institute submission noted that the impacts of AI are currently difficult to quantify due to there being 'few standards for reporting'.[31]

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[28] ARC Centre, *Submission 146*, p. 14.

[29] ARC Centre, *Submission 146*, p. 14.

[30] Dr Kate Crawford, *Submission 84*, p. 3.

[31] UNSW AI Institute, *Submission 59*, p. 5.

6.34 The submission of Dr Kate Crawford observed that the available data on AI's environmental impacts is incomplete, and that it is 'very hard to get accurate and complete data on [its] environmental impacts'.[32] Dr Crawford ascribed the paucity of data in part to commercial sensitivities, with the 'full planetary costs of generative AI', for example, being 'closely guarded corporate secrets'.[33] This view was echoed by Dr Dylan McConnell, who commented that the publicly available information in relation to the energy consumption, operating profiles and expansion plans of data centres is 'somewhat opaque' due to 'commercial sensitivity'.[34]

6.35 Dr Crawford suggested that a multifaceted approach involving the AI industry, researchers and legislators is required to better capture the environmental impacts of AI, suggesting in particular the need for measuring and public reporting of energy and water use by the AI industry as well as 'regular environmental audits by independent bodies' to 'support transparency and adherence to standards'.[35]

6.36 Given the absence of consistent and widely applicable standards, a number of witnesses and submitters indicated their support for the development of standards to more effectively and comprehensively measure and report the environmental impacts of AI. The UNSW AI Institute, for example, recommended that the government 'support the development of standards for measuring the full environmental cost of AI' along with committing to best practice 'for AI projects developed in the public sector'.[36] The Computing Research and Education Association submission also called for the development of 'tools for measuring the full environmental cost of AI' and for government to 'lead by example with AI projects developed in the public sector'.[37]

6.37 The Salesforce submission called for 'standardised metrics for measuring and reporting the impact of AI systems', along with requirements for the public disclosure of the energy efficiency and carbon footprint of the development and operation of AI systems.[38]

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32 Dr Kate Crawford, *Submission 84*, p. 3.

33 Dr Kate Crawford, *Submission 84*, p. 3.

34 Dr Dylan McConnell, Private Capacity, *Committee Hansard*, 17 July 2024, p. 30.

35 Dr Kate Crawford, *Submission 84*, p. 4.

36 UNSW AI Institute, *Submission 59*, p. 5.

37 Computing Research and Education Association, *Submission 50*, p. 5.

38 Salesforce, *Submission 22*, p. 9.

6.38   The ARC Centre pointed to 'strong moves' towards the development of standards for measuring and reporting in Europe and the US, calling on Australia to:

> …encourage and promote if not mandate the development of environmental impact logging and transparency standards to support environmental reporting and transparency across the whole AI supply chain.[39]

6.39   The ARC Centre noted that the work of multiple stakeholders could contribute to the development of such environmental standards for AI:

> To support such standards, multiple groups in academia, advocacy, software engineering and industry are working on the quantification of carbon impacts of AI in application software, as well as more holistic assessments of the environment impacts of AI systems.[40]

6.40   Dr Crawford cited efforts in the US to improve the understanding of AI's environmental impacts, as well as establish standards and a voluntary framework for measuring and assessing those impacts, via the introduction of the Artificial Intelligence Environmental Impacts Act of 2024 (AIEI Act). The AIEI Act would:

> …[require] the [US] Environmental Protection Agency to lead a study on the environmental impacts of AI…[and direct] the National Institute for Standards and Technology to collaborate with academia, industry and civil society to establish standards for assessing AI's environmental impact, and to create a voluntary reporting framework for AI developers and operators.[41]

6.41   The ARC Centre submission noted that the AIEI Act framework is intended to measure and report the 'full range of…[AI's] environmental impacts including energy consumption and pollution across the full AI lifecycle', and potentially be implemented as a mandatory rather than voluntary reporting framework.

6.42   Further, the ARC Centre noted that an 'earlier version' of the EU Artificial Intelligence Act (EU AI Act) had included similar provisions to the AIEI Act for environmental auditing and reporting, and that these elements remained implicit in the approach taken by the EU AI Act.[42] It noted that the EU AI Act 'encourages the creation and implementation of voluntary codes of conduct for assessing and minimising environmental impact for all AI developers and providers', while high-risk AI systems are expected to be subject to risk and technical assessments that address the impact of AI development, operation and

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39   ARC Centre, *Submission 146*, pp 15-16.

40   ARC Centre, *Submission 146*, pp 15-16.

41   Dr Kate Crawford, *Submission 84*, p. 4.

42   ARC Centre, *Submission 146*, p. 16.

deployment on 'environmental protection'.[43] The ARC Centre considered that Australia should also adopt an approach in which 'environmental impact and sustainability…[are] defined as included within the broad concept of AI safety for the purposes of risk assessment and mitigation'.[44]

6.43 The Salesforce submission also supported including establishing efficiency standards for high-risk AI systems, calling for environmental impacts to be included in 'assessing the risk of AI systems and classifying high-risk models'.[45]

Reducing the environmental impacts of AI

Data centres

6.44 Noting the significant environmental impacts of the infrastructure that supports the development and deployment of AI (discussed above), a number of inquiry participants noted the benefits of increasing the use of renewable energy in, and energy efficiency of, AI facilities and AI systems, as well as improving the computing efficiency of the high-performance computing facilities used to develop and deploy AI systems.

Increasing the use of renewable energy

6.45 The submission of the UTS Faculty of Engineering and Information Technology, for example, called for government to increase investment in 'mitigating the environmental impact of AI data centres' given their significant consumption of energy.[46] It noted increasing efforts over the last decade to use renewable energy sources for datacentres, thereby reducing their GHG emissions and leading to the concept of a 'green data centre'.[47]

Increasing energy efficiency

6.46 Dr Kate Crawford observed that designing data centres to be more energy efficient would contribute to reducing their energy use and improving the sustainability of such facilities more generally. Dr Crawford observed that government regulation may be needed to achieve such efficiencies across the wider industry:

> At the outset…'government] could set benchmarks for energy and water use, incentivize the adoption of renewable energy and mandate comprehensive environmental reporting and impact assessments. Over time, laws and regulations could require adherence to strict environmental

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43   ARC Centre, *Submission 146*, p. 15.

44   ARC Centre, *Submission 146*, p. 15.

45   Salesforce, *Submission 22*, p. 9.

46   UTS Faculty of Engineering and Information Technology, *Submission 62*, p. 7.

47   UTS Faculty of Engineering and Information Technology, *Submission 62*, p. 7.

approaches that prioritize sustainability, especially for energy and water usage.[48]

6.47 In addition to increasing the efficiency of the facilities and buildings that house computing and data centres, a number of inquiry participants noted the benefits of improving the efficiency of the computing methods used to develop, train and deploy AI models and systems.

6.48 However, it should be noted that increased energy efficiency of AI may not lead to reductions in AI's total energy use, where there is increased demand overall for AI services. Research conducted by Goldman Sachs, for example, found that between 2015 and 2019 the energy demands of data centres remained relatively stable despite a tripling of their workload, partly due to gains in energy efficiency, but since 2020 the benefits of these efficiency gains 'appear to have dwindled'. It concluded that 'the widening use of AI' implies an increase in AI's energy consumption overall notwithstanding improvements to the efficiency of AI data centres and systems.[49]

6.49 The AI and Cyber Futures Institute recommended encouraging the adoption and creation of environmentally sustainable AI technologies by investing in research into and development of 'green AI'.[50]

6.50 Dr Crawford noted the potential for increasing the energy efficiency of developing AI models as well as designing AI systems to operate using less energy. The BigScience project in France, for example, had developed the BLOOM AI model that is a similar size to OpenAI's ChatGPT-3 but has a significantly lower carbon footprint. Dr Crawford further suggested that AI researchers could collaborate with social and environmental scientists to 'optimize [AI] neural network architectures…[and] guide technical designs towards greater ecological sustainability'.[51]

6.51 The submission from the Pawsey Supercomputing Research Centre and Curtin Institute for Data Science noted a number of specific opportunities or strategies it employed to 'limit, reduce and mitigate' the environmental impacts of the Pawsey supercomputing facility, which could be applied to the 'uptake of AI technologies throughout Australia'. These include:

- working with the research community to ensure that 'code is efficient' and AI algorithms are optimised to reduce the computational resources they require. Improved computer code efficiency is achieved, for example,

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[48] Dr Kate Crawford, *Submission 84*, p. 4.

[49] Goldman Sachs, 'AI is poised to drive 160% increase in data center power demand', AI is poised to drive 160% increase in data center power demand | Goldman Sachs (accessed 14 September).

[50] AI and Cyber Futures Institute, *Submission 126*, p. 5.

[51] Dr Kate Crawford, *Submission 84*, p. 2

through 'compressing and pruning AI models to reduce [their] size and computational complexity, transfer learning (leveraging pre-trained models and transfer learning techniques)…[and] supporting and advising' on developing more energy efficient algorithms and techniques;

- considering energy efficiency as a key factor in hardware selection and performing ongoing monitoring, such as conducting lifecycle assessments of AI technologies to identify opportunities for efficiency improvements throughout their lifecycle; and

- investing in and developing training and education programs to inform AI developers, researchers and users about the environmental impacts of AI technologies and promote sustainable practices. An example of this is a current collaboration with the Commonwealth Scientific and Industrial Research Organisation (CSIRO) to provide researchers with a report on the energy consumption and GHG emissions of the work they undertake using the Pawsey supercomputing facility.[52]

6.52 To assist and 'guide companies in minimising their ecological footprint', the UTS Faculty of Engineering and Information Technology submission called for the establishment of 'clear regulatory guidelines that mandate the environmental assessment and optimization of AI systems'.[53]

AI industry

6.53 The submissions and evidence received from some significant AI industry participants described a range of ways to reduce the environmental impacts of AI, particularly in relation to the issues of energy use, GHG emissions and water use described above.

6.54 A number of these submitters pointed to their overarching environmental commitments to, for example, carbon neutral operations, as well as practical efforts to achieve more efficient computing and methods used for AI development and deployment.

6.55 Google, for example, advised that, since 2017, it has matched 100 per cent of the energy use of its global operations with annual purchases of renewable energy and is pursuing a target to be carbon neutral by 2030. It also seeks to minimise its carbon footprint through optimal management of building temperature and lighting settings.[54]

6.56 Google also noted rapid improvements it has made in the efficiency of AI development and refinement, 'reducing the energy required to train an AI model by up to 100 times and…associated emissions by up to 1000 times'. Faster

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52   PSRC and Curtin Institute for Data Science, *Submission 130*, p. [5].

53   UTS Faculty of Engineering and Information Technology, *Submission 62*, p. 6.

54   Google, *Answers to questions on notice (34)*, 16 August 2024 (received 6 September 2024), p. 5.

and more efficient techniques for AI and machine learning were 'enabling [AI] models that are 'higher quality, faster, and less compute-intensive to serve'.[55]

6.57 Similarly, the submission of Amazon noted its 'sustainability commitment' to 'match 100 percent electricity with renewable energy by 2030' and reach 'net-zero carbon' by 2040. It noted the potential for significant energy efficiency gains, and therefore GHG emissions reductions, by running AI systems in cloud-based computing systems, and pointed to its efforts to improve the energy efficiency of its data centres as well as power them by renewable energy sources.[56]

6.58 Amazon is also working on the development of more efficient chips for use in developing and deploying AI systems, such as 'high-performance machine learning' chips 'designed to reduce the time and cost of training generative AI models' that could achieve energy-consumption reductions of up to 29 per cent.[57]

6.59 Microsoft considered that it remained 'on track' to achieve its commitment to be carbon neutral by 2030, despite increased emissions due in part to AI in recent years,[58] and noted commitments to its operations being 'water positive' and 'zero waste' by 2030. It detailed a number of initiatives being undertaken as part of a 'sustainability-by-design approach', including optimising energy consumption efficiency in Microsoft datacentres through renewables projects and zero-carbon electricity; and the use of low-carbon building materials for constructing its datacentres.

6.60 As with the other large AI technology firms, Microsoft indicated that it was exploring ways to develop and deploy AI models with fewer resources while achieving similar or better performance of current approaches—for example, through its release of 'Phi', a suite of small language models whose performance matches and outperforms models up to 25 times larger.[59]

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[55] Google, *Answers to questions on notice (34)*, 16 August 2024 (received 6 September 2024), p. 4.

[56] Amazon, *Submission 184*, pp 7-8.

[57] See, for example: Amazon, '7 ways Amazon is using AI to build a more sustainable future', February 2024, available at https://www.aboutamazon.com/news/sustainability/how-amazon-uses-ai-sustainability-goals (accessed 25 August 2024).

[58] Mr Steven Worrall, Corporate Vice-President, Microsoft, *Committee Hansard*, 16 August 2024, p. 36.

[59] Microsoft, *Submission 158*, pp 11-12.

Regulating the environmental impacts of AI

Existing government regulation and policy

6.61 As discussed below, regulation of the environmental impacts of AI falls under existing Commonwealth and state and territory legislative schemes for environmental protection and management.

6.62 In addition, a number of other policies and initiatives developed in recent years are relevant to managing and mitigating the environmental impacts of AI. These include AI-specific policy frameworks and guides on the development and use of AI and general policies, such as procurement policies that could capture the purchase of AI systems and construction of AI facilities by government.

6.63 The submission of the ARC Centre commented on the need to review broadly the effectiveness of Australian law in regulating the environmental impacts of AI:

> There is…a need to review and update existing Australian laws and policies to ensure they are fit for the purpose of ensuring environmentally responsible and sustainable AI, as AI applications are taken up across the whole of the public and private sector. Different legal and policy frameworks will touch on AI's environmental impact across different parts of the whole AI lifecycle including: environmental planning laws and licensing regimes for the siting and running of facilities such as mines and processing facilities for critical minerals, and data centres and undersea cables for data storage and compute power; energy grids including the creation and use of renewable energy facilities; carbon reporting and ESG frameworks; policies to incentivise and obligate product stewardship and e-waste reduction and re-use.[60]

General scheme of environmental protection in Australia

6.64 The environmental impacts of the AI industry in the broadest sense are, as with any business or industry activity, subject to Australian Commonwealth, state and territory environmental laws, regulations and polices.

6.65 At the Commonwealth level, the main environmental legislation is the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), which is primarily concerned with the environmental assessment and regulation of development activities that could have a significant impact on matters of national environmental significance.

6.66 Outside of this, the states and territories are responsible for a range of environmental laws, policies and administration, in relation to, for example, development assessments (other than those falling under the EPBC Act) and the management, use or protection of living and non-living resources.

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[60] ARC Centre, *Submission 146*, p. 1.

AI Ethics Framework (2019)

6.67   The AI Ethics Framework (the ethics framework) was released by the Department of Industry, Science and Resources (DISR) in November 2019 with the aim of guiding businesses and government to design, develop and implement AI responsibly.

6.68   The ethics framework includes eight voluntary AI Ethics Principles, intended to:

- achieve safer, more reliable and fairer outcomes for all Australians;
- reduce the risk of negative impact on those affected by AI applications; and
- help businesses and governments to practice the highest ethical standards when designing, developing and implementing AI.[61]

6.69   The first principle listed in the AI Ethics Principles relates to 'human, societal and environmental wellbeing', and states that 'AI systems should benefit individuals, society and the environment'.[62] This principle is explained as encouraging the assessment of AI's environmental impacts throughout the lifecycle of AI system, as well as the use of AI to help address areas of global concern such as the United Nations' sustainable development goals.[63]

Net Zero Plan (2022)

6.70   The Net Zero Plan, outlined in the government's 2022 Annual Climate Statement to Parliament, is being developed to guide Australia's transition to the legislated target of net zero GHG emissions by 2050. The submission of the Department of Industry, Science and Resources notes that the plan:

> …will be supported by six sector plans that are being developed for electricity and energy, agriculture and land, infrastructure and transport, industry, resources, and the built environment sectors. The plans will consider ways to reduce emissions in each sector and between them the plans cover all major components of the economy.[64]

6.71   In terms of AI environmental impacts specifically, the submission advises that:

> …data centres as a commercial building are captured under the Built Environment Sector Plan, which will provide an emissions reduction pathway to 2050 for the built environment sector.[65]

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61   DISR website, 'Australia's AI Ethics Principles', www.industry.gov.au/publications/australias-artificial-intelligence-ethics-framework/australias-ai-ethics-principles (accessed 4 September 2024).

62   DISR website, 'Cornerstones of assurance', Australia's AI Ethics Principles | DISR (accessed 4 September 2024).

63   DISR, *Safe and responsible AI in Australia*, Discussion Paper, June 2023, pp 13-14; *Australia's AI Ethics Principles*, https://www.industry.gov.au/publications/australias-artificial-intelligence-ethics-framework/australias-ai-ethics-principles (accessed 14 August 2024).

64   DISR, *Submission 160*, p. [19].

65   DISR, *Submission 160*, p. [19].

National framework for the assurance of artificial intelligence in government (2024)

6.72 The national framework for the assurance of artificial intelligence in government (the assurance framework) was agreed to by relevant Commonwealth, state and territory ministers in June 2024. The assurance framework draws on the 2019 ethics framework and is intended to establish 'cornerstones and practices of AI assurance' as part of the broader governance of the use of AI by governments.[66]

6.73 The assurance framework cornerstones describe key assurance practices to assist governments to 'effectively apply' the ethics principles underpinning the ethics framework. The cornerstones relate to AI governance and data governance; risk based assessment and management of AI; AI standards; and procurement.

6.74 The assurance framework practices are intended to demonstrate how governments can practically apply the ethics principles to the assurance of AI. The practices specify the following three actions implementing the ethics principle of ensuring AI systems achieve 'human, societal and environmental wellbeing':

- **Document intentions**: governments should define and document the purpose, objectives and expected outcomes of AI use cases for people, society and the environment; and consider whether there is a clear public benefit from the use of AI, and whether the use of AI is preferable compared to non-AI alternatives.
- **Consult with stakeholders**: governments should identify and consult with stakeholders, including subject matter and legal experts and impacted groups, to allow for the early identification and mitigation of risks.
- **Assess impacts**: governments should assess the likely impacts of an AI use case on people, society and the environment to determine if the benefits outweigh risks and manage any such impacts appropriately.[67]

Environmentally Sustainable Procurement policy (2024)

6.75 The Environmentally Sustainable Procurement policy (ESP policy) and associated reporting framework are intended to reduce the environmental impact of Australian Government procurement, and thereby support 'Australia's transition to a net zero, circular economy', by preferencing the

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[66] Department of Finance (DOF), 'National framework for the assurance of artificial intelligence in government', National framework for the assurance of artificial intelligence in government | Department of Finance (accessed 14 August 2024).

[67] DOF, 'Implementing Australia's AI Ethics Principles in government', Implementing Australia's AI Ethics Principles in government | Department of Finance (accessed 14 August 2024).

purchase of products that minimise GHG emissions, are safer for the environment and retain their value for longer.[68]

6.76 The ESP policy has applied from 1 July 2024 to construction services procurements at or above $7.5 million; and from 1 July 2025 will also apply to procurements for information and communications technology (ICT) goods; uniforms and textiles; and fit outs of builsing and office interiors (furniture, fittings and equipment) at or above $1 million.[69] The Sustainable Procurement Guide, which informs the ESP policy, states that these procurement areas represent the government's 'highest impact purchases'.[70]

Environmentally positive uses of AI

6.77 As set out above, AI infrastructure and systems can have significant negative environmental impacts in terms of energy use; GHG emissions; and water, land and resource use.

6.78 However, AI technologies can be applied to a wide variety of environmentally positive uses. Such uses include the use of AI to avoid, reduce or mitigate the negative environmental impacts of human industry and economic activity generally, and more directly to further our understanding and management of specific environmental challenges such as climate change and species extinction.

6.79 A number of inquiry participants pointed to the increasing potential for use of AI by industry in ways that reduce the impact of industry on the environment. For example, the submission of the DISR cited the finding of a 2022 IBM Global AI Adoption Index that 'two-thirds of companies either use or plan to use AI to pursue their [environmental] sustainability objectives'.[71]

6.80 Submissions cited numerous examples of potential uses of AI to improve the efficiency of industries in ways that have corresponding environmental benefits, usually through more efficient use of energy and resources thereby reducing environmental impacts. These examples include the use of AI to:

- optimise manufacturing processes;[72]

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[68] DOF, 'Environmentally Sustainable Procurement Policy (ESP Policy)', https://www.finance.gov.au/government/procurement/clausebank/environmentally-sustainable-procurement-policy-esp-policy (accessed 26 August 2024).

[69] DOF, 'Environmentally Sustainable Procurement Policy (ESP Policy)', https://www.finance.gov.au/government/procurement/clausebank/environmentally-sustainable-procurement-policy-esp-policy (accessed 26 August 2024).

[70] The Hon Tanya Plibersek MP, Minister of the Environment and Water, Foreword, *Sustainable Procurement Guide: An environmental focus for Commonwealth entities*, April 2024, p.3.

[71] DISR, *Submission 160*, p. [18].

[72] Kingston AI Group, *Submission 122*, p. 4.

- optimise retail supply chains by, for example, using AI to determine the most efficient packaging options and detect damaged goods before shipping;[73]
- operate mines with greater energy efficiency through, for example, automated ore sorting; water and power monitoring; supply chain monitoring; and environmental monitoring;[74]
- monitor agricultural crops to provide precise data on crop health and improve agricultural practices;[75] as well as to automate management of water and pest control for improved environmental sustainability;[76] and
- enhance transport planning and traffic management to reduce transport GHG emissions through more fuel-efficient routing and optimised traffic flows.[77]

6.81   AI can also be used to discover and develop solutions to specific environmental impacts caused by industrial activities or processes. For example, DISR cited the use of AI to develop a new concrete formula that reduces the highly GHG emissions-intensive process of concrete manufacturing by 40 per cent.[78]

6.82   In addition to industrial applications, AI can significantly improve environmental and natural resource management. Examples of beneficial uses for these purposes include the use of AI to:

- optimise the use of natural resources such as water and energy to reduce waste and environmental impact;[79]
- monitor and track wildlife populations and ecosystem health to aid in the preservation of biodiversity;[80] and
- monitor and predict environmental changes, such as air quality and deforestation rates, to facilitate and inform conservation efforts.[81]

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[73]   Amazon, '7 ways Amazon is using AI to build a more sustainable future', https://www.aboutamazon.com/news/sustainability/how-amazon-uses-ai-sustainability-goals (accessed 25 August 2024).

[74]   DISR, *Submission 160*, p. 19.

[75]   EY, *Submission 163*, p. 5; Associate Professor Shumi Akhtar, *Submission 131*, p. 3.

[76]   University of Technology Sydney (UTS), Faculty of Engineering and Information Technology, *Submission 62*, p. 4.

[77]   Google, *Submission 145*, p. 3; Kingston AI Group, *Submission 122*, p. 4.

[78]   DISR, *Submission 160*, p. 18; University of Illinois Urbana-Champaign, *Artificial intelligence produces a recipe for lower-carbon concrete*, 27 April 2022.

[79]   UTS, Faculty of Engineering and Information Technology, *Submission 62*, p. 4.

[80]   UTS, Faculty of Engineering and Information Technology, *Submission 62*, p. 4.

[81]   Associate Professor Shumi Akhtar, *Submission 131*, p. 3.

6.83   AI is also able to assist with understanding and addressing the significant environmental challenges and impacts of climate change. Examples provided by a number of inquiry participants included the use of AI to:

- analyse environmental data and provide more accurate climate forecasts to aid in planning and executing more effective environmental policies and climate change mitigation efforts;[82]
- forecast renewable energy production from sources like solar and wind power, and balance energy supply and demand to ensure efficient utilisation of renewables and reduce reliance on fossil fuels;[83]
- develop more efficient solar cells and improve production processes for manufacturing solar panels;[84] and
- predict and respond to more frequent and intense catastrophic weather events such as flooding and bushfires through, for example, riverine flood modelling and forecasting, and the prediction, identification and tracking of bushfires in real time.[85]

Committee view

6.84   The evidence received by the inquiry demonstrates that the development and use of AI technologies have a range of significant environmental impacts, most notably in respect of energy and water use; GHG emissions; and land and resource use.

Energy use and GHG emissions

6.85   The committee heard that the development and training of generative AI models, and the subsequent deployment and use of AI-powered applications, such as ChatGPT-3, require vast amounts of computing power and data storage. This computing and data infrastructure is housed in specialist buildings that require very large inputs of energy and water to power and cool the computing facilities.

6.86   The growing development of generative AI models in recent years, and their rapidly increasing application to the provision of consumer products and services, has seen notable increases in the energy use of computing facilities and data centres. This is due not only to the increasing number of queries submitted

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[82]   EY, *Submission 163*, p. 5; UTS Faculty of Engineering and Information Technology, *Submission 62*, p. 4; Associate Professor Shumi Akhtar, *Submission 131*, p. 3; and Sydney AI Centre (University of Sydney), *Submission 165*, p. 4.

[83]   DISR, *Submission 160*, p. 5.

[84]   Google, *Submission 145*, p. 3; Rizwan Choudhury, Interesting Engineering, *AI enables rapid and reliable solar cell production in Australia*, 16 November 2023.

[85]   Google, *Submission 145*, p. 3; EY, *Submission 163*, p. 5; DISR, *Submission 160*, p. 19; and Kingston AI Group, *Submission 122*, p. 4.

daily to platforms like ChatGPT-3—which on some estimates receives as many as 10 million queries a day—but also to the higher amount of energy required to produce AI-generated responses compared to earlier technologies, such as a response to a simple text query generated by Google.

6.87 While estimates vary, the committee heard that the energy use of data centres is currently around 1.5 per cent of total global energy use. In Australia, the energy use of data centres may be around 5 per cent of total energy use, with some projections suggesting this could grow to as much as 15 per cent by 2030. While such estimates are uncertain, the committee considers that the rate of growth in the energy use of data centres will undoubtedly be considerable, driven strongly by commercial incentives to develop new AI models and AI-powered products and services. The committee acknowledges, accordingly, the importance of governments ensuring that the energy demands of the AI industry are factored into future energy system planning.

6.88 The high energy use of the AI industry also gives rise to environmental concerns regarding its associated GHG emissions. To the extent that the energy used by the AI industry is derived from fossil fuels, the development, training and deployment of AI models and applications make a corresponding contribution to GHG emissions and therefore to the problem of climate change.

6.89 In this regard, the committee acknowledges that, as with all emissions-intensive industrial and economic activities, there is significant environmental benefit to be gained wherever high-performance computing facilities and data centres can derive their energy from emissions-free renewable sources. Given this, the committee notes the importance of siting such facilities in locations that have access to renewable energy.

6.90 Further, the committee notes that the AI industry's GHG emissions represent a proportion of Australia's total emissions and, as such, fall under the government's existing emissions reduction targets and climate policies, including:

- Australia's commitment, as a party to the Paris Agreement, to the goal of limiting the increase in global average temperatures to well below 2°C of warming and pursuing efforts to keep warming to less than 1.5 °C;[86]
- Australia's legislated and formal emissions reduction targets under the Paris Agreement of 43 per cent by 2030 and net zero by 2050;[87]
- the government's Net Zero plan, which involves six sectoral emissions plans, including the built environment sector plan which will capture AI facilities;[88]

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[86]   DISR, 'Net Zero', Net Zero - DCCEEW (accessed 4 September 2024).

[87]   DISR, 'Powering Australia, Powering Australia - DCCEEW (accessed 4 September 2024).

[88]   DISR, 'Net Zero', Net Zero - DCCEEW (accessed 4 September 2024).

- the government's Rewiring the Nation plan to modernise Australia's electricity grid and upgrade transmission infrastructure to support the transition from fossil fuel-based energy sources to renewable energy sources;[89] and
- the government's Capacity Investment Scheme, which provides a national framework for investment in renewable energy capacity, such as wind, solar and battery storage.[90]

6.91 The committee considers that, subject to ensuring that AI's energy needs are factored into future energy system planning, Australia's current GHG emissions reduction policy settings, and progress toward a substantially renewables-based energy system, provide a robust policy framework to address the significant energy use and associated GHG emissions of the AI industry.

Water use

6.92 In relation to AI's water use, the committee heard that, despite varying estimates, AI facilities use very significant quantities of water, thereby potentially competing with social and environmental water uses and placing pressure on water resources management, infrastructure and planning.

6.93 As demand for AI-related water use will only grow as the AI industry continues to expand, the committee acknowledges the need for governments to ensure that future water resources management, infrastructure and planning take account of the water needs of the AI industry. Given the varying availability of water and cycles of drought across Australia, the committee notes the importance of siting such facilities in locations that can service the AI industry's water requirements without impacting critical social and environmental water uses. In this regard, the committee notes examples of the strategic siting of such facilities near abundant water sources, such as aquifers and hydroelectric stations, to allow for the use and recycling of water to cool computing infrastructure.

Reducing the environmental impacts of AI

6.94 In light of the significant environmental impacts of AI's energy and water use, a number of inquiry participants pointed to the environmental benefits of increasing the efficiency of the computational methods used to develop and train AI models, as well as to operate the AI models themselves, insofar as these gains translate to more efficient use of energy and water resources. In this regard, the submissions of the large AI tech companies detailed a number of

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[89] DISR, 'Rewiring the Nation', Rewiring the Nation - DCCEEW (accessed 4 September 2024).

[90] DCCEEW, 'Capacity Investment Scheme', Capacity Investment Scheme - DCCEEW (accessed 4 September 2024).

efficiency gains in recent years, achieved through improvements to computing hardware and the computing methods used to develop and operate AI models.

6.95 However, while the committee appreciates that greater efficiencies in the development and operation of AI models may provide corresponding reductions in energy and water use, it notes that the pursuit of computing efficiency by large AI companies is driven by commercial rather than environmental imperatives. In the context of the continuing rapid growth of the AI industry, the committee considers it very likely that any related environmental gains are therefore likely to be insignificant, amounting to merely slower rates of growth in energy and water use overall.

Land use and resources

6.96 In relation to the AI industry's environmental impacts on land use and resources, the committee notes evidence that the associated industries and activities that underpin AI and the technology industry more broadly also have significant environmental impacts. In particular, the mining and processing of key minerals; manufacturing of computing equipment; and management and recycling of waste from these activities competes with environmental land uses and can impact significantly on the quality and range of natural habitats.

6.97 While acknowledging these potentially significant impacts, the committee notes that responsibility for environmental regulation and resource management in Australia is shared between the Commonwealth and state and territory governments. Given this, the committee considers that these land use and resource impacts are most appropriately considered and dealt with through existing legislative schemes for environmental protection and land-use and planning, rather than by AI-specific measures or policies.

Capturing the environmental impacts of AI

6.98 A significant theme to emerge from the evidence received by the inquiry is the need for the environmental impacts of AI to be more fully captured, with data currently lacking due to a lack of consistent measuring and reporting standards, as well as commercial sensitivities in relation to data that might reveal the relative costs and efficiencies of different AI models and approaches to their development.

6.99 Accordingly, various inquiry participants called for the development of comprehensive standards for measuring and reporting AI's environmental impacts, to be applied widely across the AI industry whether as part of a voluntary or mandatory reporting framework. A number of submitters and witnesses also noted the potential for the reporting and assessment of AI's environmental impacts to be mandated by AI-specific legislative schemes, such as the EU AI Act, or as an element of an audit or assessment framework for high-risk uses of AI.

6.100 In this regard, and with reference to the discussion above, the committee notes that complete and accurate information about the full range of AI's environmental impacts is critical for the purposes of energy system and water resource planning and management, as well as to ensuring that AI's impacts are effectively regulated under Australia's intersecting federal, state and territory legislative regimes for environmental protection, resource management and land use and planning.

Environmentally positive uses of AI

6.101 Finally, the committee notes the evidence received in relation to the numerous potentially environmentally positive uses of AI. At a broad level, the use of AI to achieve greater efficiencies in significant areas of the economy, such as manufacturing, agriculture and the transport sector, can result in more efficient use of natural resources and reduced environmental impact.

6.102 More directly, AI has many potential environmental applications, including in relation to natural resource management; environmental monitoring and conservation; and understanding and finding solutions to the environmental challenges of our time, including climate change and species extinction.

6.103 The committee notes that, as with any potential uses of AI, realising AI's potential environmental benefits requires the creation of a regulatory and policy environment that fosters the development of the AI industry more broadly, while effectively mitigating the significant potential risks of AI technology. The evidence received by the inquiry and the committee's views on these issues are discussed in Chapters 2 and 3.

Regulating the environmental impacts of AI

6.104 In relation to regulating the environmental impacts of AI, in addition to being subject to existing general schemes of environmental protection and land use and planning, the committee notes, as set out at paragraph 7.61, the government's implementation of AI-specific and general policy frameworks that are relevant to managing and mitigating the environmental impacts of AI. These include, for example, policies providing guidance on the development and use of AI, and government procurement policies applicable to the purchase of AI systems and construction of AI facilities.

6.105 The committee notes also the government's continuing consultation on the development of mandatory guardrails for the use of AI in high-risk settings, as outlined in its *Safe and responsible AI in Australia* proposals paper.[91] The government's proposed principles for guiding the assessment of potentially high-risk uses of AI include consideration of 'the risk of adverse impacts to the broader Australian economy, society, environment and rule of law', and the

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[91] DISR, *Safe and responsible AI in Australia: Proposals paper for introducing mandatory guardrails for AI in high-risk settings*, September 2024.

committee notes the potential, as suggested by some inquiry participants, for the assessment of high-risk AI uses to include their impact on matters of environmental protection and sustainability.

6.106 By 2023, the world's data centres are forecast to consume more energy than India, the world's most populous nation, driven primarily by a massive extension of AI infrastructure. This, in addition to the significant water use, land use and other environmental concerns associated with this infrastructure, necessitates a coordinated and holistic Government approach to ensuring the growth of this sector in Australia is sustainable. While onshore data infrastructure is important for data security and sovereign capability purposes, any growth in the AI infrastructure industry in Australia should be managed to ensure it is delivering value for Australians and, more broadly, is in accordance with the national interest.

Recommendation 13

6.107 That the Australian Government take a coordinated, holistic approach to managing the growth of AI infrastructure in Australia to ensure that growth is sustainable, delivers value for Australians and is in the national interest.

Senator Tony Sheldon
Chair
Labor Senator for New South Wales

Dissenting report from Senator the Hon James McGrath and Senator the Hon Linda Reynolds CSC

Coalition Members of the Select Committee's Reply to the Final Report's Recommendations

Introduction

1.1 The Coalition members of the Select Committee on Adopting Artificial Intelligence (the committee) hold that the governance of artificial intelligence (AI) is one of the 21st century's greatest public policy challenges.

1.2 Nevertheless, the Coalition members of the committee hold that any AI policy framework ought to safeguard Australia's cyber security, intellectual property rights, national security, and democratic institutions without infringing on the potential opportunities that AI presents in relation to job creation and productivity growth.

1.3 AI presents an unprecedented threat to Australians' cyber security and privacy rights. AI technologies, especially large language models (LLMs), such as Chat-GPT, are trained on substantial amounts of data in order to be able to generate outputs. That is, in order for a LLM, like Chat-GPT, to gain a predictive capacity, the LLM needs to be 'fed' significant quantities of data to enable the technology to develop its own text, images or videos.

1.4 One risk of AI LLMs is that these models become the amalgamation of the data that they are fed. As a result, if the information going into an AI LLM is biased or prejudicial, there is a significant risk that the LLM would then replicate such biases and discrimination on a mass scale.

1.5 However, one of the greatest risks associated with modern advancements in AI LLMs is the 'inappropriate collection and use of personal information as well as the leakage and unauthorised disclosure or de-anonymisation of personal information'.[1]

1.6 With little-to-no domestic regulation of LLMs, especially those owned and operated by multinationals such as Meta, Google, and Amazon, the storage and utilisation of significant amounts of private data on its users is a real risk. However, when asked about the extent to which these organisations use private data of their users in the development of their AI models, these organisations provided very unclear responses. Indeed, Meta did not even answer questions about whether it used private messages sent through Messenger or WhatsApp in its generation of its LLM, Meta AI.[2]

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[1] Select Committee on Adopting Artificial Intelligence, *Final report*, November 2024, p. 15.

[2] Meta, *Answers to questions on notice (59)*, 27 September 2024 (received 24 October 2024), pp 1-9.

1.7   Notwithstanding the severe privacy considerations related to this type of conduct, as LLMs have not yet matured, there is a significant risk that private information on certain users may unintentionally form the basis of future outputs. Such a risk to the cybersecurity of the Australian people is unprecedented.

1.8   Similarly, AI presents a significant challenge not just to Australia's creative industries, but to the entire intellectual property rights structure in Australia more broadly. As the Final Report highlights, 'a significant issue in relation to copyright arises where copyrighted materials are used to 'train' AI models'.[3]

1.9   Indeed, the data that LLMs require to acquire predictive capacity, including images and text, are often extracted from the internet with no safeguards as to whether this data is owned by another individual or entity.

1.10   When Meta, Amazon, and Google were asked whether they use copyrighted works in training their LLMs, they either did not respond, stated that the development of LLMs without copyrighted works is not possible or stated that they had trained their LLMs on so much data that it would be impossible to even know.[4] These potential violations of Australia's copyright laws represent only the beginning of the threat that AI generation poses to the ongoing management of intellectual property rights in Australia.

1.11   The Department of Home Affairs highlighted the severe national security risks presented by AI in its submission to the inquiry.[5] Due to the recent exponential improvements in AI capabilities, coupled with the unprecedented level of publicly available personal and sensitive information on many Australians, foreign actors now have the ability to develop AI capabilities to 'target our networks, systems and people.'[6] That is, foreign actors could gain the ability to target specific Australians through AI capabilities trained on their own private and sensitive data. The ability for foreign and/or malicious actors to use sophisticated AI technology for scamming and phishing represents a significant threat to Australia's national security.

1.12   As this inquiry into AI occurs in the context of the two-year anniversary of the public release of Chat-GPT, these threats have been clear and in the public domain for 24 months. Yet the Federal Government has seemingly done absolutely nothing to deal with these threats to Australia's cyber security, intellectual property rights, and national security across this entire two-year period.

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[3]   Select Committee on Adopting Artificial Intelligence, *Final report*, November 2024, p. 84.

[4]   Select Committee on Adopting Artificial Intelligence, *Final report*, November 2024, pp 84-85.

[5]   Department of Home Affairs (DHA), *Submission 55*, p. 5.

[6]   DHA, Submission 55, p. 5.

1.13 Indeed, 10 months ago, in January 2024, the Department of Industry, Science and Resources (DISR) stated that 'existing laws do not adequately prevent AI-facilitated harms before they occur, and more work is needed to ensure there is an adequate response to harms after they occur'.[7] And yet absolutely nothing has happened over these 10 months.

1.14 The Federal Government has neglected its responsibility to deal with any of the threats that the exponential growth of the AI industry poses to the Australian people and their entities.

1.15 The Coalition members of the committee hold that any AI policy framework ought to safeguard Australia's cyber security, intellectual property rights, national security, and democratic institutions without infringing on the potential opportunities that AI presents in relation to job creation and productivity growth. The Coalition members of the committee apply this position to assess the Final Report's recommendations.

Recommendation 1

1.16 That the Australian Government introduce new, whole-of-economy, dedicated legislation to regulate high-risk uses of AI, in line with Option 3 presented in the government's introducing mandatory guardrails for AI in high-risk settings: proposals paper.

1.17 Though the Coalition members of the committee do not necessarily oppose the introduction of an AI Act, the Coalition members of the committee note that such whole-of-economy guardrails should only be used as a last resort.

1.18 Option 3 of the Government's *Introducing mandatory guardrails for AI in high-risk settings: proposals paper* calls on a whole-of-government approach to deal with AI, including the introduction of a new cross-economy AI Act as the regulatory framework to mandate guardrails of AI.

1.19 In response to this proposition, the Final Report notes that the Financial Services Council (FSC) stated that the AI industry should not be 'unduly burdened with red tape, particularly where industry-specific regulation already exists to mitigate the risks'.[8]

1.20 Similarly, 'the Governance Institute of Australia (GIA) drew attention to existing statutory frameworks that could be adapted to regulate AI, including the *Corporations Act 2001*, the *Privacy Act 1988* and the Australian Consumer Law within the *Competition and Consumer Act 2010*. The GIA recommended that the

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7   Department of Industry, Science and Resources (DISR), *Safe and responsible AI in Australia consultation: Australian Government's interim response*, January 2024, p. 18.

8   Select Committee on Adopting Artificial Intelligence, *Final report*, November 2024, p.41.

government review the effectiveness of these existing schemes for regulating AI.'[9]

1.21 Likewise, the Digital Industry Group Incorporated (DIGI) noted that 'many uses of AI systems in Australia are already subject to regulatory frameworks'. Before enacting any AI-specific laws, DIGI urged consideration be given to clarifying and strengthening the adequacy of existing regulatory frameworks for regulation of AI.[10]

1.22 The Coalition members of the committee note the submissions by the FSC, GIA, and DIGI and thus hold that any development of an AI Act should only be legislated to fill regulatory gaps that are unable to be addressed through amendments to existing legislative frameworks.

1.23 That is, as an AI Act would invariably infringe on private sector productivity, especially at a time where the Australian economy's productivity growth is near-stagnant, such an Act should only be considered if absolutely necessary.

1.24 As such, the Coalition members of the committee hold that an AI Act should only be used to fill regulatory gaps that were unable to be addressed through AI regulatory schemes developed through amendments to existing laws and legislative frameworks.

Recommendation 2

1.25 That, as part of the dedicated AI legislation, the Australian Government adopt a principles-based approach to defining high-risk AI uses, supplemented by a non-exhaustive list of explicitly defined high-risk AI uses.

1.26 Two possible methods of classifying high-risk AI use are through a principles-based approach or through a list-based approach. Though Recommendation 2 suggests a blend between the principles-based approach and a non-exhaustive list-based approach, this Final Report does not delve into this Recommendation in great detail.

1.27 However, the Coalition members of the committee hold that, if a principles-based approach was sufficiently robust, a non-exhaustive list of other high-risk AI uses would be redundant as the principles-based approach would already capture any such high-risk uses.

Recommendation 3

1.28 That the Australian Government ensure the non-exhaustive list of high-risk AI uses explicitly includes general-purpose AI models, such as large language models (LLMs).

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9   Select Committee on Adopting Artificial Intelligence, *Final report*, November 2024, p.41.

10   Select Committee on Adopting Artificial Intelligence, *Final report*, November 2024, p.41.

1.29   Similar to the response to Recommendation 2, if a sufficiently robust principles-based approach is taken to defining what is and what is not high-risk AI, then a non-exhaustive list would not be required in the first instance.

Recommendation 4

1.30   That the Australian Government continue to increase the financial and non-financial support it provides in support of sovereign AI capability in Australia, focusing on Australia's existing areas of comparative advantage and unique First Nations perspectives.

1.31   Consistent with many of the submissions to the inquiry, the Coalition members of the committee note the importance of developing a robust sovereign AI capability in Australia.

Recommendation 5

1.32   That the Australian Government ensure that the final definition of high-risk AI clearly includes the use of AI that impacts on the rights of people at work, regardless of whether a principles-based or list-based approach to the definition is adopted.

1.33   The Coalition members of the committee do not hold that all uses of AI by 'people at work' need to be characterised or treated as being 'high-risk'.

1.34   Such red tape would only infringe on the productivity benefits or water down the legislative requirements for actual high-risk cases of AI.

1.35   In its *Safe and responsible AI in Australia consultation: interim response*, DISR highlighted the importance of 'minimising compliance costs for businesses that do not develop or use high-risk AI'.[11] The Coalition members of the committee agree with the department's position in this case.

1.36   With forecasts predicting that AI could create 200,000 new jobs and contribute up to $115 billion annually to Australia's economy,[12] the minimisation of red tape compliance burdens is essential to fully embracing the benefits of AI.

1.37   Blanket sector-wide restrictive regulations, as suggested in Recommendation 5, would hinder this objective. The Coalition members of the committee oppose this recommendation.

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[11]   DISR, *Safe and responsible AI in Australia consultation: Australian Government's interim response*, January 2024, p. 13.

[12]   Mr Steven Worrall, Corporate Vice-President, Microsoft Pty Ltd, *Committee Hansard*, 16 August 2024, p. 35.

Recommendation 6

1.38 That the Australian Government extend and apply the existing work health and safety legislative framework to the workplace risks posed by the adoption of AI.

1.39 The Coalition members of the committee support the extension and application of the existing work health and safety legislative framework to workplace risk posed by the adoption of AI.

1.40 However, the Coalition members of the committee only support this recommendation on the proviso that the 'workplace risks' of the adoption of AI are legitimate workplace risks to health and safety.

1.41 Several submitters to the inquiry were overly liberal with their descriptions of the workplace risks posed by the adoption of AI. One submitter categorised the utilisation of AI for the purposes of 'keystroke monitoring and email monitoring' as being 'dehumanising, invasive and incompatible with fundamental rights'.[13] The Coalition members of the committee do not hold this view.

1.42 Rather, the Coalition members of the committee hold that the work health and safety legislative framework ought to only apply to the adoption of AI where there is a legitimate threat to work health and safety.

Recommendation 7

1.43 That the Australian Government ensure that workers, worker organisations, employers and employer organisations are thoroughly consulted on the need for, and best approach to, further regulatory responses to address the impact of AI on work and workplaces.

1.44 The Coalition members of the committee support this recommendation.

1.45 The Coalition members of the committee support consultation between the Federal Government and workers, worker organisations, employers and employer organisations when developing public policy in relation to AI.

1.46 However, so long as the relevant legislative frameworks are being followed, the Federal Government should not impose requirements or sanctions on private businesses to consult with the Federal Government or their employees on how they want to innovate their businesses using AI.

Recommendation 8

1.47 That the Australian Government continue to consult with creative workers, rightsholders and their representative organisations through the Copyright and Artificial Intelligence Reference Group on appropriate solutions to the

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13   Victorian Trades Hall Council, *Submission 114*, p. 5.

unprecedented theft of their work by multinational tech companies operating within Australia.

1.48   The Coalition members of the committee oppose the intentional or unintentional breach of the *Copyright Act 1968* by multinational technology companies using privately copyrighted work or data for the purposes of training their LLMs.

Recommendation 9

1.49   That the Australian Government require the developers of AI products to be transparent about the use of copyrighted works in their training datasets, and that the use of such works is appropriately licenced and paid for.

1.50   The Coalition members of the committee note the opacity of some of the multinational developers of general-purpose AI models, especially Meta, Google and Amazon. The Coalition members of the committee call on all developers to be upfront with their utilisation of copyrighted works for their LLMs.

Recommendation 10

1.51   That the Australian Government urgently undertake further consultation with the creative industry to consider an appropriate mechanism to ensure fair remuneration is paid to creators for commercial AI-generated outputs based on copyrighted material used to train AI systems.

1.52   The Coalition members of the committee support this recommendation.

Recommendation 11

1.53   That the Australian Government implement the recommendations pertaining to automated decision-making in the review of the Privacy Act, including Proposal 19.3 to introduce a right for individuals to request meaningful information about how substantially automated decisions with legal or similarly significant effect are made.

1.54   The Coalition members of the committee note that the Attorney General's Department (AGD) is currently completing a consultation paper on the policy and legal framework for the use of automated decision-making by Government.[14] The Coalition members of the committee will hold off on a final position until this consultation process has completed.

Recommendation 12

1.55   That the Australian Government implement recommendations 17.1 and 17.2 of the Robodebt Royal Commission pertaining to the establishment of a

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14   Attorney-General's Department (AGD), *Use of automated decision-making by government: Consultation paper*, November 2024.

consistent legal framework covering automated decision-making in government services and a body to monitor such decisions. This process should be informed by the consultation process currently being led by the Attorney-General's Department and be harmonious with the guardrails for high-risk uses of AI being developed by the Department of Industry, Science and Resources.

1.56 Similar to Recommendation 11, the Coalition members of the committee note that this recommendation is subject to an ongoing consultation process in the AGD. However, the Coalition members of the committee note that any automated decision making (ADM) systems in government ought to be harmonious with the guardrails for high-risk uses of AI if such uses are consistent with the principles-based approach to defining high-risk AI.

Recommendation 13

1.57 That the Australian Government take a coordinated, holistic approach to managing the growth of AI infrastructure in Australia to ensure that growth is sustainable, delivers value for Australians and is in the national interest.

1.58 The Coalition members of the committee support this recommendation.

Conclusion

1.59 If this inquiry illustrated anything, it re-affirmed the view that the governance of AI is an intractable public policy problem.

1.60 The inquiry has also demonstrated that AI poses an unprecedented risk to Australia's cyber security, intellectual property rights, national security, and democratic institutions. Though it is essential that the Federal Government minimise compliance costs for businesses that do not develop or use high-risk AI, the Federal Government must act to address the significant risks that AI poses to Australia's security and its institutions of governance.

1.61 The Federal Government's complete inaction on any AI-related policymaking whatsoever despite its own admission 10 months ago that its 'existing laws do not adequately prevent AI-facilitated harms' is a disgrace.[15]

1.62 Nevertheless, the Coalition members of the committee would welcome the opportunity to work with the Government on tackling public policy challenges associated with the governance of AI in our contemporary society.

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15 DISR, *Safe and responsible AI in Australia consultation: Australian Government's interim response*, January 2024, p. 18.

Coalition Members of the Select Committee's Reply to the Interim Report's Recommendations

Introduction

1.63 The Coalition members of the committee hold that any electoral changes to improve Australia's democracy ought to be assessed on the following four core principles:

- Fair, open and transparent elections;
- Equal treatment of all political participants;
- Freedom of political communication and participation, without fear of retribution; and
- Recognising freedom of thought, belief, association and speech as fundamental to free elections.

1.64 Australia's success as a liberal democracy is reliant on the effective operation of the Australian Electoral Commission (AEC), and the Federal government more broadly, to satisfy and uphold these four principles.

1.65 Ensuring that Australians have continued faith in the electoral system is paramount to Australians' faith in its institutions of government.

1.66 The Coalition members of the committee's response to the five recommendations proposed in the Select Committee on Adopting AI's Interim Report are guided by these four core principles.

1.67 Recommendations 1 to 4 of the Interim Report largely argue for the need for mandatory credentialling and/or prohibitions on the dissemination of electoral matter developed using AI.

1.68 Recommendation 1 recommends that, ahead of the next federal election, the government implement voluntary codes relating to watermarking and credentialling of AI-generated content.

1.69 Recommendation 2 recommends that the Australian Government undertake a thorough review of potential regulatory responses to AI-generated political or electoral deepfake content, including mandatory codes applying to the developers of AI models and publishers including social media platforms, and prohibitions on the production or dissemination of political deepfake content during election periods, for legislative response prior to the election of the 49th Parliament of Australia.

1.70 Recommendation 3 recommends that laws restricting the production or dissemination of AI-generated political or electoral material be designed to complement rather than conflict with the mandatory guardrails for AI in high-risk settings, the recently introduced disinformation and misinformation reforms, and foreshadowed reforms to truth in political advertising.

1.71 Recommendation 4 recommends that the Australian Government ensure that the mandatory guardrails for AI in high-risk settings also apply to AI systems used in an electoral or political setting.

1.72 Please note that the Coalition members of the committee's comments relate to Recommendations 1 to 4 holistically.

1.73 In response to the Interim Report in October, the Coalition members of the committee largely noted that they would reserve their final position on these recommendations until the United States' policy response to AI is holistically assessed following the US election.

1.74 The Coalition members of the committee agree with the sentiment in the Final Report that:

> Following the US election, the committee notes that AI appears not to have had a significant impact on the course or outcome of the electoral contest, and there were relatively few reports of the use of deepfakes or other AI-generated content designed to sow political disinformation or influence the minds of voters.[16]

1.75 As such, the Coalition members of the committee hold that, though Australia's regulatory structures do need to be reviewed, the large absence of political disinformation through AI in the recent US election suggests that this is unlikely to be an imminent risk to Australia's democracy.

1.76 One of the greatest difficulties surrounding the implementation of voluntary codes or outright prohibitions relating to watermarking and credentialling of AI-generated content is that such codes would require a clear and dynamic definition of AI.

1.77 Indeed, for example, the Federal Government's Electoral Legislation Amendment (Electoral Communications) Bill 2024 includes provisions that would require specific additional authorisations for any written, visual or audio electoral or referendum matter that is created or modified using digital technology.

1.78 Under this proposal, for any electoral matter in the form of TV or radio advertisements, stickers, fridge magnets, leaflets, how-to-vote cards, etc., there would need to be a specific spoken or written authorisation stating that 'the content of this advertisement was substantially or entirely created or modified using digital technology.'

1.79 The Bill's Explanatory Memorandum provides examples of visual and audio electoral matter created or modified using digital technology by providing the examples of 'deepfake videos depicting then-Prime Minister Rishi Sunak being promoted via paid social media posts, and voice-cloning falsely depicting then-Opposition Leader Sir Keir Starmer making disparaging remarks about staff.'

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[16] Select Committee on Adopting Artificial Intelligence, *Final report*, November 2024, p. 2.

However, the Bill does not provide a definition for 'digital technology' other than that it includes 'artificial intelligence', and the Bill also does not define 'artificial intelligence'.[17]

1.80 However, this Final Report defines AI as 'an engineered system that generates predictive outputs such as content, forecasts, recommendations or decisions for a given set of human-defined objectives or parameters without explicit programming.'[18]

1.81 Yet, even if this definition were to fill the absence of a definition in this proposed Bill, this term could apply to a very broad understanding, where most electoral matter would be covered, including ubiquitous technologies such as predictive text or image adjustments.

1.82 As such, the requirement to prohibit or require explicit watermarking or authorisations for content created or modified using digital technology or AI would only lead to people and entities opting to authorise all electoral and referendum matter to state that it was created or modified using digital technology to avoid the possible consequences of omitting such an authorisation.

1.83 The Coalition members of the committee oppose recommendations 1 and 3, as the Coalition members of the committee do not support the dystopian prohibitions on freedom of speech or the ill-thought through authorisation requirements included in the Electoral Legislation Amendment (Electoral Communications) Bill 2024.

1.84 However, the Coalition members of the committee agree with recommendations 2 and 4, noting the importance of a bipartisan and thorough review of potential regulatory responses to AI-generated political or electoral content and that the mandatory guardrails for AI nationally are emulated across electoral and political settings.

Recommendation 14

1.85 The committee recommends that the government examine mechanisms, including education initiatives, to improve AI literacy for Australians, including parliamentarians and government agencies, to ensure Australians have the knowledge and skills needed to navigate the rapidly evolving AI landscape, particularly in an electoral context.

1.86 While the Coalition members of the committee do not oppose this recommendation it is particularly important in the electoral context that any AI

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[17] Electoral Legislation Amendment (Electoral Communications) Bill 2024, Explanatory Memorandum, p. 12.

[18] Select Committee on Adopting Artificial Intelligence, *Final report*, November 2024, p. 4.

education programmes are designed following extensive consultation with the opposition.

Conclusion

1.87 Unlike the theme of the Interim Report, the Coalition members of the committee hold that freedom of speech is not a mere constitutional guardrail, but that freedom of speech is integral to the success of our liberal democracy.

1.88 This is why the Coalition members of the committee strongly oppose the dystopian reforms set out in the laws that purport to adjudicate truth in political advertising in the government's Electoral Communications Bill.

1.89 Yet it is unsurprising that the Labor government are seeking to develop further dystopian mechanisms to control the Australian public. Indeed, this proposal plays into the consistent dystopian vision that the Labor party has for our country. A vision of less freedom, greater executive secrecy, and less transparency.

1.90 Such a vision has lingered on broad display consistently through the Labor party's term of government. Whether it be the Labor government's appalling approach to answering questions on notice, consistent refusals to satisfactorily respond to orders for the production of documents, forcing stakeholders to sign non-disclosure agreements to be included in consultations or creating a handbook for officials on how to avoid answering questions at senate estimates, this government has unswervingly favoured secrecy and duplicity over transparency and accountability.

1.91 As such it is unsurprising that the Labor party are now attempting to use further vehicles to censor the Australian public through laws that purport to adjudicate truth in political advertising.

1.92 The Coalition members of the committee are concerned that, should the government introduce a rushed regulatory AI model with prohibitions on freedom of speech in an attempt to protect Australia's democracy, the cure will be worse than the disease.

1.93 The Coalition members of the committee would welcome the opportunity to work with the government on balancing how our freedom of speech can be protected in an AI world.

Senator the Hon James McGrath
Member
LNP Senator for Queensland

Senator the Hon Linda Reynolds CSC
Member
Liberal Senator for Western Australia

Additional comments from the Australian Greens

1.1 This inquiry was an extremely timely exploration of a broad suite of issues facing society as a result of the growth and development of artificial intelligence (AI) including regulatory, human rights, and environmental challenges.

1.2 The submissions received by the committee were extremely informative and from a particularly wide range of organisations. Likewise, the inquiry was undertaken with a genuine curiosity from the Senators involved and with a view to finding paths forward.

1.3 It is therefore a little disappointing that the final report does not recommend an overarching strategy that would bring Australian regulation of AI into line with the UK, Europe, California or other jurisdictions. The current focus on high-risk AI means many of the more mainstream uses, many of which are positive but none of which are without risk, have not been adequately considered.

1.4 To this end the Greens propose the following recommendation.

Recommendation 1

1.5 That the Australian government begin consultation on a National Strategy on AI to develop sovereign capacity for human-centric AI in Australia including innovation and investment, transition to an AI enabled economy and workforce and prioritisation of environmental goals.

1.6 While the report grapples with the issue of copyright and proposes government focus on consulting with industry and a plan for transparency for AI models it fails to address the key issue raised regarding unfair contracts. Many submissions and witnesses raised the issue of previously signed contracts (many of which were signed before generative AI was even a thing) being re-read to authorise the use of creative content including voice recordings and publications for purposes from developing large language models (LLMs) to directly creating voice prints or likenesses for use in generative AI models.

1.7 To address copyright concerns the Greens propose the following recommendation:

Recommendation 2

1.8 That the Australian Government provide regulatory guidance to ensure contracts in creative industries are not unfairly and inappropriately used to acquire a person's likeness, inherent personal attributes or creative works for the purposes of machine learning or exploitation using AI.

1.9 Automated decision making has been a subject considered at some length including in this inquiry and we support the recommendations in this report

regarding implementing the recommendations from the Privacy Review and Royal Commission into Robodebt.

1.10 Community mistrust in automated decision making, particularly following Robodebt, means the government should assure the Australian community that where it is used it will not only be transparent but will be in their interest. To this end we propose the following recommendation:

Recommendation 3

1.11 That the Australian Government ensures Automated Decision Making is only used without human intervention in situations where it would provide that the people the subject of the decision making are better off.

1.12 Finally, the environmental impacts of AI were canvassed at some length in this report. They are significant and they are increasing. Datacentres are getting bigger, and their footprints are not just in their construction but also in their use of energy, of materials upgrades and water.

1.13 Predictions of exponential power use by generative AI and data centres make it clear that planning to reduce power use, operational requirements that focus on minimizing energy use and ensuring that power is sourced from zero carbon renewable power will all be needed to limit the environmental impacts going forward.

1.14 As more super powered chips enter the market in Australia the likelihood is that water use will also significantly increase.

1.15 The current building standards for data centres are not fit for purpose for AI and current development application rules don't proactively look into the operating environmental impacts of these centres. That has to change. The Greens propose the following recommendation to address this:

Recommendation 4

1.16 That the Australian Government develop a comprehensive roadmap to address environmental impacts of AI including updating building standards specifically relating to data centres, ensuring data centres are incentivised to access renewable energy, maximising code efficiency, water recycling and hardware reuse and recycling plans. This should include comprehensive environmental reporting of the life cycle impacts of AI data centres and benchmarks for energy and water use.

1.17 AI is here to stay and Australia can grow our already strong fundamentals to become a world leader in human-centred and environmentally-responsible AI, but only if we get the right regulatory settings in place and soon.

Senator David Shoebridge
Deputy Chair
Greens Senator for New South Wales

Additional comments from Senator David Pocock

Introduction

1.1 This committee inquiry attracted a wide range of deeply considered submissions, from a selection of stakeholders notable for their diversity, offering important insights on the fast emerging application of Artificial Intelligence (AI).

1.2 I would thank everyone who took the time to submit to the inquiry and those who provided evidence at the public hearings.

1.3 I especially thank the committee secretariat for their diligent work in a complex policy arena.

1.4 I also echo the committee's concerns with the testimony of certain witnesses, notably Google, Meta and Amazon, who lacked transparency and were not forthcoming in the information they provided to the committee and in response to Senators' questions. The continued disdain with which multinational tech and social media corporations treat sovereign governments, and their attempts to better regulate them, is of growing concern.

1.5 Their behaviour underscores the pitfalls in policy and regulatory frameworks that put the onus on social media companies to assess and regulate content.

1.6 It also highlights why further transparency, especially when it comes to algorithm and large language model content sources, is both essential and urgent.

Recommendations

1.7 I support all of the Chair's recommendations but believe some need to go further, faster.

1.8 The government's interim response[1] to *The Safe and responsible AI in Australia report* was released in January this year. A voluntary AI Safety Standard[2] was released in September, when the term of the AI expert group also concluded.[3] Consultation on mandatory guardrails for safe and responsible AI concluded at the beginning of October. With the growing uptake of AI, legislation to mandate

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[1] DISR, *Safe and responsible AI in Australia consultation: Australian Government's interim response*, January 2024.

[2] DISR, *Voluntary AI Safety Standard: Guiding safe and responsible use of artificial intelligence in Australia*, September 2024.

[3] DISR, *AI Expert Group terms of reference*, https://www.industry.gov.au/science-technology-and-innovation/technology/artificial-intelligence/ai-expert-group-terms-reference (accessed 25 November 2024).

how AI is used in high-risk settings needs to be an urgent priority for government.

Recommendation 1

1.9   That the government prioritise introduction of legislation to introduce mandatory guardrails for the safe and responsible use of AI in the next sitting period.

1.10   The first recommendation of the committee's interim report was that, ahead of the next federal election, the government implement voluntary codes relating to watermarking and credentialing of AI-generated content.

1.11   As we enter the final sitting week for 2024—and potentially for this parliamentary term—no such legislation has been introduced.

1.12   The second recommendation in the committee's interim report has also not been acted on. This was a recommendation that the Australian Government undertake a thorough review of potential regulatory responses to AI-generated political or electoral deepfake content, including mandatory codes applying to the developers of AI models and publishers including social media platforms, and prohibitions on the production or dissemination of political deepfake content during election periods, for legislative response prior to the election of the 49th Parliament of Australia.

1.13   In response to questioning by Senator Shoebridge and I about the use of deepfakes in electoral material, former Australian Electoral Commissioner Tom Rogers told the hearing:

> It is absolutely happening at an accelerated rate, particularly as our understanding of this technology increases…I think this is an issue for democracies globally, not just for Australia. We are witnessing this globally.

1.14   But the Commissioner, referencing the electoral act and its capacity to regulate the use of deepfakes, went on to say:

> The purpose of the act isn't to regulate the content of political ads, as it's currently set up—that would be a content issue—so long as it was appropriately authorised. And we could work out who did the authorisation. That would meet the requirements of section 321, which is the authorisation section. It wouldn't fall foul of section 329, which has been very narrowly cast by the courts.[4]

1.15   AI and mis and disinformation are threatening democracies around the world. Australia is not immune, but we are clearly underprepared.

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[4]   Mr Tom Rogers, Electoral Commissioner, Australian Electoral Commission, *Committee Hansard*, 20 May 2024, p. 27.

Recommendation 2

1.16 That the government prioritise consideration of the Electoral Legislation Amendment (Electoral Communications) Bill 2024 with amendments that would see the use of artificial intelligence banned in electoral matter with effect prior to the next federal election.

1.17 The committee heard strong evidence about the need for a national AI safety centre to address the growing concerns around AI safety and to ensure that Australia remains at the forefront of AI research and development while prioritising safety and ethics.

1.18 Mr Greg Sadler, the Chief Executive Officer to the Good Ancestors Project, commended the establishment of the National AI Centre but said a more safety-focused centre was needed:

> I think in the bureaucracy we've got great institutes like the National AI Centre that's focused on the adoption of AI, but you can see why they have that competing requirement with safety. We think that an Australian AI safety institute on the UK model that's tasked specifically to think about these frontier safety risks with next generation models is helpful.[5]

Recommendation 3

1.19 That the government fund a national AI safety centre in the next federal budget.

1.20 Another pressing issue identified during the inquiry was the need for immediate action to protect copyright, including:

- establishing a clear and robust framework for protecting copyright;
- implementing a national copyright education program;
- establishing a national registry for copyright works; and
- strengthening enforcement mechanisms to prevent copyright infringement.

1.21 The Australian Society of Authors recommends that the Australian Government establish a clear and robust framework for protecting copyright in the digital age, including measures to prevent copyright infringement and ensure fair compensation for creators.

1.22 The Copyright Agency submits that the Australian Government should implement a national copyright education program to raise awareness about the importance of respecting copyright and the consequences of copyright infringement.

1.23 Australian artists are particularly at risk from AI and the Music Council of Australia recommends that the Australian Government establish a national

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5   Mr Greg Sadler, Chief Executive Officer, Good Ancestors Project, *Committee Hansard,* 16 August 2024, p. 51.

registry for copyright works, to provide a centralised database for creators to register their works and to facilitate the identification of infringing content.

1.24   In the same vein the Australian Recording Industry Association submits that the Australian Government should strengthen enforcement mechanisms to prevent copyright infringement, including increasing penalties for copyright infringement and providing greater resources for law enforcement agencies to investigate and prosecute copyright crimes.

Recommendation 4

1.25   That the government urgently bring forward a bill to amend the Copyright Act to strengthen prohibitions on copyright infringement, clarify how copyright law applies to generative AI and, separately, fund the establishment of a copyright register and greater enforcement and compliance activities.

Senator David Pocock
Member
Independent Senator for the
Australian Capital Territory

Appendix 1
Submissions and additional information

1   Mr Crispin Rovere

2   Mr Ashish George

3   Mr Benjamin Anderson

4   Ms Niharika Bandam

5   Mr Alexey Trushin

6   Mr Damien Granet

7   Name Withheld

8   Mr Sam Coggins

9   Mr Daniel Parris

10   Miss Maxine Wu

11   Workday

12   Neubile

13   Basic Income Australia Limited

14   Office of the Inspector-General of Intelligence and Security

- Attachment 1

15   Mr Gareth Kindler

16   Mr Samuel Grew

17   Mr Mitchell Laughlin

18   Dr Peter Slattery

19   BSA | The Software Alliance

20   Per Capita's Centre of the Public Square

- 20.1 Supplementary to submission 20
- Additional Information 1

21   Dr Darcy Allen, Professor Chris Berg & Dr Aaron Lane

22   Salesforce

23   Mr Jordan von Eitzen

24   Adobe

25   Mr Damien Chinnery

26   Ms Chelsea Bonner

27   Mr Andrew Duckett

28   Existential Risk Observatory

29   Mr Michael Kerrison

30   Australian Nursing and Midwifery Federation (ANMF)

31   Costa Group Pty Ltd

32   Australian Communications Consumer Action Network (ACCAN)

33   Actuaries Institute

34   Dr Cat Kutay, Dr Yakub Sebastian & Dr Yan Zhang

35   Palo Alto Networks

36   Australian Services Union

37   Australian Chamber of Commerce and Industry (ACCI)

38   The Australian Association Of Voice Actors

- 38.1 Supplementary to submission 38

39   Australian Academy of Technological Sciences and Engineering

40   Royal Australian and New Zealand College of Radiologists

41   Shop, Distributive & Allied Employees' Association

42   Engineers Australia

43   Independent Music Publishers International Forum

44   Department of Defence

45   Nuvento

46   Insurance Council of Australia

47   NSW Small Business Commissioner

48   Ready Research

49   Regional Universities Network

50   Computing Research and Education Association (CORE)

51   OpenAI

52   Chartered Accountants ANZ

53   Digital Transformation Agency

54   Australian Technology Network of Universities

55   Department of Home Affairs

56   Australian Computer Society (ACS)

57   Universities Australia

58   Harmony Intelligence

59   UNSW AI Institute

60   Australian Electoral Commission

61   Australian National University

62   UTS Faculty of Engineering and Information Technology

63   CSIRO

64   Australian Council of Trade Unions (ACTU)

65   Responsible Innovation Lab, The Australian National University

66   ANU Integrated Artificial Intelligence (IAI) Network

67   Australian Securities and Investments Commission

68   Tech Policy Design Centre, ANU

69   Professor Edward Santow, Human Technology Institute, UTS

70   Associate Professor Andrew Meares, Professor Katherine Daniell, Mrs Maia Gould & Associate Professor Matthew Holt, School of Cybernetics, ANU

71   Australian Human Rights Commission

72   Professor Lachlan Blackhall, Deputy Vice-Chancellor (Research & Innovation), ANU

73   Australian Information Industry Association

74   Tech Council of Australia

75   A/Prof Alysia Blackham

76   Fusion Party Australia

77   TechInnocens

78   Dr Emmanuelle Walkowiak

79   Mr Michael Huang

80   Australian Centre for Health Engagement, Evidence and Values

81   Annalise.ai

82   Copyright Agency

83   Australian Medical Association

84   Dr Kate Crawford

85   RMIT Enterprise AI and Data Analytics Hub

86   Intelligent Software Systems Lab, Swinburne University of Technology

87   Statistical Society of Australia

88   The Association of Professional Staffing Companies

89   Atlassian

90   Dr Dilan Thampapillai

91   Twilio

92   Copyright Advisory Group

93   Consumers Health Forum of Australia
- 93.1 Supplementary to submission 93

94   Australian Manufacturing Workers' Union

95   Professor Carolyn Semmler, Professor Lyle Palmer, Associate Professor Melissa McCradden Dr Lauren Oakden-Rayner & Ms Lana Tikhomirov

96   Australians for AI Safety

97   Accenture

98   Arts Law

99   Telstra

100   Gradient Institute

101   Digital Platform Regulator Forum

102   Australian Signals Directorate

103   Australian Financial Markets Association

104   UNSW Allens Hub for Technology Law and Innovation and Disability Innovation Institute at UNSW

105   Good Ancestors Policy

106   Deloitte Australia

107   Queensland Nurses and Midwives' Union

108   Department of Education

109   Dr Zofia Bednarz

110   Deakin Law School

111   Australia New Zealand Screen Association

112   Dr Susan Bennett

113   New South Wales Council for Civil Liberties

114   Victorian Trades Hall Council

115   National Association for the Visual Arts

116   Finance Sector Union of Australia
117   Australian Broadcasting Corporation
118   Australian Council of Social Service
119   Australian College of Midwives
120   Australian Digital Alliance
121   Dr Elizabeth Coombs
122   Kingston AI Group
   • 122.1 Supplementary to submission 122

123   Suicide Prevention Australia
124   Dr Monika Kansal & Ms Faith Appleton
125   Mandala
126   AI and Cyber Futures Institute
127   Business Council of Co-operatives and Mutuals
128   IEEE Society on Social Implications of Technology Australia
129   Mr Adam Ford
130   Pawsey Supercomputing Research Centre and Curtin Institute for Data Science
131   Associate Professor Shumi Akhtar
132   Dr Farida Akhtar & Associate Professor Shumi Akhtar
133   Dr Alexie Papanicolaou
134   Applied Artificial Intelligence Institute, Deakin University
135   Financial Services Council
136   Free TV
137   Media, Entertainment & Arts Alliance
   • 137.1 Supplementary to submission 137

138   Australian Publisher Association
139   Australian Society of Authors
140   Australian Public Service Commission
141   Screen Producers Australia
142   Dr Armin Alimardani
143   Governance Institute of Australia
144   Mr James Newton-Thomas
145   Google
146   ARC Centre of Excellence for Automated Decision-Making and Society
147   Council of Small Business Organisations Australia
148   Reset.Tech
   • Attachment 1

149   Human Rights Law Centre
150   Australian Federal Police
151   Productivity Commission
152   Law Council of Australia
153   SBS
154   Attorney-General's Department

155 DIGI

156 Digital Rights Watch

157 Tertiary Education Quality and Standards Agency

158 Microsoft

159 Infosys

160 Department of Industry, Science and Resources

161 Science and Technology Australia

162 Australia Small Business and Family Enterprise Ombudsman

163 EY

164 The University of Sydney

165 Sydney AI Centre, The University of Sydney

166 ARIA

167 Xaana.Ai

168 CISAC

169 Australasian Performing Right Association & Australasian Mechanical Copyright Owners Society

170 International Centre for Missing and Exploited Children Australia

171 Australian Retailers Association

172 Australian Institute of Company Directors

173 Australian Copyright Council

174 Digital Sciences Initiative, The University of Sydney

175 Australian Digital Inclusion Alliance

176 Australian Production Design Guild

177 AWG, AWGACS, ASEG, APDG and ACS
- 177.1 Supplementary to submission 177
- 177.2 Supplementary to submission 177

178 Australian Guild of Screen Composers

179 National Aboriginal and Torres Strait Islander Music Office

180 Monash University

181 Australian Screen Directors Authorship Collecting Society

182 Department of Health and Aged Care

183 Australian Library and Information Association
- 183.1 Supplementary to submission 183

184 Amazon

185 NSW Department of Customer Service

186 La Trobe University

187 Dr Caitlin Curtis

188 Dr Alexia Maddox, Dr Stuart Evans, Prof. Bernadette Walker Gibbs

189 Ms Bridget Loughhead

190 Ms Monika Janinski

191 Ms Arshia Jain

192 Mr Hugo Lyons Keenan

193 Mr Jack Payne

194	Mr Nelson Gardner-Challis
195	Mr Scott Smith
196	Mr Callum Dyer
197	Mr Yanni Kyriacos
198	Mr Evan Hockings
199	Dr Rupert McCallum
200	Mr Yuki Kitano
201	Mr Greg Baker
202	Dr Sarah Winthrope
203	Ms Katherine Biewer
204	Associate Professor William Billingsley
205	Associate Professor Ritesh Chugh
206	Mr Matt Fisher
207	Mr Kel McNamara
208	Mr Justin Olive
209	Dr Laura Leighton
210	Mr Oliver Guest & Mr Renan Araujo
211	Mr Hunter Jay
212	Mr Steven Deng
213	Mr Ethan Watkins
214	Mr Lucas Lewit-Mendes
215	Mr Marcus Pearl
216	Mr Jack Strocchi & James Newton-Thomas
217	Australian Research Data Commons
218	WACOSS
219	The Community and Public Sector Union
220	Meta
221	John Paul Quaremba
222	Name Withheld
223	Name Withheld
224	Name Withheld
225	Name Withheld
226	Name Withheld
227	Name Withheld
228	Name Withheld
229	Name Withheld
230	Mr Christian Pearson
231	Monash DeepNeuron
232	Mr Peter Payne
233	KMC Health Care
234	Australian Alliance for AI in Healthcare
235	Nine
236	Human Rights Watch

237   Ombudsman NSW
238   Future Skills Organisation
239   Uniting Church and U Ethical
240   UNSW School of Art and Design
241   Ms Keiran McGee
242   Dr Darryl Carlton
243   Mr Adam McArdle
244   Mr Walter McKenzie
245   Confidential

Additional Information

1   AI and Music Report by Goldmedia for Australasian Performing Right Association and Australasian Mechanical Copyright Owners Society (received 19 August 2024)

Answers to Questions on Notice

1   Per Capita's Centre for the Public Square, Identifying AI content and regulations, answers to questions on notice asked at a public hearing from Senator David Pocock, 21 May 2024 (received 6 June 2024)

2   ASIC, AI's disruption of well-established markets, answers to questions on notice asked at a public hearing from Senator David Shoebridge, 21 May 2024 (received 17 June 2024)

3   Professor Davis, Costs of sovereign foundation models, answers to questions on notice asked at a public hearing from Senator David Pocock, 21 May 2024 (received 26 June 2024)

4   Australian Electoral Commission, Social media advertising transparency, answers to questions on notice asked at a public hearing from Senator David Pocock, 20 May 2024 (received 11 June 2024)

5   Australian Electoral Commission, Contact with DISR regarding AI, answers to questions on notice asked at a public hearing from Senator David Pocock, 20 May 2024 (received 11 June 2024)

6   Tech Policy Design Centre, ANU, New York law for independent audit of AI systems, answers to questions on notice asked at a public hearing from Senator Fatima Payman, 20 May 2024 (received 17 June 2024)

7   CSIRO, Ethical framework for AI, answers to questions on notice asked at a public hearing from Senator David Shoebridge, 20 May 2024 (received 17 June 2024)

8   CSIRO, Short to medium term AI standards, answers to questions on notice asked at a public hearing from Senator David Shoebridge, 20 May 2024 (received 17 June 2024)

9   CSIRO, Technology for large language AI models, answers to questions on notice asked at a public hearing from Senator David Pocock and Senator James McGrath, 20 May 2024 (received 17 June 2024)

10   CSIRO, CSIRO's capacity to develop AI technologies, answers to questions on notice asked at a public hearing from Senator David Shoebridge, 20 May 2024 (received 17 June 2024)

11   CSIRO, Open-source models, answers to questions on notice asked at a public hearing from Senator Varun Gosh, 20 May 2024 (received 17 June 2024)

12   CSIRO, Time frames of safeguard implementation, answers to questions on notice asked at a public hearing from Senator Tony Sheldon, 20 May 2024 (received 17 June 2024)

13   Gradient Institute, Decline of Australian AI, answers to questions on notice asked at a public hearing from Senator Tony Sheldon, 20 May 2024 (received 17 June 2024)

14   Gradient Institute, Risk assessment and evaluation, answers to questions on notice asked at a public hearing from Senator David Shoebridge, 20 May 2024 (received 17 June 2024)

15   Tech Council Australia, Various, answers to questions on notice asked at a public hearing from Senator David Shoebridge, 21 May 2024 (received 19 June 2024)

16   ANU School of Cybernetics, South Korea prohibition of deepfake images and voice in election, answers to questions on notice asked at a public hearing from Senator David Shoebridge, 20 May 2024 (received 13 June 2024)

17   Human Rights Law Centre, Use of AI for public decision-making and AI regulation, answers to questions on notice asked at a public hearing from Senator Tony Sheldon and Senator Lisa Darmanin, 16 July 2024 (received 30 July 2024)

18   Parks Australia, Healthy Country AI, answers to questions on notice asked at a public hearing from Senator David Shoebridge, 17 July 2024 (received 7 August 2024)

19   CSIRO, Funding to replace Setonix, answers to questions on notice asked at a public hearing from Senator David Shoebridge, 17 July 2024 (received 7 August 2024)

20   Adobe, Image licensing and deepfake regulations, answers to questions on notice asked at a public hearing from Senator Tony Sheldon and Senator David Shoebridge, 16 July 2024 (received 8 August 2024)

21   Castlepoint, States conducting self-assessments, answers to questions on notice asked at a public hearing from Senator Lisa Darmanin, 17 July 2024 (received 9 August 2024)

22   Kingston AI Group, Audit standards, answers to written questions on notice from Senator Tony Sheldon, 9 August 2024 (received 23 August 2024)

23   Atlassian, various answers, answers to written questions on notice from Senator Tony Sheldon, 9 August 2024 (received 23 August 2024)

24   Good Ancestors Policy and Harmony Intelligence, Workplace participation, answers to questions on notice asked at a public hearing from Senator Tony Sheldon, 16 August 2024 (received 29 August 2024)

25 Good Ancestors Policy and Harmony Intelligence, Regulating deepfakes, answers to questions on notice asked at a public hearing from Senator David Pocock, 16 August 2024 (received 29 August 2024)

26 Good Ancestors Policy and Harmony Intelligence, AI Safety Institute funding and structure, answers to questions on notice asked at a public hearing from Senator David Pocock, 16 August 2024 (received 29 August 2024)

27 Good Ancestors Policy and Harmony Intelligence, Engaging government on cross-cutting issues relating to AI safety policy, answers to questions on notice asked at a public hearing from Senator David Shoebridge, 16 August 2024 (received 29 August 2024)

28 ASIC, ASIC trial of using AI, answers to questions on notice asked at a public hearing from Senator David Pocock and Senator David Shoebridge, 21 May 2024 (received 5 July 2024)

29 Microsoft, various answers, answers to questions on notice asked at a public hearing from Senator David Shoebridge, 16 August 2024 (received 30 August 2024)

30 Good Ancestors Policy and Harmony Intelligence, Comparative legal analysis of the Canadian and EU AI acts as applied in Australia, answers to questions on notice asked at a public hearing from Senator David Shoebridge, 16 August 2024 (received 30 August 2024)

31 Adobe, Firefly's use of public domain images, answers to written questions on notice from Senator Tony Sheldon, 9 August 2024 (received 31 August 2024)

32 Digital Transformation Agency, Microsoft CoPilot Trial Costs, answers to questions on notice asked at a public hearing from Senator David Pocock, 16 August 2024 (received 4 September 2024)

33 Google, various answers, answers to written questions on notice from Senator David Pocock, 20 August 2024 (received 6 September 2024)

34 Google, various answers, answers to questions on notice asked at a public hearing from Senator David Shoebridge, 16 August 2024 (received 6 September 2024)

35 Google, various answers, answers to questions on notice asked at a public hearing from Senator David Pocock, 16 August 2024 (received 6 September 2024)

36 Google, Distinction between information provided publicly and information provided to users of Gemini models, answers to questions on notice asked at a public hearing from Senator Varun Ghosh, 16 August 2024 (received 6 September 2024)

37 Amazon, Reforms on reasonable limits on worker surveillance, answers to questions on notice asked at a public hearing from Senator Lisa Darmanin, 16 August 2024 (received 6 September 2024)

38 Amazon, Collection of data through use of AI products and content from Australian creatives used to train AI models, answers to questions on notice

asked at a public hearing from Senator Varun Ghosh, 16 August 2024
(received 6 September 2024)

39   Amazon, Amazon's practices for ensuring creative people's moral rights are
        not infringed, answers to questions on notice asked at a public hearing from
        Senator Varun Ghosh, 16 August 2024 (received 6 September 2024)

40   Amazon, various answers, answers to written questions on notice from
        Senator David Pocock, 20 August 2024 (received 6 September 2024)

41   Digital Transformation Agency, DTA Involvement in AMICA tool, answers to
        questions on notice asked at a public hearing from Senator David Pocock,
        16 August 2024 (received 6 September 2024)

42   Attorney-General's Department, Role of AMICA in providing legal advice,
        answers to questions on notice asked at a public hearing from
        Senator Varun Ghosh, 16 August 2024 (received 11 September 2024)

43   Attorney-General's Department, Prohibition or criminalisation of the use of
        deepfakes in elections, answers to questions on notice asked at a public
        hearing from Senator David Pocock, 16 August 2024 (received
        11 September 2024)

44   Attorney-General's Department, Partnership between AMICA and Portable
        and storage of data, answers to questions on notice asked at a public hearing
        from Senator David Shoebridge, 16 August 2024 (received 11 September 2024)

45   Attorney-General's Department, Role of AMICA in parenting disputes and
        property disputes, answers to questions on notice asked at a public hearing
        from Senator David Shoebridge, 16 August 2024 (received 11 September 2024)

46   Attorney-General's Department, Exchange between department and AMICA
        and timeline for roll out, answers to questions on notice asked at a public
        hearing from Senator David Shoebridge, 16 August 2024 (received
        11 September 2024)

47   Department of Industry, Science and Resources, Consultation list of National
        AI Centre, answers to questions on notice asked at a public hearing from
        Senator David Pocock, 16 August 2024 (received 11 September 2024)

48   Department of Industry, Science and Resources, Fact sheet on EU AI act,
        answers to questions on notice asked at a public hearing from
        Senator David Pocock, 16 August 2024 (received 11 September 2024)

49   Attorney-General's Department, Drafting of legislative responses to
        recommendations from privacy act review, answers to questions on notice
        asked at a public hearing from Senator David Shoebridge, 16 August 2024
        (received 13 September 2024)

50   Meta, Various answers, answers to questions on notice asked at a public
        hearing from Senators David Shoebridge, Lisa Darmanin, James McGrath,
        and Varun Ghosh, 16 August 2024 (received 18 September 2024)

51   Meta, Various answers, answers to written questions on notice from
        Senator David Pocock, 12 September 2024 (received 18 September 2024)

52 Google, various answers, answers to written questions on notice from
Senator Tony Sheldon, 9 September 2024 (received 20 September 2024)

53 Google, various answers, answers to written questions on notice from
Senator Tony Sheldon, 9 September 2024 (received 20 September 2024)

54 Department of Industry, Science and Resources, Time frame commitment,
answers to questions on notice asked at a public hearing from
Senator David Shoebridge, 16 August 2024 (received 24 September 2024)

55 Attorney-General's Department, Details of stakeholder consultation on
children's online privacy code, answers to questions on notice asked at a
public hearing from Senator David Shoebridge, 16 August 2024 (received
24 September 2024)

56 Amazon, various answers, answers to written questions on notice from
Senator Tony Sheldon, 9 September 2024 (received 9 October 2024)

57 Attorney-General's Department, List of stakeholders consulted on changes to
the Privacy Act, answers to questions on notice asked at a public hearing from
Senator David Pocock, 16 August 2024 (received 30 September 2024)

58 Attorney-General's Department, list of stakeholders the Department has met
with on Privacy Act

reforms since the release of the Government's response, answers to written questions
on notice from Senator David Pocock, 20 August 2024 (received
30 September 2024)

59 Meta, various answers, answers to written questions on notice from
Senator Tony Sheldon, 27 September 2024 (received 24 October 2024)

Tabled Documents

1 Document tabled by Professor Genevieve Bell at a public hearing on
20 May 2024: Bell, G. (2021). Talking to AI: An anthropological encounter with
artificial intelligence. In L. Pedersen and L. Cliggett (Eds.), The SAGE
Handbook of Cultural Anthropology (1st ed, pp. 442–457). SAGE Inc.

2 Document tabled by Professor Genevieve Bell at a public hearing on
20 May 2024: Bell, G., Burgess, J., Thomas, J., and Sadiq, S. (2023). Rapid
Response Information Report: Generative AI - language models (LLMs) and
multimodal foundation models (MFMs). Australian Council of Learned
Academies

3 Law Council of Australia, Opening statement, 16 July 2024, tabled by
Dr Fabian Horton at a public hearing in Canberra on 16 July 2024

4 Document tabled by Mr Joseph Longo at a public hearing on 21 May 2024:
Bradford, A (2024). The False Choice Between Digital Regulation and
Innovation

5 Document tabled by Mr Joseph Longo at a public hearing on 21 May 2024:
Mr Joseph Longo's opening remarks at the ASIC UTS AI Regulators
Symposium, 21 May 2024

6   Document tabled by Mr Joseph Longo at a public hearing on 21 May 2024:
         Mr Joseph Longo's Keynote speech at the University of Melbourne Centre for
         Artificial Intelligence and Digital Ethics, 17 April 2024

7   Document tabled by Mr Joseph Longo at a public hearing on 21 May 2024:
         Mr Joseph Longo's Keynote address at the UTS Human Technology Institute
         Shaping Our Future Symposium, 31 January 2024

Appendix 2
Public hearings and witnesses

Monday 20 May 2024
1R0, Main Committee Room
Australian Parliament House
Canberra

CSIRO
- Ms Stela Solar, Director, National Artificial Intelligence Centre CSIRO Data61
- Dr Stefan Hajkowicz, Chief Research Consultant, CSIRO Data61

Australia's Chief Scientist
- Dr Catherine Foley

Australian Electoral Commission
- Mr Tom Rogers, Electoral Commissioner
- Mr Jeff Pope, Deputy Electoral Commissioner

Distinguished Professor Genevieve Bell, Private capacity

Australian Human Rights Commission
- Mrs Lorraine Finlay, Human Rights Commissioner

Gradient Institute
- Mr Bill Simpson-Young, Chief Executive

School of Cybernetics, ANU
- Associate Professor Andrew Meares, Deputy Director and Associate Professor
- Associate Professor Matthew Holt, Associate Director (Education)
- Mrs Maia Gould, Cybernetics Engagement Lead

Centre for Public Awareness of Science, ANU
- Dr Ehsan Nabavi, Head of Responsible Innovation Lab

Tech Policy Design Centre, ANU
- Ms Zoe Hawkins, Head of Policy Design

Tuesday 21 May 2024
The Grace Hotel
77 York St
Sydney

Australian Securities and Investments Commission (ASIC)
- Mr Joe Longo, Chair
- Ms Calissa Aldridge, Executive Director, Markets
- Mr Graham Jefferson, Digital and Legal Transformation Lead

Centre of the Public Square, Per Capita
- Mr Peter Lewis, Convenor
- Mr Jordan Guiao, Director of Responsible Technology

Human Technology Institute, UTS
- Professor Edward Santow, Director, Policy and Governance
- Professor Sally Cripps, Director, Technology
- Professor Nicholas Davis, Director, Strategy and Operations

Australian Information Industry Association
- Mr Simon Bush, CEO

Australian Artificial Intelligence Institute, UTS
- Distinguished Professor Jie Lu AO, Director

AI Institute, UNSW
- Professor Toby Walsh, Chief Scientist

Australian Council of Trade Unions (ACTU)
- Mr Vince Caughley, NSW Division Secretary
- Mr Bernard Smith, NSW Branch Secretary
- Mr Joseph Mitchell, Assistant Secretary
- Mr Sunil Kemppi, Senior Legal and Industrial Officer
- Mr Jack Boutros, Campaigner

Tech Council of Australia
- Mr Ryan Black, Acting CEO
- Ms Erika Ly, Policy Manager

Tuesday 16 July 2024
Main Committee Room 1R0
Parliament House
Canberra

Professor Anton van den Hengel, Private capacity

The Media, Entertainment & Arts Alliance
- Mr Paul Davies, Campaigns Director
- Dr Rod Davies, Musicians member
- Mr Cooper Mortlock, Equity member
- Mr Matt Byrne, Political Lead

- Ms Tawar Razaghi, Media member

Digital Rights Watch
- Ms Lizzie O'Shea, Founder and Chair

Adobe
- Mr John Mackenney, Director, Public Sector Strategy APAC

Human Rights Watch
- Ms Hye Jung Han, Children's Rights and Technology Researcher and Advocate

Human Rights Law Centre
- Mr David Mejia-Canales, Senior lawyer
- Ms Kimberly La, Secondee Lawyer

Associate Professor Alysia Blackham, Private capacity

Professor Kevin Sanson, Private capacity

ARC Centre of Excellence on Automated Decision-Making and Society
- Professor Julian Thomas, Director

Law Council of Australia
- Dr Fabian Horton, Chair, Futures Committee
- Mr Angus Lang SC, Assistant National Chair, Intellectual Property Committee
- Professor Peter Leonard, Member, Media and Communications Committee, Business Law Section
- Ms Olga Ganopolsky, Chair, Privacy Law Committee of the Business Law Section
- Mr John Farrell, Executive Policy Lawyer

Ms Claire Pullen, Private capacity

The Australian Association Of Voice Actors
- Mr Simon Kennedy, President
- Ms Teresa Lim, Vice President
- Ms Lesley Chambers, Industry Liaison

Wednesday 17 July 2024
Main Committee Room 1R0
Parliament House
Canberra

Trellis Data
- Mr Michael Gately, CEO
- Mr Timothy McLaren, Head of Communication

Nuvento
- Mr David Hohnke, CEO
- Mr David Sheard, Founding Director, Chief Technology Officer

Xaana.Ai
- Mr Dan Saldi, Founder and CEO

Castlepoint
- Mrs Rachael Greaves, CEO

Haast
- Mr Liam King, CTO, Co-Founder

QuintessenceLabs
- Mr John Leiseboer, Chief Technology Officer

Atlassian
- Mr David Masters, Head of Global Public Policy
- Ms Anna Jaffe, Director of Regulatory Affairs and Ethics

Parks Australia
- Mr Sean Sullivan, Deputy Secretary
- Dr Rebecca Pirzl, Branch head, Science and Australian National Botanic Gardens, Parks Australia
- Dr Renee Bartolo, Director, Office of the Chief Remote Pilot

Dr Dylan McConnell, Private capacity

RMIT University
- Dr Ascelin Gordon, Senior Lecturer

Pawsey Supercomputing Research Centre and Curtin Institute for Data Science
- Mr Mark Stickells AM, CEO

Professor Enrico Coiera, Private capacity

Professor Farah Magrabi, Private capacity

Professor Keith McNeill, Private capacity

Dr Sandra Johnson, Private capacity

Australian Nursing and Midwifery Federation
- Associate Professor Micah DJ Peters, Director, National Policy Research Unit
- Ms Annie Butler, Federal Secretary

Australian Medical Association
- Professor Steve Robson, President
- Dr Michael Bonning, Federal Counciler

Friday 16 August 2024
Senate Committee Room 2S1
Australian Parliament House
Canberra

Amazon
- Ms Nicole Foster, Director, Global AI/ML Public Policy
- Mr Matt Levey, Head of Public Policy, Australia and New Zealand

Google
- Ms Tulsee Doshi, Director, Product Management, Google DeepMind
- Ms Lucinda Longcroft, Director, Government Affairs and Public Policy, Australia and New Zealand

Microsoft
- Mr Steven Worrall, Corporate Vice President
- Mr Lee Hickin, AI Technology and Policy Lead Asia
- Ms Sarah Carney, National Technology Officer
- Mr John Galligan, General Manager, Corporate External and Legal Affairs

Good Ancestors Policy
- Mr Greg Sadler, CEO, Good Ancestors Policy, Coordinator, Australians for AI Safety

Harmony Intelligence
- Mr Soroush Pour, CEO

Digital Transformation Agency
- Mr Chris Fechner, CEO

- Ms Lauren Mills, Branch Manager, Digital Strategy, Policy and Engagement
- Ms Lucy Poole, General Manager, Digital Strategy, Planning and Performance

Attorney-General's Department
- Ms Jenna Priestly, Acting First Assistant Secretary, Courts, Tribunals and Commercial Division
- Ms Catherine Fitch, Assistant Secretary Privacy Reform Taskforce, Integrity Frameworks Division
- Mr Stephen Still, Assistant Secretary, Transparency and Administrative Law Branch, Integrity Frameworks Division
- Ms Ayesha Nawaz, Assistant Secretary of the Human Rights Branch

Department of Industry, Science and Resources
- Ms Helen Wilson, Deputy Secretary Science and Technology Group
- Mr Anthony Murfett, Head of Technology and Digital Division
- Mr Daniel Quinn, General Manager Artificial Intelligence Policy Branch

Wednesday 11 September 2024
Committee Room 2S3
Australian Parliament House
Canberra

Meta
- Ms Melinda Claybaugh, Global Privacy Policy Director
- Mr Simon Milner, Vice President Public Policy, APAC