An Artificial Intelligence Standards Roadmap: Making Australia's Voice Heard

STANDARDS Australia

Contents

Abbreviations and acronyms

ACCC	Australian Competition and Consumer Commission
AI	Artificial Intelligence
ANSI	American National Standards Institute
APEC	Asia-Pacific Economic Cooperation
APPs	Australian Privacy Principles
DIN	Deutsches Institut für Normung
GDPR	European General Data Protection Regulation
IEEE	Institute of Electrical and Electronics Engineers
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
ICT	Information and Communication Technology
ITU-T	International Telecommunications Union Telecommunication Standardization Sector
JTC 1	Joint Technical Committee 1 (joint ISO and IEC Committee)
ML	Machine Learning
NIST	National Institute for Standards & Technology
NSB	National Standards Body
OECD	Organisation for Economic Co-operation and Development
SAC	Standards Administration of China
SDOs	Standards Development Organisation
WEF	World Economic Forum

Summary of recommendations

Goal: Ensure Australia can effectively influence AI standards development globally

01 Increase the membership of the Artificial Intelligence Standards Mirror Committee in Australia to include participation from more sectors of the economy and society.

02 Explore avenues for enhanced cooperation with the United States National Institute for Standards & Technology (NIST) and other Standards Development Organisations (SDOs) with the aim of improving Australia's knowledge and influence in international AI Standards development.

03 The Australian Government nominate government experts to participate in ISO/IEC/JTC 1/SC 42, and the National Mirror Committee (IT-043). The Australian Government should also fund and support their participation, particularly at international decision-making meetings where key decisions are made, within existing budgetary means.

Goal: Increase Australian business' international competiveness in relation to responsible AI and streamline requirements in areas like privacy risk management.

04 Australian businesses and government agencies develop a proposal for a direct text adoption of ISO/IEC 27701 (Privacy Information Management), with an annex mapped to local Australian Privacy Law requirements. This will provide Australian businesses and the community with improved privacy risk management frameworks that align with local requirements and potentially those of the GDPR, CBPR and other regional privacy frameworks.

Goal: Ensure AI-related standards are developed in a way that takes into account diversity and inclusion, ensures fairness, and builds social trust.

05 Australian Government stakeholders, with industry input, develop a proposal to improve data quality in government services, to optimise decision-making, minimise bias and error, and improve citizen interactions.

06 Australian stakeholders channel their concerns about inclusion, through participating in the Standards Australia AI Committee (IT-043), to actively shape the development of an international management system Standard for AI as a pathway to certification.

Goal: Grow Australia's capacity to develop and share best practice in the design, deployment and evaluation of AI systems.

07 The Australian Government consider supporting the development of a security-by-design initiative, which leverages existing standards used in the market, and which recognises and supports the work being carried out by Australia's safety by-design initiative.

08 Develop a proposal for a Standards hub setup to improve collaboration between standards-setters, industry certification bodies, and industry participants, to trial new more agile approaches to AI Standards for Australia.

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1. Introduction

Artificial Intelligence (AI) is a resurgent technology experiencing significant advances. Since 2017, 14 of the world's most advanced economies have announced over AU$86 billion in focused AI programs and activities.[1] This growth in AI and the investment underpinning it has the potential to transform the lives of Australians, who are already keen and early adopters of AI. Alongside this opportunity, concerns have been raised about the impact of AI on the future of work, social inclusion and opportunity, among other issues.[2] With these concerns, the interest in AI Standards to shape responsible design, deployment and evaluation of AI, and facilitate global adoption, has been growing. There is precedent for this. In Information and Communication Technology (ICT), standards have assisted in enabling web accessibility, digital formatting and strengthening information security. In the physical world, standards have revolutionised the way we transport goods – including through the humble shipping container.

This Roadmap, developed as a result of consultation with a broad cross-section of stakeholders, provides a framework for Australians to intervene and shape the development of standards for AI internationally. Following the release of a Discussion Paper by Standards Australia in June 2019, it provides an actionable set of Recommendations to ensure Australia's interests in AI, ranging from safety and trust for citizens and consumers to opportunities for export by Australian businesses, are protected, promoted and enhanced.[3] As a developer of AI, but even more significantly as a purchaser of AI 'off-the-shelf,' it is important that Australia is involved in shaping the International Standards that are used to develop these AI products and services. This involvement will ensure Australia's know-how and values are incorporated. It will also assist Australian companies selling AI solutions internationally if our developers know what standards to adopt when making AI products and services for international markets and global supply chains.

During July – October 2019, Standards Australia held national consultation forums and deep-dive workshops across major capital cities, which concluded with an AI Standards Lab to test key ideas. This was complemented by a formal written submission process (see Appendix One for participants and submitters). Participants in consultation forums and stakeholders who made formal written submissions highlighted the opportunity that exists to turn salient concerns into opportunities to develop 'responsible AI' by tackling specific concerns in areas such as privacy, inclusion, safety and security and getting the policy and regulatory balance right. Realising this opportunity will require effective national co-ordination, a task for both Australian businesses and Government, with the support of Standards Australia as the National Standards Body.

1   Hajkowicz S, Karimi S, Wark T, Chen C, Evans M, Rens N, Dawson D, Charlton A, Brennan T, Moffatt C, Srikumar S, Tong KJ (2019). Artificial intelligence: Solving problems, growing the economy and improving our quality of life. Sydney: CSIRO Data61.

2   See for example: Carrasco, M., Mills, S., Whybrew, A., & Jura, A. (2019). The Citizen's Perspective on the Use of AI in Government: BCG Digital Government Benchmarking. Sydney: BCG Digital. See also: Tanner, W., Miscampbell, G. & Blagden, J. (2019). Human Capital: Why we need a new approach to tackle Britain's long tail of low skills. London: Onward. See too: Whittlestone, J., Nyrup, R., Alexandrova, A., Dihal, K. Cave, S. (2019) Ethical and societal implications of algorithms, data, and AI: a roadmap for research. London: Nuffield Foundation.
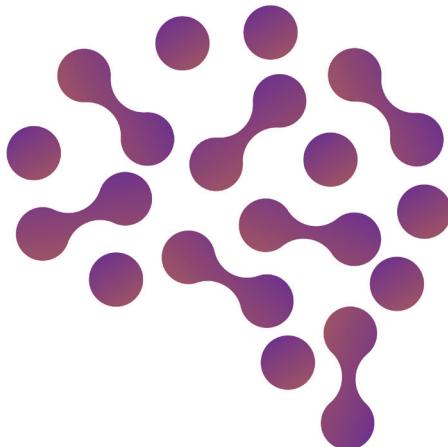
3   Standards Australia (2019). Artificial Intelligence: Hearing Australia's Voice. Sydney: Standards Australia.

Section two provides an overview of the role standards can play in managing the development and adoption of AI, using examples from the digital economy.

Section three summarises International AI standards work underway within Standards Development Organisations (SDOs), specifically ISO/IEC JTC 1/SC 42 Artificial Intelligence, and other multilateral commitments the Australian Government has made.

Section four outlines the ideas and feedback Australian stakeholders provided on AI Standards. This includes specific opportunities for Australia to play a leadership role in international SDOs, and the need to focus on specific issues, such as privacy and inclusion and fairness, and adopt a balanced approach in policy and regulation.

Section five concludes and **section six** provides clear and actionable recommendations on where Australia should focus on AI Standards work and who should have responsibility for their implementation.

This Roadmap follows a growing body of work on approaches to managing the impact of AI globally, which intersect with broader aspirations, such as those outlined in the United Nations Sustainable Development Goals. In the United States (US), this includes the work commissioned by the Administration through Executive Order 13859, which includes a roadmap published by the National Institute for Technical Standards (NIST), developed in consultation with industry.[4] In the United Kingdom (UK), this includes the work undertaken by the UK Government to invest strategically in AI, identify specific public problems where AI-driven breakthroughs might deliver an economic and social dividend and grow a workforce for the future.[5] Closer to home, it also includes the work of the Singaporean Government, including through the Infocomm Media Development Authority and the work of the AI Forum New Zealand. In Australia, the release of the AI Ethics framework and Data61's release of the AI Roadmap and it includes the release of the New South Wales Government's AI Ethics Framework.[6] There is also the ongoing work of the Australian Human Rights Commission which is inquiring into the human rights impacts of new technologies, and specifically AI.[7] The recently released Australian

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4   White House (2019). U.S. Leadership in AI: A Plan for Federal Engagement in Developing Technical Standards and Related Tools. White House: United States.

5   Department for Digital, Culture, Media & Sport (2019). 'Policy Paper: AI Sector Deal,' accessed 30/08/2019 from: https://www.gov.uk/government/publications/artificial-intelligence-sector-deal/ai-sector-deal

6   NSW Government (2019). 'NSW AI Ethics Framework,' accessed 29/01/2020 from: https://www.digital.nsw.gov.au/transformation/policy-lab/artificial-intelligence-ai/nsw-ai-ethics-framework

7   Australian Human Rights Commission (2019). Human Rights and Technology: Discussion Paper. Sydney: Commonwealth of Australia, p.166.

Council of Learned Academies (ACOLA) report provides a thorough horizon scan of AI, including in new areas such as the intersection between AI and the rights of Indigenous Peoples, and issues of algorithmic fairness more broadly.[8] Many of the ACOLA recommendations will undoubtedly be progressed through other channels too.

The litmus test for this Roadmap, and Australia's chance to play a leadership role in the governance of AI, will be the extent to which Australian industry, community groups, academia and Government coalesce to implement these recommendations and to catalyse these opportunities. As Australia's National Standards Body, we will take immediate action to ensure Australians are at the table globally when it comes to setting the AI agenda, building on work we've already started. Australia's Prime Minister, the Hon. Scott Morrison, has identified this is a priority, asserting:

> *When it comes to setting global standards, we've not been as involved as we could be. I'm determined [...] Australia will play a more active role in standards setting."*[9]

The opportunity, and challenge, for Australian stakeholders is to effectively use the Standards process to promote, develop and realise the opportunities of responsible AI, delivering business growth, improving services and protecting consumers.

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8   Walsh, T., Levy, N., Bell, G., Elliott, A., Maclaurin, J., Mareels, I.M.Y., Wood, F.M., (2019). The effective and ethical development of AI: An opportunity to improve our wellbeing. Melbourne: Report for the Australian Council of Learned Academies.

9   As quoted in Coorey, P. (2019). 'Unchecked globalism and threat to Australia's sovereignty', Australian Financial Review (October 3rd).

2. Standards and AI: Adaptive co-regulation

The internal processes of international standards bodies share two characteristics that make them useful for navigating AI policy questions. First, these bodies privilege expertise…Second, standards bodies and their processes are designed to facilitate the arrival of consensus on what should and should not be within a standard."[10]

Key points:

- Standards affect 80% of global trade, and are important in relation to emerging technologies, like AI.
- Standards provide an adaptive and responsive approach to managing AI.

Standards and the digital economy

Many of the places we go and the products and services we use are designed and developed in accordance with Australian or International Standards. The International Organization for Standardization (ISO) defines a standard as:

…provid[ing] rules, guidelines or characteristics for activities or for their results, aimed at achieving the optimum degree of order in a given context. It can take many forms. Apart from product standards, other examples include: test methods, codes of practice, guideline standards and management systems standards."[11]

Up to 80 % of global trade (USD $4 trillion annually) is affected by standards or associated technical regulations.[12] For this reason, the creation and use of consistent Standards, through the input of both the private sector and governments, is fundamental for the medium to long-term sustainable development of the global digital economy, including in relation to AI. National Standards Bodies (NSBs), such as Standards Australia, are a critical part of making this happen. Standards Australia is Australia's key representative in the development of International Standards, through our engagement with International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC). Consistent International Standards in ICT have increased interoperability and security across technology platforms, decreased barriers to trade, ensured quality and built greater public and user trust in digital products and services. Standards, including through the ISO and IEC, have enabled agreement across borders and within large commercial environments, on issues as diverse as information security (ISO/IEC 27001), cloud computing ISO/IEC 27017 and quality management (ISO 9001). Australian companies and public sector agencies already use International Standards adopted in Australia to improve a range of administrative and assurance processes.[13] While the Government determines Australia's legislative and regulatory framework, Australian and International Standards play a crucial role

10 Cihon, P. (2019). Technical Report: Standards for AI Governance: International Standards to Enable Global Coordination in AI Research & Development. Oxford: Future of Human Institute, University of Oxford, p.14-15.

11 ISO (2019). 'Deliverables,' accessed 29/01/2020 from: https://www.iso.org/deliverables-all.html

12 Outsell (2017). Market Size Share Forecast Trend Report 20 June 2017 – Global Standards Publishing Market 2017. Outsell: Burlingame, California.

13 As an example, see reference to ISO/IEC 27001 in: NSW Government. (2019). 'Cyber Security Policy'. Accessed: 09/06/2019 from: https://www.digital.nsw.gov.au/policy/cyber-security/cyber-security-policy

in supporting responsible behaviour, whether through voluntary use (which can be to reduce risks associated with liability under existing laws or regulations) or direct regulatory call-up. Unless referred to in legislation, regulation, or via contractual means, there is no requirement for organisations to comply with Standards in Australia. In Australia, companies comply with a myriad of regulatory frameworks pertaining to safety and security (for electrical goods and medical devices, for instance), and are subject to competition and privacy laws in the jurisdictions in which they operate. As such, approaches to governing the use of AI in Australia, including through Standards, need to be cognisant of the scope of existing laws and regulatory requirements, both locally and internationally.

No action	Non-regulatory solutions e.g. information program	Self-regulation, including Australian Standards, industry codes	Quasi-regulation, including Australian Standards endorsed by government	Co-regulation, including Australian Standards called up in regulation	Law e.g. government legislation

How standards for AI can be used

Standards can play a constructive role in enabling the widespread use of responsible AI. For example, they can establish common building blocks, and risk management frameworks, for companies, governments and other organisations. This may take the form of Standards in areas such as: governance (targeted at Board Directors and senior executives), management systems (which might include specific risk management frameworks and controls within organisations) and technical standards that are focused on factors such as terminology (heavily used by engineers or procurers of particular solutions). NIST has argued:

> " *AI standards that articulate requirements, specifications, guidelines, or characteristics can help to ensure that AI technologies and systems meet critical objectives for functionality, interoperability, and trustworthiness—and that they perform accurately, reliably, and safely."*[14]

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14 NIST (2019). US Leadership in AI: A Plan for Federal Engagement in Developing Technical Standards and Related Tools. Washington: NIST (US Department of Commerce), p. 8.

How can Standards for AI be used by Australian industry, government and consumers? There are three ways we might imagine the impact of Standards:

On a voluntary basis

including within business operations and across different sites. This might be a Standard outlining controls for information security and privacy, an auditing framework, or reporting template(s).

Through inclusion in contracts

(including within supply chains). This might establish some common parameters between partners in AI deployment, for example.

Via regulatory call-up in specific sectors

if deemed appropriate by regulators. This might include in relation to medical devices or financial services, for example.

Standards can also help protect Australia's national and international interests. For example, they can help in implementing the Organisation for Economic Co-operation and Development (OECD) Principles on Artificial Intelligence, which Australia has supported.[15] Here, standards can lead to the creation of risk management approaches, as well as more granular technical solutions that provide guidance on these principles, within companies, within customer bases and across the broader community. In order for Australian stakeholders to be 'standards makers', rather than 'standards takers' in the area of AI it is important to strengthen our participation through international SDOs. There are practical reasons for this. Australia is an outwardly-facing trade-dependent nation. To responsibly share, and protect, our ideas, our products and our services, we need to act in a strategic and considered way globally. This should promote free and fair trade and enhance our national interest, including security considerations. The International Standards landscape, and our opportunities for direct intervention and participation, are discussed in detail in the next sections.

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15 Organization for Economic Co-operation and Development (2019). Principles on Artificial Intelligence. Paris: OECD.

3. The global AI standards landscape

"To positively influence the development trajectory of AI, we do not necessarily need to design new institutions." [16]

Key points:

- 42 countries, including Australia, have committed to the development of consensus-driven Standards on AI, through the OECD Principles on AI.
- The development of such Standards is taking place through the Artificial Intelligence Joint Technical Committee of ISO and IEC - (ISO/IEC JTC 1/SC 42).

A range of International SDOs are developing and publishing AI-related standards. With differing degrees of granularity, these:

a. identify foundational areas for ongoing technical definition and refinement,
b. codify existing good practice(s), drawing on broader ICT-focused Standards, and,
c. engage with questions of ethics and responsible development, deployment and evaluation of AI.

In order to maximise our focus and value for Australia, Standards Australia considers the development of these Standards is best progressed through active Australian participation in existing SDOs, including ISO/IEC JTC 1/SC 42.

Australia's global commitment to consensus-based standards development

OECD principles

The OECD, through a comprehensive process, has developed a broad set of Principles for AI. In May 2019, these were endorsed by the OECD Ministerial Council. A total of 42 countries, including Australia, have committed themselves to these principles. The principles include actionable steps to underpin a framework for the 'responsible stewardship of trustworthy AI'. This includes design, development and deployment of AI internationally. These high-level value-based principles are:

- AI should benefit people and the planet by driving inclusive growth, sustainable development and well-being.
- AI systems should be designed in a way that respects the rule of law, human rights, democratic values and diversity, and they should include appropriate safeguards – for example, enabling human intervention where necessary – to ensure a fair and just society.
- There should be transparency and responsible disclosure around AI systems to ensure that people understand AI-based outcomes and can challenge them.
- AI systems must function in a robust, secure and safe way throughout their life cycles and potential risks should be continually assessed and managed.

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16 Cihon, P. (2019). Technical Report: Standards for AI Governance: International Standards to Enable Global Coordination in AI Research & Development. Oxford: Future of Human Institute, University of Oxford, p.6.

- Organisations and individuals developing, deploying or operating AI systems should be held accountable for their proper functioning in line with the above principles.

It is important to note that the OECD principles encourage governments to "promote the development of multi-stakeholder, consensus-driven global technical standards for interoperable and trustworthy AI."[17] The obvious pathway for the development of these Standards is through SDOs that operate on the basis of 'one country, one vote', and are thus largely consensus-based. This includes ISO and the IEC. Prioritising participation via these SDOs also prevents fragmentation of AI standards development efforts internationally, saving time and money, as important as broader co-ordination and collaboration is.

It is also important that the Australian Government, through the other SDOs it participates in, continues to shape agendas for emerging technology standardisation that reflects Australia's economic interests, including trade and exports within a market-based framework, as well as our social and political interests, ranging from human rights to security considerations.

World Economic Forum

The World Economic Forum (WEF) has also been undertaking work to strengthen the governance of AI, including in the public sector, through their Centre for the Fourth Industrial Revolution. This includes a focus on the development of high level principles-based guidance, workbooks and frameworks to assist in decision-making, in collaboration with national governments. This has led to partnerships with the Government of New Zealand, and a number of publications, including Guidelines for AI Procurement, with a pilot currently underway with the UK Government. These partnerships and this published material might play a constructive additional role in the development of International Standards to support the design, development, deployment and evaluation of responsible AI systems, including within organisations. Standards Australia has engaged with the WEF to encourage greater liaison and co-ordination between the WEF and ISO/IEC JTC 1/SC 42. This might unlock unique synergies for what are mutually supportive agendas.

Australia's participation in AI Standards setting through ISO/IEC

The AI Standards Roadmap must have regard for the work being conducted by other countries in relation to standards development and frameworks for AI. By taking a proactive approach to understanding what is being done around the world, Australia may draw learnings or be better placed to anticipate and respond to changes.

—Written submission by The University of Melbourne, p.3

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17 Organization for Economic Co-operation and Development (2019). Principles on Artificial Intelligence. Paris: OECD.

Key points:

- The ISO/IEC JTC 1/SC 42 is the primary international committee on AI that Australia has an active role in.
- ISO/IEC JTC 1/SC 42 currently has 29 participating members, including Australia, and 13 observing members.
- The Australian Government should nominate experts to actively participate in this work, to leverage work within the private sector and internationally.

The Joint Technical Committee (JTC) 1 is the major joint ISO and IEC ICT-focused Standards Committee. It was established to provide a forum for standards development in relation to ICT, and has developed commonly used standards including: MPEG, JPEG, as well as standards on data governance and cyber security. Through national delegations which include representatives of NSBs, private companies, consumer groups, researchers and other stakeholders, JTC 1 provides opportunities to shape the development of fit-for-purpose Standards. It might present a forum for Australian stakeholders to not only refine international Standards-based content, based on their specific expertise, but to shape the development of new Standards-based solutions to issues identified, based on local models that emerge over time.

In 2017, JTC 1 established Sub-Committee (SC) 42 to focus on standards development for AI systems. The Secretariat is held by the United States (specifically through the American National Standards Institute (ANSI)). The major objectives of the Committee are to:

- Serve as the focus and proponent for JTC 1's standardisation program on Artificial Intelligence; and
- Provide guidance to JTC 1, IEC, and ISO committees developing AI applications.

In January 2020, SC 42 had 29 participating members, including Australia, and 13 observing members. Participating members have more expansive rights and responsibilities than observing members. To increase Australia's role and direct representation in JTC 1/SC 42, Standards Australia established an AI Mirror Committee (IT-043) in late 2018. The Australian delegates from IT-043 participate at meetings, contribute to content and vote on adoption of Standards relevant to Australia. When the International Standards are adopted by the Australian mirror committee they gain the designation of "AS ISO/IEC" Standards.

To date SC 42 has published three Standards, including two Technical Reports (TR).

ISO/IEC JTC 1/SC 42 Standards Under Development

Project	Focus area
ISO/IEC TR 20547-2:2018	Information technology — Big data reference architecture — Part 2: Use cases and derived requirements
ISO/IEC TR 20547-5:2018	Information technology — Big data reference architecture — Part 5: Standards roadmap
ISO/IEC AWI 38507	Information technology — Governance of IT — Governance implications of the use of AI by organizations
ISO/IEC CD 22989	Artificial intelligence — Concepts and terminology
ISO/IEC CD 23053	Framework for Artificial Intelligence (AI) Systems Using Machine Learning (ML)
ISO/IEC CD TR 20547-1	Information technology — Big data reference architecture — Part 1: Framework and application process
ISO/IEC AWI 24668	Information technology — Artificial intelligence —Process management framework for Big data analytics
ISO/IEC FDIS 20547-3	Information technology — Big data reference architecture — Part 3: Reference architecture
ISO/IEC 20546:2019	Information technology — Big data — Overview and vocabulary
ISO/IEC NP 24029-2	Artificial Intelligence (AI) — Assessment of the robustness of neural networks — Part 2: Formal methods methodology
ISO/IEC AWI TR 24368	Information technology — Artificial intelligence — Overview of ethical and societal concerns
ISO/IEC CD TR 24029-1	Artificial Intelligence (AI) — Assessment of the robustness of neural networks — Part 1: Overview
ISO/IEC PDTR 24028	Information technology — Artificial Intelligence (AI — Overview of trustworthiness in Artificial Intelligence
ISO/IEC NP TR 24027	Information technology — Artificial Intelligence (AI) — Bias in AI systems and AI aided decision making
ISO/IEC AWI 23894	Information Technology — Artificial Intelligence — Risk Management
ISO/IEC CD TR 24030	Information technology — Artificial Intelligence (AI) — Use cases
ISO/IEC NP TS 4213	Information technology — Artificial Intelligence — Assessment of classification performance for machine learning models
ISO/IEC AWI TR 24372	Information technology — Artificial intelligence (AI) — Overview of computational approaches for AI systems

IT-043 has representation from the following sectors: technology companies, consumer groups, legal practitioners, management consultants, medical regulators, academia, government departments and industry bodies.

Given the growth of AI across an increasing number of sectors in the economy, it is important participation in the IT-043 be broad, to ensure all sectors can provide input to standards under development that may influence relevant AI products and services. Stakeholders we spoke to called for a more co-ordinated approach by Australia to AI Standards development globally. One pointedly remarked, "[w]e endorse strong Australian representation and voice in International Committees addressing these

issues."[18] Given that Australia is already a participating member in ISO/IEC/JTC 1/SC 42, this call to action might be best read as a call to contribute both specific expertise (by sector of the economy, or by technical specialisation) and to contribute novel ideas to International Standards development activities. The recent Roadmap on AI by Data61 identifies (1) Natural Resources and Environment, (2) Health, Ageing and Disability and (3) Cities, Towns and Infrastructure, as key areas of opportunity for Australia in relation to AI.[19] This could provide a starting point for identification of sectors vital to standards development, and should be reflected in amendment to the constitution of IT-043.

Standards Australia has reviewed the current IT-043 membership and identified a number of gaps in representation. These include:

- Areas of Australia's competitive strength including agriculture, mining and resources. These warrant direct representation given the potential for AI to improve productivity and make a marked impact on enhancing safety.[20]
- Financial services, including regulatory bodies, due to the increasing role of AI in the sector and its regulatory nature.
- The aged-care sector due to Australia's ageing population. There are a number of areas where AI could benefit people in the advanced years of their lives and, as such, potential users of AI need to be directly engaged in shaping Standards.

It is vital we fill these gaps, and ensure more comprehensive representation. This is because we need to promote:

- Australia's security interests (collaboration on Standards might enable us to participate in specific supply chains in areas like defence and cyber security),
- Australia's trade and investment agenda (where alignment with international Standards might be key, including for local businesses seeking to enter and expand within global supply chains), and
- Australia's evolving values (such as how we view fairness, including as inscribed in our domestic laws).

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18 Written submission, Chair, Standards Australia' IT-021 Committee - Record-keeping (August 2019).

19 Hajkowicz S, Karimi S, Wark T, Chen C, Evans M, Rens N, Dawson D, Charlton A, Brennan T, Moffatt C, Srikumar S, Tong KJ (2019). Artificial intelligence: Solving problems, growing the economy and improving our quality of life. Sydney: CSIRO Data61.

20 Cf. https://www.alphabeta.com/our-research/staying-ahead-of-the-game-the-economic-potential-of-digital-technologies-in-australias-resources-industries/

Recommendation 1: Increase the membership of the the AI mirror committee in Australia to include participation from more sectors of the economy and society.

To diversify and increase participation on the Mirror Committee on AI, in early 2020 Standards Australia will seek participation from the following sectors:

1. Financial services, including regulatory bodies
2. Health and social care
3. Disability
4. Ageing, with a specific focus on industry participants
5. Transport, including industry participants and the National Transport Commission
6. Retail
7. Mining and resources
8. Agriculture
9. Broader groups of consumers, including specific affected communities such as people with a disability, those from regional and rural areas as well as people from a Non-English Speaking Background (NESB)
10. Metereology and other specialised areas
11. Energy
12. Manufacturing
13. Human Rights

Standards Australia will update its list of participants on the IT-043 as well as contact information to make sure representatives on these committees can be contacted to discuss the work or explore new work items that may be relevant to their sector.

In addition to SC 42, there are a range of other sub-committees within JTC 1 that might be relevant to AI (See Appendix Two).

In addition to JTC 1, ISO also has other committees that might have relevance to AI Standards development, including: ISO/ TC 307 (blockchain and DLT) which Australia chairs. Standards Australia with consumer representatives, also participates in ISO's Consumer Committee (COPOLCO), which is undertaking a project exploring AI, primarily from a consumer perspective.

International AI standards development

International Electrotechnical Commission (IEC)

The IEC has undertaken significant work to support the standardisation of AI. In 2018, the IEC published a comprehensive Whitepaper on AI which addressed the rise of AI, technical and social issues and opportunities for Standards development.[21]

Moreover in 2018, the IEC became a founding partner in OCEANIS (the Open Community for Ethics in Autonomous and Intelligent Systems).[22] OCEANIS seeks to "provide […] a trusted environment where participants":

- Share information and coordinate on respective initiatives and programs, starting with the areas of autonomous and intelligent systems.
- Enhance understanding on the role of standards in facilitating innovation while addressing problems that go beyond technical solutions to address ethics and values.
- Jointly organize events at local/regional/global levels.
- Identify opportunities for collaborative activities that bolster the development and use of standards in supporting technical, business, and policy communities in addressing technical, societal, and ethical implications of technology expansion.[23]

Standards Australia will become a member and contributor of OCEANIS and participate in its deliberations. This will improve the co-ordination between Standards bodies and ensure remaining issues of standardisation outside of the scope of JTC 1/SC 42 are effectively addressed.

IEC also administers Standardisation Evaluation Group-10 which explores issues of automation in relation to AI.

In Australia, the voice to the IEC is formally through Standards Australia's IEC National Committee which meets regularly as a strategic co-ordination body, and includes representatives of government, regulators and industry.

IEEE

The Institute of Electrical and Electronic Engineers (IEEE) has released a number of documents regarding the ethical design and development of AI through their Global Initiative on Ethics of Autonomous and Intelligent Systems. This has involved consultation across areas of industry, academia and government at an international level, with some Australian involvement. The IEEE Ethically Aligned Design document articulates five core principles to consider in the design and implementation of AI and ethics, and discusses these at length. These principles include adherence to existing human rights frameworks, improving human wellbeing and ostensibly to ensure accountable and responsible design, transparent technology and the ability to track misuse.

21 International Electrotechnical Commission (2018). White Paper: Artificial intelligence across industries. Geneva: IEC,

22 OCEANIS (2019). 'Home',' accessed 17/09/2019 from: https://ethicsstandards.org/

23 OCEANIS (2019), 'Terms of Reference,' accessed 17/09/2019 from: https://ethicsstandards.org/terms-of-reference/

Ethically Aligned Design also outlines existing standards development activities underway within IEEE, including the P7000™ series, where a number of specific standards are under development addressing different aspects of AI design, development and evaluation, as outlined below. IEEE Standards under development in relation to ethical AI include:

IEEE Standards Project for Algorithmic Bias Considerations	IEEE Standards Project for Child and Student Data Governance	IEEE Standards Project for Employer Data Governance
IEEE Standards Project for Personal Data AI Agent Working Group	IEEE Standards Project for Ontological Standard for Ethically Driven Robotics and Automation Systems	IEEE Standards Project for Ethically Driven Nudging for Robotic, Intelligent and Autonomous Systems
IEEE Standards Project for Fail-Safe Design of Autonomous and Semi-Autonomous Systems	IEEE Standards Project for Well-being Metric for Autonomous and Intelligent Systems	IEEE Standards Project for the Process of Identifying and Rating the Trustworthiness of News Sources
IEEE Standards Project for Machine Readable Personal Privacy Terms	IEEE Standards Project for Inclusion and Application Standards for Automated Facial Analysis Technology	

In 2019, Standards Australia signed an agreement to enable the adoption of IEEE Standards through the Standards Australia process, where no suitable ISO or IEC standard is available. This enables the adoption of IEEE Standards with the Australian Standards designation under some circumstances.

National standards-based approaches

United States: The NIST Roadmap

In recent years the US government has taken a free market approach to AI policy. However, with the release or development of significant national AI strategies from key trading partners such as China and the European Union, the US government began policy action in early 2019, through more formalised direction-setting. In February 2019 the US President issued Executive Order 13859 on Maintaining American Leadership in Artificial Intelligence, setting a clear plan of action for US AI policies.[24] In 2019, the NIST was commissioned by the US Government to develop a Roadmap on AI Standards to 'position the United States as a leader.'[25] In regards to technical standards, the Executive order on AI required that within 180 days that the Secretary of Commerce, through the Director of the NISIT, issue a plan for US Federal engagement in the development of technical standards and related tools in support of reliable, robust and trustworthy systems that use AI technologies. Industry responded with submissions during this process, some of which emphasised the importance of the standards being developed by ISO/IEC JTC 1/SC 42.

24 White House 2019. 'Executive Order: Maintaining American Leadership in Artificial Intelligence'. Available from: https://www.whitehouse.gov/presidential-actions/executive-order-maintaining-american-leadership-artificial-intelligence/

25 NIST (2019). NIST paper U.S. Leadership in AI: A Plan for Federal Engagement in Developing Technical Standards and Related Tools. White House: United States.

The Roadmap was released on 9 August 2019.[26] The Roadmap:

- Identifies areas of strategic focus for standardisation (outlined below)
- Outlines the importance of co-ordination in relation to standards-setting
- Calls for strategic engagement with international parties to 'advance AI Standards for US economic and national security needs'

NIST focus areas for standards development are outlined below:[27]

Concepts and terminology	Metrics	Safety
Data and knowledge	Networking	Risk management
Human interactions	Performance testing and reporting methodology	Trustworthiness

Finally, in early 2020, the White House released a draft Memorandum for consultation, outlining 10 principles for AI, to apply to Executive Departments and Government Agencies. The Principles document proposes, in relation to non-regulatory approaches, that:

> *Agencies should give a preference to voluntary consensus standards but may also avail themselves of independent standards-setting organizations and consider the robustness of their standards when evaluating the need for or developing related regulations."*[28]

For this reason, Standards Australia is strongly of the view that engaging with NIST on the development of AI Standards is important. This is specifically to gain insights, identify where Australia might replicate the approach, or where these Standards should be international in scope, including through ISO/IEC JTC 1/SC 42. For example, we might wish to leverage insights in areas like 'performance testing and reporting methodology.' These elements might form part of a comprehensive approach to managing AI, including from an auditing perspective, and could be relevant to management-system-type Standards.

26   NIST, 2019. 'U.S. Leadership in AI'. Available from: https://www.nist.gov/sites/default/files/documents/2019/08/10/ai_standards_fedengagement_plan_9aug2019.pdf

27   NIST (2019). US Leadership in AI: A Plan for Federal Engagement in Developing Technical Standards and Related Tools. Washington, D.C.: US Department of Commerce, p. 3

28   Vought, R.T. (2020). Memorandum for the Heads of Executive Departments: Guidance for Regulation of Artificial Intelligence Applications. White House: Washington, D.C., p.7.

Recommendation 2: Explore avenues for enhanced cooperation with the United States National Institute for Standards & Technology (NIST) and other Standards Development Organisations (SDOs) with the aim of improving Australia's knowledge and influence in international AI Standards development.

Germany: BMWi/DIN/DKE initiative

German Standards bodies and consortia have increasingly entered the field of AI Standardisation. In early 2019, Deutsches Institut für Normung (DIN) released a Position Paper on AI which outlines its commitment to increasing participation in Standards development, including via creating opportunities for Committee participation for startups and Small and Medium Enterprises.[29] The paper also notes the intersection between government strategy and Standards activities, commenting: "the German federal government [through its AI Strategy] has identified standardization as being one of the 12 central fields of action, making it an essential building block for this vital topic of the future."[30]

In mid-2019, this was followed by a DIN announcement that it was developing an AI Roadmap, underpinned by an explicit commitment to implementing an action of the German Federal Republic's AI Strategy, concerning 'setting standards.'[31] This is being undertaken in co-ordination with the German Federal Ministry of Economics and Energy (BMWi), through a Steering Group.

Two DIN Technical Specifications are already being developed in the field of AI:

- DIN SPEC 92001-1, Artificial Intelligence — Life Cycle Processes and Quality Requirements — Part 1: Quality Meta Model
- DIN SPEC 92001-2, "Artificial Intelligence — Life Cycle Processes and Quality Requirements — Part 2: Quality Requirements

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29 DIN (2019). 'Artificial Intelligence Standardization helps create innovation friendly framework conditions for the technology of the future', accessed 17/09/2019 from: https://www.din.de/blob/306690/f0eb72ae529d8a352e0b0923c67b6156/position-paper-artificial-intelligence-english--data.pdf

30 DIN (2019). 'DIN to develop AI standardization roadmap,' accessed 16/09/2019 from: https://www.din.de/en/din-and-our-partners/press/press-releases/din-to-develop-ai-standardization-roadmap-330542

31 DIN (2019). 'DIN to develop AI standardization roadmap,' accessed 16/09/2019 from: https://www.din.de/en/din-and-our-partners/press/press-releases/din-to-develop-ai-standardization-roadmap-330542
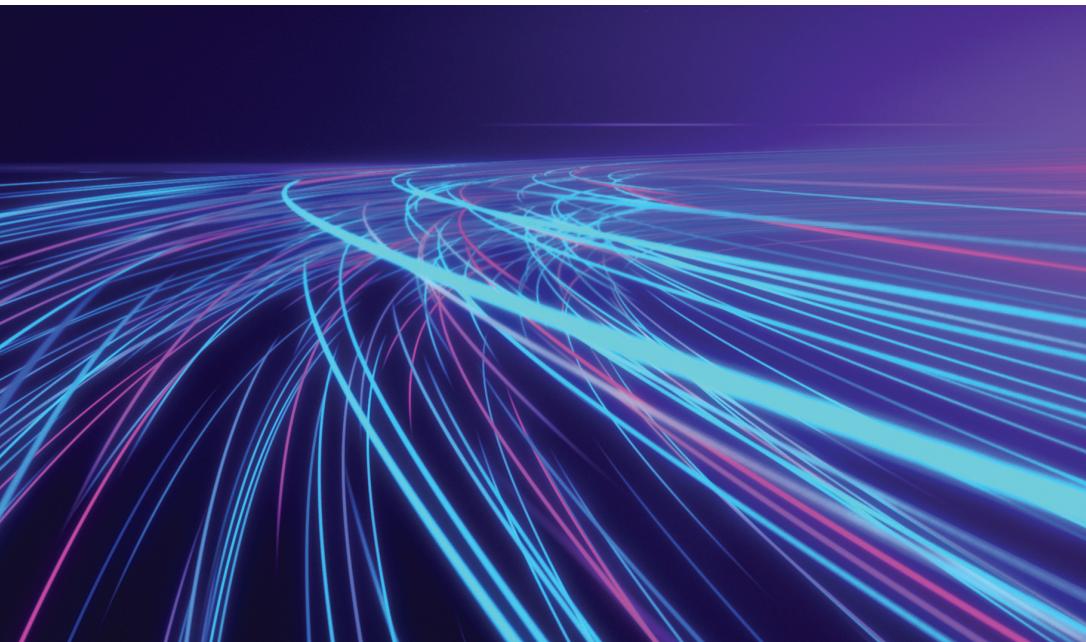
China

In July 2017, China publicly released its national AI strategy, A Next Generation Artificial Intelligence Development Plan. The plan includes strategies and goals for research and development, industrialisation policy, talent development, education and skills attainment, standard setting and regulations, ethical norms and security.

China's strategy has three key objectives. These include: (1) By 2020, make China's AI industry "in-line" with competitors (2) By 2025, reach 'world leading' in some AI fields (3) By 2030, become the "primary" centre for AI innovation.

The Standards Administration of China's (SAC) 2018 White Paper on Artificial Intelligence Standardization identified standardisation of AI as critical to supporting industrial development in China and leadership of key AI related technologies. Some have argued that:

> *Substantial Chinese contributions are likely to focus on standards in the outer layers of the AI domain, particularly in the products/services and applications layers. This is because leading Chinese AI firms such as Alibaba, Tencent, Baidu, iFlyteck and SenseTime have considerable experience in using AI to solve business operational problems.* "[32]

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32 Reference for this quote is: https://www.newamerica.org/cybersecurity-initiative/digichina/blog/chinese-interests-take-big-seat-ai-governance-table/

Snapshot of International AI Standards development activities

Initiative/SDO process	Australia engaged/ participating	Status: (Binding/non-binding)	Area of focus
OECD AI principles	Yes (through the Australian Government)	No, although Australia has agreed to this recommendation	Trustworthy AI – articulates principles with corresponding actions (process based)
ISO/IEC JTC1/SC 42	Yes (through Standards Australia Mirror Committee IT-043)	Non-binding, voluntary use of Standards (unless otherwise indicated through Government reference in policy, circular, regulation or legislation, particularly those adopted in Australia with the designation of AS/ISO/IEC Standards).	• Terminology • Governance of AI within organisations • (Evolving work-program, including many other areas of focus) • Standard and 2 Technical Reports published to-date.
IEEE	Yes (Through independent experts)	Non-binding, voluntary use	IEEE Ethically-Aligned Design outlines core principles and related Standards under development, as listed above.
IEC (including OCEANIS)	Yes (through Standards Australia Mirror Committee IT-043 and the IEC National Mirror Committee)	unless otherwise indicated through Government reference in policy, circular, regulation or legislation, particularly those adopted in Australia with the designation of AS/ISO/IEC Standards).	• Co-ordination, via OCEANIS
International Telecommunications Union (ITU)	Yes	Non-binding, voluntary use (unless otherwise indicated through Government reference in policy, circular, regulation or legislation, particularly those adopted in Australia with the designation of AS/ISO/IEC Standards).	AI for Good Global Summit (annual) AI Repository Various Focus Groups (AI for Health, Machine Learning for 5G)
National efforts **United States (NIST Roadmap)**	N/A	Non-binding, unless otherwise indicated by the United States Government.	• 9 thematic areas of focus • Consensus-based Standards a key focus
Germany (DIN initiatives and BMWi/DIN/DKE Roadmap on ethics and AI)	N/A	Not yet known.	• Commitment to helping advance Government AI Strategy directives • Roadmap not yet released
China	N/A	Binding (directive from central government)	• Local standardisation, followed by international engagement, with goals aligned to leadership internationally on AI

The need for strategic Australian leadership and co-ordination of AI Standards, including internationally

Key points:

- Improved national and international co-ordination on AI Standards is critical for Australia.

- Standards Australia must engage with Standards bodies from like-minded countries to identify gaps and opportunities for standardisation.

> *[W]e need better connectivity between academia, industry and government. One way to address this could be through the development of a National AI Strategy and we have seen a number of countries put these in place with a stated desire to be global leaders supported by targeted investments."*

—Written submission by KPMG

Stakeholders were almost unanimous in their call for greater co-ordination of AI activities, including Standards, within Australia. Whilst many comments were aimed at policy co-ordination, which differs from Standards development, there was an aspiration for Australia to achieve a greater level of coherence seen in many other countries.

Stakeholders from across financial services, academia, consulting and those delivering AI services in a horizontal sense all explicitly called for a national AI Strategy. The Australian Payments Network explicitly tied this to not just immediate enterprise-level benefits, but broader social and economic benefits, arguing, "Australia needs to develop a national strategy and frameworks to manage security and build trust in order to realise the social and economic benefits of AI."[33] LivePerson added that "the country still lacks a dedicated national AI strategy and greater levels of spending will be needed for Australia to keep up with other countries that are lavishing public funds on AI initiatives."[34]

Many respondents also tied their desire for greater co-ordination domestically to spaces for the development of ethical AI approaches. Some offered practical models as to how this might function, including through the creation of an AI Council at a national level.[35]

Others argued for a mix of activity, ranging from direct participation in International Standards development, to trialling and testing new models within Australia, including approaches that take into account Australian views on ethics.[36] Chartered Accountants Australia and New Zealand similarly called for such an approach, noting Australia's position in the world and the reality of global trade flows:

> *Technologies such as AI are not limited by national boundaries and in order for Australia to be seen as an active participant, standards should have the ability to applied internationally, meaning that both a national and international approach is required in their development."*[37]

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33 Written submission by the Australian Payments Network (August 2019).
34 Written submission by LivePerson (August 2019), p.3.
35 Cf. Written submission by Deakin University (September 2019)
36 Written submission by Engineers Australia (August 2019), p.5.
37 Written submission by Chartered Accountants Australia and New Zealand (August 2019), p.2

Other stakeholders pointed to the importance of co-ordination on Standards development, including avoiding fragmentation for businesses and the community alike, noting:

> *A disparate set of Standards will lead to issues in terms of interoperability, data sovereignty, commercial translation across borders and limit opportunities to partner."*[38]

One way to channel Australia's voice, in a unified way, on AI Standards is through leadership in International SDOs (such as ISO and IEC), alongside like-minded partners. This call for greater Australian engagement in AI Standards development is consistent with Australia's Tech Future, which names, as one of its objectives "[g]lobal rules and standards affecting digital technologies and digital trade support Australia's interests."[39]

Australia's opportunity: Australian representation internationally through industry, government and community voices

It is widely acknowledged that governing AI requires a multi-disciplinary approach and one that brings different voices together. Standards Australia recommends that the Australian Government clearly, and actively, support this through resourcing participation of their nominated technical experts in international plenary meetings of JTC 1/SC 42 and other appropriate fora. The expertise these experts should bring include: governance (including knowledge of public sector IT deployment at-scale), privacy, safety, and highly technical knowledge around data formats and labelling. The participation of such experts in shaping International Standards is becoming a pressing issue, not just for trade, but in relation to geopolitical and security considerations too.[40] Having minimal representation means that, in some cases, specific concerns might not be shared or channelled and also places government at considerable disadvantage in leveraging cutting-edge work in emerging technology standards development, including where they might want to consider or use standards later.

Recommendation 3: The Australian Government nominate government experts to participate in ISO/IEC JTC 1/SC 42, and the National Mirror Committee (IT-043), and actively support their participation.

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38 Written submission by KPMG (August 2019), p.3.
39 Department of Industry, Innovation and Science (2018). Australia's Tech Future. Canberra: Commonwealth of Australia, p.45.
40 Cave, D. Hoffman, S., Joske, A., Ryan, F. & Thomas, E. (2019). Mapping China's Technology Giants. Canberra: Australian Strategic Policy Institute, p. 17.

4. Australia's opportunity to build 'responsible AI' through Standards

Australians shared their views on Standards to underpin AI throughout the consultation process – through written submissions and participation in roundtables. Stakeholders we spoke to argued that building and sustaining trust in AI will require a focus on: privacy, inclusion and fairness, safety and security and ensuring policy and regulatory responses are proportionate. Below, we discuss how Standards can contribute to each of these areas and what Australians can do to make this a reality.

Privacy

Key points:

- Privacy protection is central to building trust in AI-based decisions, services, and products.

- New Standards-based solutions can assist organisations and businesses to embed risk management frameworks for privacy, delivering business benefits and improving trust.

" *Standards Australia should consider how AI standards can complement and reflect Australia's principle-based data protection framework, including the potential for AI standards to serve as an auditable system of assurance for organisations."*

—Submission by the Office of the Australian Information Commissioner, p. 4

Privacy was a key theme in a number of submissions, on the part of businesses, consumers and government agencies. The concern for privacy, in the context of AI Standards, was two-fold: (1) to protect consumers/citizens in an era characterised by big data and, (2) to streamline processes (specifically controls) for businesses in environments where multiple jurisdictional requirements, including at a principle-level, exist. These ranged from the European General Data Protection Regulation (GDPR) to the Australian Privacy Principles as outlined in the *Privacy Act 1988 (Cth)* and the APEC Cross-Border Privacy Rules System. Many businesses operating in areas relating to AI are already bound by the provisions of the *Privacy Act 1988 (Cth).*

Deakin University argued that "…there is an ongoing need to underscore in the public sphere (and incorporate into business standards) the importance of privacy as a human right."[41] Engineers Australia shared the view that some developments in AI were 'outpacing' existing privacy laws. As a remedy, they proposed the use of Standards to introduce clarity in some specific technical areas.

One submitter identified the following privacy-related areas as fit for Standards development activities: 'standards for consent and protection of privacy is needed and best practice for data anonymization and sanitization.'[42] JTC 1, building on the work of the NSW Chief Data Scientist, through its 'Data Usage' Working Group, is already working on quantifying the risk of re-identification of data, with a view to reaching global agreement on optimal frameworks and techniques. Standards Australia is of the view

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41 Written submission by Deakin University (September 2019).
42 Written submission by Associate Professor Alan Liew, Griffith University (August 2019).

that both Government agencies and the private sector might best leverage this work through directly participating in these processes, sharing their expertise and specific techniques they adopt, with a view to developing global Standards-based approaches to data de-identification. Practically, they can do this as soon as the report on Data Usage is delivered within JTC 1, and when JTC 1 subsequently identifies the most appropriate mechanism to incorporate findings into Standards development activities. It is anticipated that this will occur in early 2020, with work already well underway.

Case study

'Data Usage' – quantifying risk of re-identification of personal information

In November 2018, at the JTC 1 Plenary in Stockholm, Australia, through its delegation, successfully proposed a Study Group on Data Usage. This proposal was informed by work initiated by the NSW Chief Data Scientist and the Australian Computer Society, and has enabled international work to be undertaken, to seek agreement on what should be in-scope when it comes to good practice concerning the management and de-identification of Personally Identifiable Information (PII).

Some companies working in AI, including LivePerson, argued that they were proactively taking measures to protect personal information. They commented: "[p]rotection of personally identifiable information has been first and foremost on our mind when deploying AI-powered solutions."[43]

The Office of the Australian Information Commissioner (OAIC), as a regulatory body, argued strongly for Standards that align with privacy obligations, as codified through law in the Australian Privacy Principles (APPs), for example. The OAIC also commented that proactive measures by regulated entities (under the APPs) would be a positive step to address concerns about inaccurate or incomplete data underpinning decision-making which can lead to discriminatory outcomes. The OAIC commented, with reference to the existing APPs:

> *[a] regulated entity is required to take reasonable steps to ensure that personal information it collects is accurate, up to date and complete (APP 10) and must allow individuals to access and correct personal information held about them (APPs 12 & 13)."[44]*

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43 Written submission by LivePerson (August 2019), p.6.
44 Written submission by the Office of the Australian Information Commissioner (OAIC) (August 2019), p.7

Standards, in this context, might outline the specific risk management frameworks and controls that businesses might employ to manage access to information in a manner that protects and promotes privacy. In the past, International Standards have either focused on information security, as one element of a privacy-focused approach (through ISO/IEC/27001, for example), or focused on risk management more broadly through ISO 31000. Within the arrival of the Mandatory Notifiable Data Breach Scheme in Australia and the desire by some businesses to achieve a degree of harmonisation with the GDPR, such an approach, which builds on international frameworks and best practice, might be timely. ISO/IEC 27701, outlined below, provides one such live opportunity.

Australia's opportunity: Embedding and scaling privacy-by-design through Standards

In mid-2019, ISO/IEC 27701:2019 was published. This new standard, developed by JTC 1/SC27/Working Group 5, is an extension to the existing standard ISO/IEC 27001- – Information Security. It provides a framework to continuously improve privacy controls for personal information within an organisation of any size, through a Privacy Information Management System (PIM). Currently, this Standard is mapped against the European GDPR and might well be one of the constitutive elements of a global certification regime for the GDPR and privacy more broadly.

The new Standard has been supported by a range of companies and organisations. Julie Brill, Corporate Vice President and Deputy General Counsel of Privacy and Regulatory Affairs at Microsoft, has described this Standard as "groundbreaking…. for privacy so that organizations of all sizes, jurisdictions, and industries can effectively protect and control the personal data they handle." Brill has also publically announced that, "[a]s the next chapter of Microsoft's commitment to extend the rights provided in the European Union's General Data Protection Regulation to our customers globally, Microsoft Azure and Office 365 will implement the PIMS standard and will assist our customers and partners in adopting this interoperable model."[45]

In the Australian context, there is scope to adopt ISO 27701:2019, through the Standards Australia process, with a modification to include mapping against requirements under the Australian privacy framework, including the Australian Privacy Principles (APPs). In practice, this could lead to a harmonised approach to how we secure personal information and continuously improve privacy protection processes within organisations in a way that adapts a more global risk-based approach (through ISO/IEC 27701) to specific domestic requirements through the APPs. Having such a framework would streamline compliance requirements for Australian businesses, which is becoming vital in an age of big data and AI deployment.[46] It will also make the technical guidance available through a Standard amenable to change, as the law evolves in Australia in this area. A review of the *Privacy Act 1988 (Cth)* has already been announced by the Australian Government, in response to the findings of the Australian Competition and Consumer Commission's (ACCC) Digital Platforms Inquiry.

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45 Naden, C (2019). 'Tackling Privacy Information Management Head-on: First International Standards Just Published,' accessed 28/08/2019 from: https://www.iso.org/news/ref2419.html
46 Written submission by the Office of the Australian Information Commissioner (August 2019).

Recommendation 4: Australian businesses and government agencies develop a proposal for a direct text adoption of ISO/IEC 27701 (Privacy Information Management), with an annex mapped to local Australian Privacy Law requirements. This will provide Australian businesses and the community with improved privacy risk management frameworks that align with local requirements, including the Australian Privacy Principles and potentially those of the GDPR, CBPR and other regional privacy frameworks.

Inclusion and Fairness

Key points:

- Issues of inclusion and fairness (including around race, gender, sexual orientation, socio-economic status etc.) remain a concern for Australians in relation to AI.

- Developing data quality standards and providing input into the development of an AI Management System Standard being considered are two key opportunities to promote responsible AI development and deployment nationally and internationally.

> *Standards connect 'hard ethics' such as legislative and regulatory policy from government and industry with 'soft ethics' which foster community expectations and democratic resilience which arise from civil society, families, and individuals. Only a whole-of-society approach can meet the challenges to governance in the digital age. Standards are the crucial connective tissue."*

—Written submission, Jeff Bleich Centre

Standards can play a strong role in promoting inclusive design and use of AI consistent with laws or good practice. A range of submitters and workshop participants raised the role Standards for AI might play in preventing and addressing discrimination, improving accuracy of services, ensuring inclusion, safeguarding democracy, and building trust. Inclusion issues in relation to AI were framed by submitters and participants in terms

of gender, race, ethnicity, sexual orientation and disability.[47] Submitters recognised that algorithmic systems rely on inputs, which requires us to move beyond the 'machine' itself, and to focus on data quality – where Standards can and do play a strong role. Some of the concerns associated with AI are attributable to poor data training (and issues with unstructured data) resulting in high error rates, bias or discrimination, through to the composition of teams developing AI systems and unconscious biases individuals might exhibit.[48] To help address issues of inclusion, participants in the workshops and in written submissions suggested a focus on practical measures to address issues, which include unlawful acts of discrimination.

One submitter drew attention to the critical role training datasets can play in shaping the operation of AI. This can contribute to, or exacerbate, discriminatory conduct in some cases:

> *A predictive model learned using a ML algorithm is only as good as its training dataset. Any unintentional sampling/selection bias in training data collection will eventually show up in the AI model(s) generated using the data... Therefore, care must be taken in curating the training dataset for a ML algorithm."*[49]

Submitters had a range of suggestions for approaches to respond to these issues. One submitter commented: "…there must be a suite of standards that helps organisations attain a certain degree of quality that protects practitioners and consumers against (inadvertent) negative consequences of engaging with AI."[50] Another recommended that "[a] set of ethical guidelines need to be set up for the responsible use of AI technology, something akin to ethical standards in medical research involving human subjects."[51] Other stakeholders specifically identified the importance of including specific affected communities, and knowledge holders, as part of an approach to inclusivity-by-design through Standards:

> *Standards can also help ensure marginalised people are adequately supported and represented in the solutions that are developed. Failure to do so can lead to adverse effects on people who are already vulnerable."*[52]

> *The development of the roadmap and subsequent work on standards should therefore draw on the knowledge of researchers from a broader set of fields. For example, promoting accessibility for persons with disabilities ought to be a key aim in establishing a regulatory framework that shapes the development and use of new technology."*[53]

Participants did not, however, address the way in which the inclusion-focused Standards they broadly proposed, aside from data quality standards, would operate in practice. For example, Australia has a complex anti-discrimination law framework, with different rights afforded on the basis of different attributes in different areas of public life. Developing standards that are universally-applicable might therefore be complex given the existence of exemptions evident in existing laws.[54] As Theirer and colleagues

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47 This mirrors, although not in its entirety, protected attributes under the Sex Discrimination Act 1984 (Cth), the Race Discrimination Act 1975 (Cth) and the Disability Discrimination Act 1992 (Cth).

48 Bousquet, C. (2018). 'Algorithmic Fairness: Tackling Bias in City Algorithms', accessed 15/01/2019 from: https://datasmart.ash.harvard.edu/news/article/algorithmic-fairness-tackling-bias-city-algorithms

49 Written submission by Associate Professor Alan Liew, Griffith University (August 2019).

50 Written submission by LivePerson (August 2019).

51 Written submission by Associate Professor Alan Liew, Griffith University (August 2019).

52 Written submission by Our Community (August 2019).

53 Written submission by the University of Melbourne (August 2017), p.7.

54 Examples include the Sex Discrimination Act 1984 (Cth), in terms of both protected attributes including sexual orientation and gender identity and its more limited jurisdictional operation.

have argued, "…it may be the case that many of the concerns related to privacy, bias, and discrimination raised in the context of AI are already covered by existing laws and regulations that address human failings in this regard."[55] The Australian Human Rights Commission is conducting a wide-ranging inquiry into human rights and emerging technology, including AI, which has specific regard to disability-related issues, with a final report for consultation released in late 2019.[56] It is Standards Australia's view that many of these issues might be addressed in the context of that Inquiry. Standards Australia has directly participated in this process, the outcomes of which the Government is likely to consider and it is anticipated that the Inquiry will result in substantive recommendations.

Nonetheless, the experiences and voices of specific affected communities, including people with a disability, should be channelled through Standards development in relation to AI, particularly in light of the requirements of the *Disability Discrimination Act 1992 (Cth)*. Standards Australia is of the view that this might best occur through the participation of consumers and people with disabilities in Standards Committees, including IT-043 (the national mirror committee to ISO/IEC JTC 1/SC 42, in addition to the participation of the Australian Human Rights Commission. Consumers, through some recognised organisations, are already participating in the work of IT-043).

Given that many of the aforementioned issues that arise in relation to inclusion can be attributed to data quality issues, Standards Australia considers development of data quality standards, including in relation to government data sets, could have a positive impact in the near term. This could occur across jurisdictions (i.e. State and Federal) and focus on areas such as human services and government services more broadly, where there is a strong citizen interface and recourse in terms of administrative law in some instances.

Recommendation 5: Australian Government stakeholders, with industry input, develop a proposal to improve data quality in government services, to optimize decision-making, minimise bias and error, and improve citizen interactions.

Enabling 'Responsible AI' through a Standards certification model

There is an opportunity to intervene to shape what might cumulatively be termed 'responsible AI', through considered Standards development activities, and voluntary use by industry. A number of stakeholders have proposed a certification model for AI, which involves industry, governments, academia and others, in shaping the outlines of what might be considered 'responsible AI.'[57] Such an approach might complement the

55 Thierer, A. Castillo O'Sullivan, A. & Russell, R. (2017). Artificial Intelligence and Public Policy. Arlington, VA: Mercatus Center at George Mason University, pp. 37-38.

56   Australian Human Rights Commission (2019). 'Human Rights and Technology,' accessed 30/08/2019 from: https://www.humanrights.gov.au/our-work/rights-and-freedoms/projects/human-rights-and-technology

57   See: Finkel, A. (2018). 'What will it take for us to trust AI?' accessed 10/10/2019, from weforum.org. See also: Somani, A. (2019). 'AI needs a certification process, not legislation,' accessed 10/06/2019 from: https://venturebeat.com/2019/06/09/ai-needs-a-certification-process-not-legislation/

work undertaken by companies themselves. Microsoft, Google and IBM, for example have their own principles for AI which exhibit elements of both more general values and more specific guidance material, through complementary resources.[58] Standards, here, might also play a supportive role. As Bowles has observed, "[e]thical conventions don't themselves solve ethical problems: thorny moral questions still pervade medicine and engineering, despite the fields' prominent codes of ethics."[59]

To develop a certification regime, some stakeholders suggested a 'scaffolding' approach could be used that assess certification against a set of existing principles, policies and standards. This would work particularly well for businesses who adopt and certify against such Standards currently, sometimes at significant cost, given their global footprint.[60] It is Standards Australia's view that certification regime using existing standards has merit, however given the diverse nature of AI systems and global operations of many businesses developing and using AI, this would need to be done in consultation with industry, academia, consumers and governments. Accordingly, such a proposal would need to be done within consensus-based Standards Development Organisations, such as ISO and IEC, over the mid to longer term horizon. It might also involve adaptions that incorporate the following techniques, controls or approaches (see table below).

What might an Australian contribution to a Management System Standard for AI look like? Some initial concepts

Focus Area	Example of techniques, control or approaches
Privacy-by-design	• Differential privacy[61] • Approaches outlined in ISO 27701:2019 • De-identification (including as refined by JTC 1 Data Usage Study Group and subsequent activity)
Inclusion-by-design	• Equal explanatory power (including deliberate over-sampling of Indigenous and minority populations)[62] • Social disparity audit techniques[63] • Data quality standards
Safety-by-design	• As outlined in eSafety Commissioner's Safety by Design Principles and Framework[64]
Security-by-design	• Approaches in ISO/IEC 27002 and ISO 27001

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58 Cf. Microsoft (2018). 'Responsible bots: 10 guidelines for developers of conversational AI', accessed 10/06/2019 from: https://www.microsoft.com/en-us/research/publication/responsible-bots/

59 Bowles, C. (2018). Future Ethics. East Sussex: New Next Press, p.31

60 Written submission by Deakin University (September 2019)

61 Dwork, C. & Roth, A. (2014). 'The Algorithmic Foundations of Differential Privacy', Foundations and Trends in Theoretical Computer Science, 9(3-4): 211-407.

62 See, for example, approaches developed by Maori researchers in Aotearoa/New Zealand. Te Roopu Rangahau Hauora a Eru Pomare (2002). Mana Whakamarama - Equal Explanatory Power: Maori and non-Maori sample size in national health surveys. Wellington: University of Otago.

63 Cf. United Kingdom Government (2019). 'Race Disparity Audit', accessed 08/10/2019 from: www.gov.uk

64 Office of the e-Safety Commissioner (2019). Safety-by-Design: Overview. Canberra: Commonwealth of Australia.

Recommendation 6: Australian stakeholders channel their concerns about inclusion, through participating in the Standards Australia AI Committee (IT-043), to actively shape the development of the management system Standard for AI as a pathway to certification.

Safety and Security

Key points:

- Consider safety and security, including by-design.

- Build on existing frameworks, including those being navigated by companies and relevant regulatory bodies.

Companies, and national governments, are increasingly recognising the importance of safety and security in driving design and deployment of AI.

To protect and safeguard citizens online, Australia's e-Safety Commissioner has developed a 'safety-by-design' initiative.[65] The initiative is in recognition of the importance of proactively considering user safety as standard risk mitigation during the development process, rather than retrofitting safety considerations after users have experienced online harm. The work is now being shared with international partners to drive-up standards of user safety within the technology community and to encourage a consistent global approach. Whilst safety and security are closely intertwined, there are important distinctions and differential approaches required to address attacks against the infrastructure of a product or service and targeted abuse against individuals within the product or service. Indeed, in recognition of this distinction, the Department of Home Affairs is consulting widely on 'security-by-design' in areas such as IoT, where there are, in some cases, intersections with AI.

Standards Australia received feedback from government agencies that the by-design model may be appropriate for addressing other specific concerns on security as they relate to AI. The proliferation of cyber security risks facing Australia means the development of security-by-design could be a fundamental enabler of both safety and privacy. It is now widely recognised, including by companies themselves that digital products and services should have a level of security built-in by design so that the next series of emerging technologies are built with security at the core and are able to be safely adopted. Security-by-design is particularly critical for the next wave of technologies as it is unlikely that traditional cyber security mitigations will be effective in addressing key security concerns.

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65 Office of the e-Safety Commissioner (2019). Safety-by-Design: Overview. Canberra: Commonwealth of Australia.

AI systems should be developed with security built-in 'by design'. Developing standards to further enhance security in the maturing AI industry will be necessary to maintain information security, privacy and safety and ensure that Australia's systems and networks are secure and resilient. AI security standards, governance frameworks, and management systems, which complement both national regulations and global conventions, will provide greater certainty to industry as AI matures. For this reason, Standards Australia considers that it is important industry participates in shaping security-related Standards for AI internationally, and that the Australian Government leverages industry best practice, in developing its approaches in this area.

Recommendation 7: The Australian Government consider supporting the development of a security-by-design initiative, which leverages existing Standards used in the market, and which recognises and supports the work being carried out by Australia's safety-by-design initiative.

The need for a proportionate policy and regulatory response to AI

Key points:

- Regulatory interventions should be proportionate to the likely and realised harm(s) posed by AI in specific settings (i.e. sectors of the economy, areas of heightened vulnerability).

- Work should be progressed through multi-stakeholder forums, allowing approaches to risk management to be tested, so they are both 'fit-for-purpose' and scalable.

In some areas of regulation in response to modern technology, we have been alarmed by heavy handed interventions that seek to eliminate some forms of risk, rather than manage them, while ignoring the risks and costs to innovation and to the economy."

—Written submission by the Australian Industry Group, p. 3

Some stakeholders expressed concern over an apparent drive to heavily regulate without identifying specific risks and harms associated with AI at-scale, primarily by driving compliance through a legislation or regulatory approach first, without considering alternatives. This anticipatory approach, underpinned by the precautionary principle can have positive and negative impacts. In these situations, as Wildavsky notes,

"[r]egulators cannot devise specifications sufficiently broad to serve as guidelines for every contingency without also limiting some actions that might increase safety."[66] The impact of such an approach, as some stakeholders argued, is to unduly impact the development, adoption or scaling of new technologies, including AI.[67]

In light of these concerns, many stakeholders expressed a desire for the use and development of Standards to respond to the real and perceived risks that might arise in relation to AI. One submitter argued: "They [standards] can be responsive to changes in understanding and technology with greater speed and efficiency than more formal regulatory instruments. When adopted by relevant jurisdictional authorities, standards can have a considerable impact on organisational behaviour."[68]

Standards might therefore enable Australia to reach a "more effective and judicious mix of standards and regulation in lifting public safety, consumer confidence and business performance," as one stakeholder group called for.[69] The OECD Principles on AI as well as G20 Ministerial Statement, to which Australia has agreed, effectively call for such an approach to AI (including in relation to legislation, policy, principles and Standards), which balances risks, opportunities and the economic impact of different policy and regulatory approaches. The Principles state:

> *Governments should review and adapt, as appropriate, their policy and regulatory frameworks and assessment mechanisms as they apply to AI systems to encourage innovation and competition for trustworthy AI."*[70]

Standards Australia is of the view that striking the right regulatory balance on the range of critical AI issues identified in this Roadmap might be achieved through a multi-stakeholder collaboration between businesses, certification bodies, government, academia and Standards Australia. This is consistent with the concept of 'AI test-beds' identified in the NIST AI Plan,[71] and might position Australian stakeholders to contribute to the development of sector-specific and broader AI Standards.

Australia's opportunity: A Standards Hub for testing approaches to AI in a real-time way

A range of stakeholders identified the need for fit-for-purpose approaches to governing AI, ranging from post-hoc audits to handbooks and lower consensus guidance material in areas where risk is a significant consideration. International Standards continue to provide the optimal channel for the design, development, deployment and evaluation of AI in a consistent manner. However, given the significant activity being undertaken within academia, consulting and some businesses on proposing, developing and trialling approaches to risk management and auditing of AI systems, there is an opportunity to codify some of these learnings, producing documents that can attest to Australian expertise, experience and workable solutions. This might subsequently form the basis for an International Standard. There is precedent for this, with Australian stakeholders having played a significant role in the development of AS/NZS 4360 (Risk Management),

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66 Wildevsky, A. (1988). Searching for Safety: Social Theory and Social Policy. New Brunswick: Transaction Books.

67 See: Written submission by Engineers Australia, p. 6.

68 Written submission by Standards Australia IT-021 Committee (Record Keeping) Chair (August 2019), p. 3

69 Written submission by the Australian Industry Group (August 2019), p.5.

70 OECD (2019). Recommendation of the Council on Artificial Intelligence, OECD/LEGAL/0449, section 2.3.

71 NIST (2019). US Leadership in AI: A Plan for Federal Engagement in Developing Technical Standards and Related Tools. Washington: NIST (US Department of Commerce), p. 15.

which was subsequently refined and adopted as an International Standard
(ISO 31000:2009, Risk management - Principles and guidelines). A dedicated hub within
Standards Australia, which brings disparate expertise together, would be the best way
to achieve this. It could provide a test-bed, of the kind alluded to in the NIST Roadmap,
where specific propositions, which could form the basis of content for Standards, could
be tested with industry and other stakeholders. This will ensure that any proposed
solutions are proportionate and fit-for-purpose.This Hub would function as follows:

1. **Nominate two to three thematic focus areas** within AI deployment (supply
   chain, retail, law enforcement and security and financial services being options,
   amongst many others).

2. Issue a **no-cost call for participation, using a consortia model**, to ensure
   technology and specific deployment alignment (i.e. provider and client), and
   based on a clear nominated use-case in the respective focus areas (could
   be in a retail environment, financial services etc.).

3. Develop clear and actionable insights from specific projects, leveraging the
   expertise of external experts appointed (legal and risk experts, educational
   experts and social scientists), **culminating in publicly available technical
   reports** that can form the basis for Standards, as well as New Work Item
   Proposals (NWIPS) through ISO and IEC. This would surface good practice
   faster, inform other sectors of critical work being undertaken and support
   Standards development, on the part of both the private sector and Australian
   Government. These projects would have clear objectives and be time-limited
   (6-12 months).

Recommendation 8: Develop a proposal
for a Standards hub setup to improve
collaboration between Standards-setters,
industry certification bodies, and industry
participants, to trial new more agile
approaches to AI Standards for Australia.

5. Conclusion

> *Digital technology has created a different world, and not always a better one. And how we address this is not yet immediately clear. But…it will require that stakeholders in democratic republics work together, not just across political parties, but across the tech sector and with governments around the world."*
>
> — Brad Smith and Carol Ann Browne[72]

> *There is no question that the recent escalation of AI systems will be shaped by the societies in which they are produced and by the political, economic and practical priorities set by those undertaking and supporting their development."*
>
> —Huon Curtis[73]
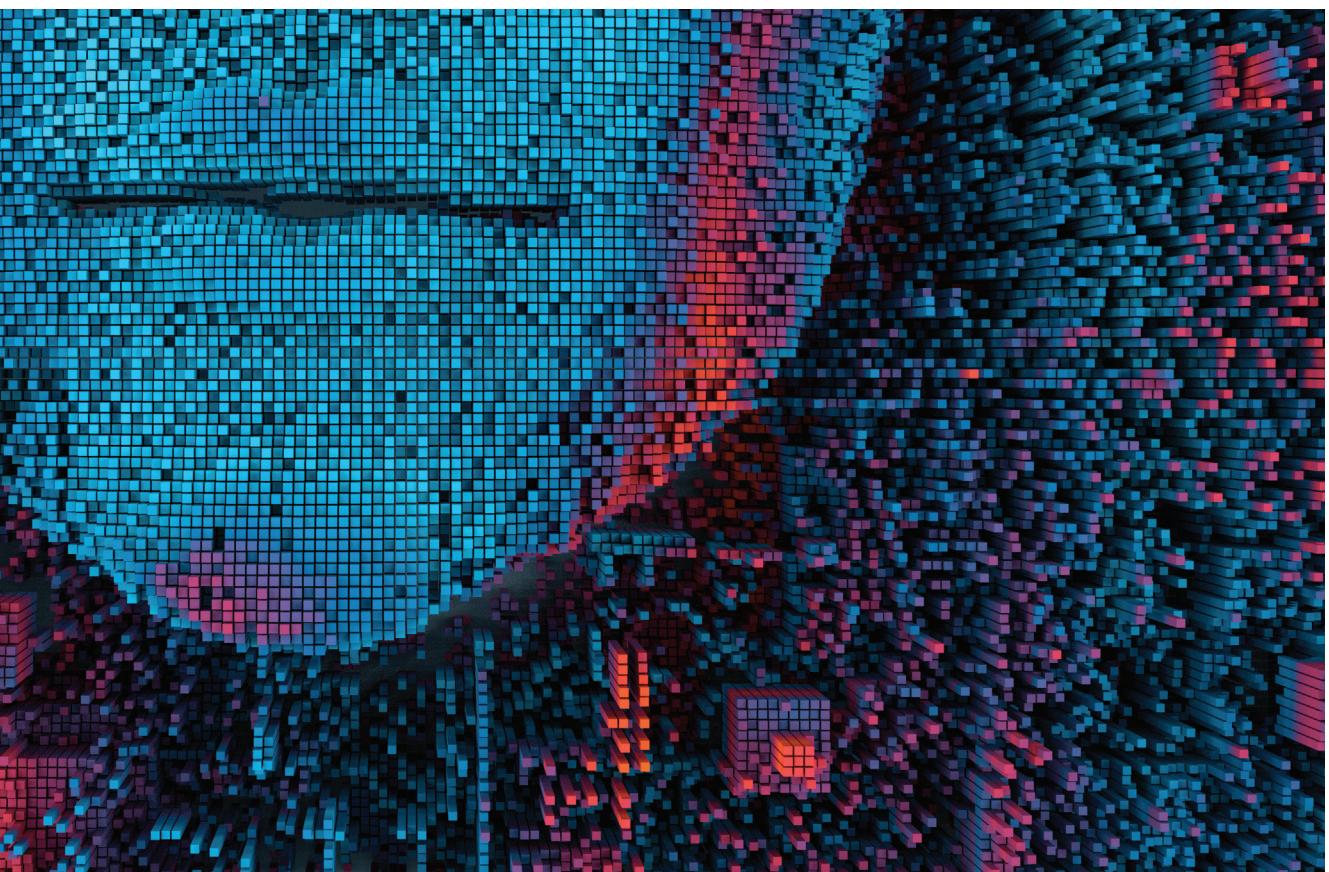
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72 Smith, B. & Brown, C.A. (2019). Tools and Weapons: The Promise and the Peril of the Digital Age. London: Hodder & Stoughton, p. 107.

73 Curtis, H. (2020). 'Artificial intelligence, gender and the future of work' Insights Paper. Canberra: Workplace Gender Equality Agency, Australian Government.
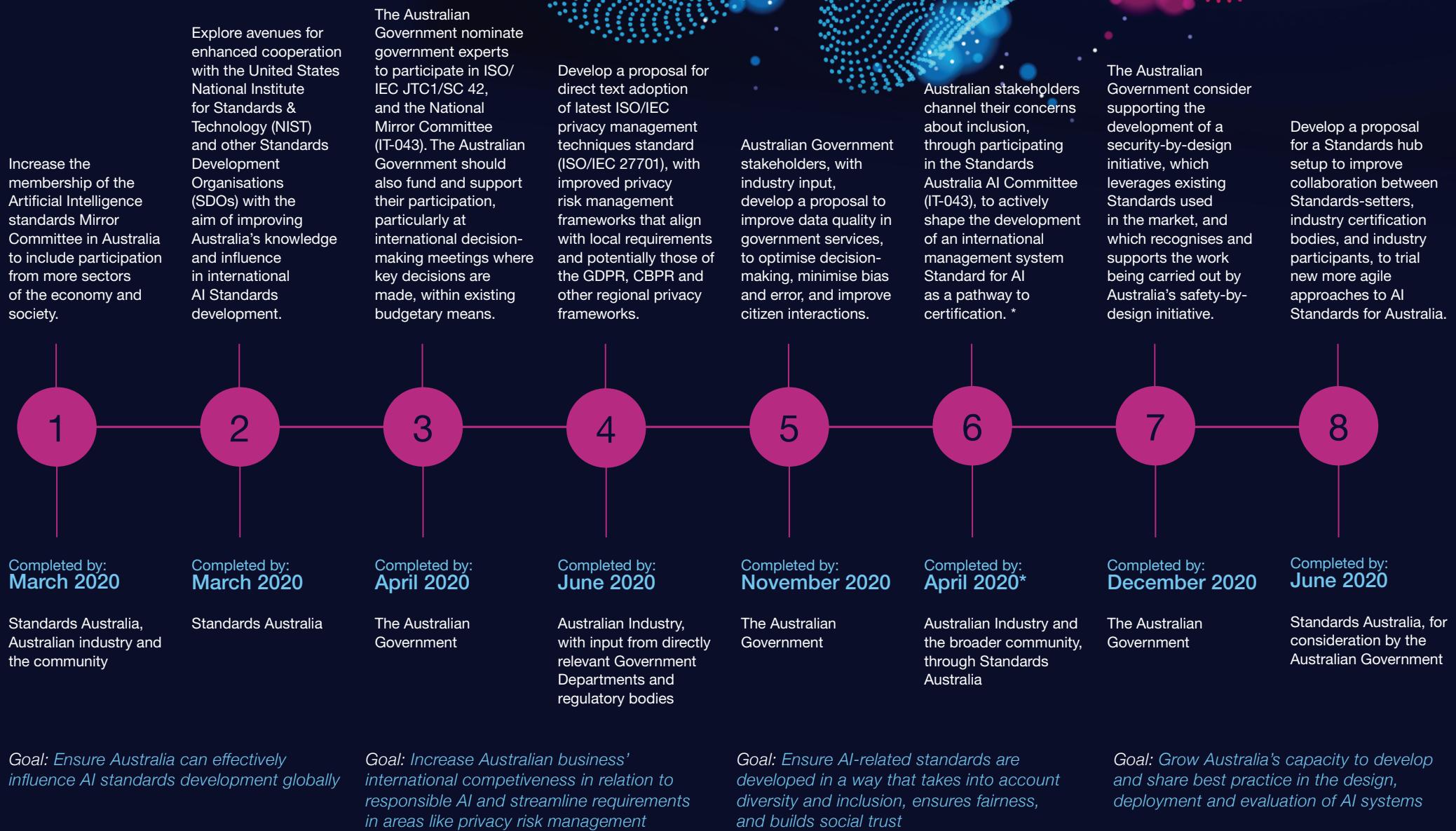
Everyday Australians are fast adopters of emerging technologies; they embrace them in their work and social lives, and they leverage the value they bring. AI presents a world of opportunity, some of which Australians have already experienced through the machine learning algorithms that power Google search, Uber and LinkedIn. The Data61 AI Roadmap has further identified sectors such as agriculture, health, ageing and disability and resources, as key areas where Australia can exert, and leverage, existing strengths.[74]

The challenge for Australia is to scale up our commitment to AI, so we unlock the opportunity it brings, not just in our homes and via our smartphones, but in our schools, universities, hospitals, and workplaces. Unlocking this value also has the potential to drive new jobs growth, as demand for new services emerges. But, in a world of interconnected markets, this relies on globally-aligned norms and rules, where Standards play a vital role. Standards can provide the means to ensure Australians are 'makers' and not just 'takers,' creating new markets for AI products and critically, services. We need to participate early, and strongly, to do this, and we already have the infrastructure, through Standards Australia, to enable this.

This Roadmap has outlined the opportunity that Australia has to transform the promise of AI into reality, through a number of concrete steps. Of course, this won't happen through Standards alone, requiring sound and proportionate regulatory and policy settings, clear strategy, investment and trust. For this reason, we need the private sector, civil society, and the Australian Government to do some clear direction setting, and 'rowing' towards common goals on AI. This Roadmap is just one contribution, to make sure Australia's voice is heard globally.

6. Actioning the Recommendations

1. Increase the membership of the Artificial Intelligence standards Mirror Committee in Australia to include participation from more sectors of the economy and society.

2. Explore avenues for enhanced cooperation with the United States National Institute for Standards & Technology (NIST) and other Standards Development Organisations (SDOs) with the aim of improving Australia's knowledge and influence in international AI Standards development.

3. The Australian Government nominate government experts to participate in ISO/IEC JTC1/SC 42, and the National Mirror Committee (IT-043). The Australian Government should also fund and support their participation, particularly at international decision-making meetings where key decisions are made, within existing budgetary means.

4. Develop a proposal for direct text adoption of latest ISO/IEC privacy management techniques standard (ISO/IEC 27701), with improved privacy risk management frameworks that align with local requirements and potentially those of the GDPR, CBPR and other regional privacy frameworks.

5. Australian Government stakeholders, with industry input, develop a proposal to improve data quality in government services, to optimise decision-making, minimise bias and error, and improve citizen interactions.

6. Australian stakeholders channel their concerns about inclusion, through participating in the Standards Australia AI Committee (IT-043), to actively shape the development of an international management system Standard for AI as a pathway to certification. *

7. The Australian Government consider supporting the development of a security-by-design initiative, which leverages existing Standards used in the market, and which recognises and supports the work being carried out by Australia's safety-by-design initiative.

8. Develop a proposal for a Standards hub setup to improve collaboration between Standards-setters, industry certification bodies, and industry participants, to trial new more agile approaches to AI Standards for Australia.

1	2	3	4	5	6	7	8

1. Completed by: **March 2020** — Standards Australia, Australian industry and the community

2. Completed by: **March 2020** — Standards Australia

3. Completed by: **April 2020** — The Australian Government

4. Completed by: **June 2020** — Australian Industry, with input from directly relevant Government Departments and regulatory bodies

5. Completed by: **November 2020** — The Australian Government

6. Completed by: **April 2020*** — Australian Industry and the broader community, through Standards Australia

7. Completed by: **December 2020** — The Australian Government

8. Completed by: **June 2020** — Standards Australia, for consideration by the Australian Government

Goal: Ensure Australia can effectively influence AI standards development globally

Goal: Increase Australian business' international competiveness in relation to responsible AI and streamline requirements in areas like privacy risk management

Goal: Ensure AI-related standards are developed in a way that takes into account diversity and inclusion, ensures fairness, and builds social trust

Goal: Grow Australia's capacity to develop and share best practice in the design, deployment and evaluation of AI systems

* In time for the JTC1/ SC 42 Plenary meeting, and subsequently for the remainder of 2020-21, until the final draft is out for ballot.

Appendix One: Stakeholder engagement

Completed consultations:

- Adelaide (universities, professional bodies, start-ups)
- Brisbane (large companies – tech, infrastructure, aerospace, Data61, universities and industry groups)
- Canberra (cross-agency attendance, including Home Affairs, DoCA, TGA, ACCC, Australian Chamber of Commerce and Industry)
- Melbourne (Large companies, start-ups, local government, universities and regulators)
- Perth (universities, industry bodies)
- Sydney (banks, retailers, NSW State Government, consultancies, start-ups, researchers, Australian Industry Group)
- There was additional engagement with Deakin University (focusing on certification) and Swinburne University (AI focused lecture), both based in Melbourne, in August 2019.

Written submissions received:

- Alicia Mitchell
- Australian Federal Police
- Australian Industry Group
- Australasian College of Dermatologists
- BCG
- Brane Shop
- Chartered Accounts ANZ
- Credit Union Australia (*not for publication)
- Communications Experts Group Pty Ltd
- Corrs Westgarth (detailed chapter/paper)
- Deakin University
- Divorce Justice
- Engineers Australia
- Governance Institute of Australia
- Griffith University
- Harrison.AI (already provided background material relating to medical devices and AI)
- Jeff Bleich Centre (Flinders University)
- KPMG
- Live Person
- Office of the Australian Information Commissioner (OAIC)
- Our Community
- PwC
- University of Melbourne
- Silverpond
- Southern Cross University
- Standards Australia IT-021 (Records Keeping) Committee
- UNSW (Allens Hub, with other institutional colleagues)

Other engagement:

- Commonwealth Attorney General's Department
- National Association of Testing Authorities (NATA) (teleconference to outline the consultation process, scope of project).
- Australian Human Rights Commission
- United States Studies Centre (joint event on AI and the innovation eco-system)

Appendix Two: JTC 1 Standards Committees Potentially Relevant to AI

In addition to SC 42, there are a range of other sub-committees within JTC 1, with the following outputs, that might be relevant to AI. Australia's Participating (P) or Observing (O) status, through Standards Australia, is outlined below:

SC Designation	Title	Secretariat	Australian Participating (P) or Observing (O) status	Australian Mirror Committee	Opportunity for Australian participation?
SC 7	Software and systems engineering	BIS (India)	P	IT-015	N/A
SC 17	Cards and security devices for personal identification	BSI (United Kingdom)	P	IT-012	N/A
SC 22	Programming languages, their environments and system software interfaces	ANSI (United States)	Not participating or observing	N/A	Yes
SC 24	Computer graphics, image processing and environmental data representation	BSI (United Kingdom)	P	IT-031	N/A
SC 27	Information Security, cybersecurity and privacy protection	DIN (Germany)	P	IT-012	N/A
SC 29	Coding of audio, picture, multimedia and hypermedia information	JISC (Japan)	P	IT-029	N/A
SC 32	Data management and interchange	ANSI (United States)	Not participating or observing	Inactive (IT-027)	Yes
SC 36	Information technology for learning, education and training	KATS (Korea)	P	IT-019	N/A
SC 37	Biometrics	ANSI (United States)	P	IT-032	N/A
SC 40	Service Management and IT Governance	SA (Australia)	P (Australia Chairs)	IT-030	N/A
SC 41	Internet of Things and related technologies	KATS (Korea)	P	IT-042	N/A

In addition to JTC 1, ISO also has other committees that might have relevance to AI Standards development, including: ISO/ TC 307 (blockchain and DLT) which Australia chairs. Standards Australia with consumer representatives, also participates in ISO'S Consumer Committee (COPOLCO), which is undertaking a project exploring AI, primarily from a consumer perspective.

Notes

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