The Australian Industry Group
Level 2, 441 St Kilda Road
Melbourne VIC 3004
PO Box 7622
Melbourne VIC 3004
Australia
ABN 76 369 958 788

1 December 2020

Department of Industry, Science, Energy and Resources
Email: artificial.intelligence@industry.gov.au

Dear Sir/Madam

**AUSTRALIA'S AI ACTION PLAN – DISCUSSION PAPER**

The Australian Industry Group (Ai Group) welcomes the opportunity to make a submission to the consultation on Australia's Artificial Intelligence (AI) Action Plan Discussion Paper by the Department of Industry, Science, Energy and Resources (DISER).

Our members are businesses of all sizes and many sectors across Australia. Rapidly advancing technologies including AI are producing waves of wider innovation across the economy as businesses and individuals build new social practices and business models upon them. Ai Group's members are grappling with these changes in different ways and with different levels of readiness and capability. The collective impact of these changes is part of the Fourth Industrial Revolution.

COVID-19 has also highlighted how interconnected many businesses are and digital technologies has been an enabler for many businesses to remain open and sustainable. This unstable environment presents an opportunity for industry to emerge more globally competitive by taking fuller advantage of Industry 4.0 and digitalisation. AI can play a timely and important role in this discussion.

Overall, Ai Group supports the direction of the AI Action Plan. We have been engaged with DISER and other interrelated consultations over the last several years. As we raised in previous submissions regarding AI, at this early stage of Australia's involvement in AI, positive measures from Government are critical. Australia is not a leader in AI, where it is still behind its peers overseas in terms of AI investment – more can be done to make us globally competitive, with Government support. We consider that the AI Action Plan has the potential to enable this, including through better integration and connections with all the various initiatives to ensure a more holistic and strategic approach to help achieve a vision for AI in Australia.

We welcome continuing engagement and the opportunity to work closely with DISER as this consultation progresses.

In the meantime, our submission responds to the various questions raised in the Discussion Paper, categorised by DISER's four proposed streams to achieve its vision for business, research, people and society.

## 1. An AI Action Plan for All Australians

### 1.1 Do we have the right vision for AI in Australia?

Overall, we support the Government's proposed vision where "Australia develops and uses AI technologies responsibly to: address national problems, build competitive businesses, and increase our collective wellbeing". We also support the proposed list of high level actions over the four streams of business, research, people and society to help achieve its proposed vision. In addition, there may be other relevant streams that have not been identified in the Discussion Paper but could be inferred that warrants further consideration such as government and infrastructure.

We previously shared our views about Government's role with respect to AI technologies. Generally, Government's role should be to set a vision for the nation, and ensure that public policy is conducive to digital investment and competition that benefits industry and the community in the long term. Government also has a leadership role to allay business and individuals' fears of "Digital Darwinism"

including AI, by preparing the community to prosper in an increasingly technology-driven era. To support this, we welcome the work of DISER as well as others to contribute to the conversation about AI in Australia.

While technology such as AI may provide benefits to business innovation and productivity, there may be mixed social impacts such as a new division in wealth creation between the technically literate and illiterate. Government has a role in minimising such negative impacts. For example, Government can be a skills enabler through education and training around areas such as digital capability (including in AI), cyber security and privacy.

### 1.2 What is the role for government to support the uptake and use of AI technologies in Australia?

We have observed a continuing and growing trend of multiple concurrent consultations by different Government agencies, which appear to be addressing similar or overlapping issues, albeit with different objectives. While we appreciate diversity of perspectives, we are concerned about the potential for fragmented and conflicting regulation or legislation that could arise in absence of proper coordination between these multiple bodies. We therefore support a need for improved coordination between the various agencies around policy issues including those that are arising from new and emerging technologies such as AI. This will help to ensure that government's potential role in promoting AI investment and uptake is not stifled by other government activities that may inhibit it. This valuable coordinating role would also ensure consistent policy, efficient use of research/industry resources, and helping to connect industry capability.

For example, there are potentially positive activities that have arisen from the revised National Digital Economy Strategy (released at the end of 2018), revised 2020 National Cyber Security Strategy, work of the PM' Digital Technology Taskforce, complementary Federal Budget announcements, and other various industry initiatives such as the I4AMF.

And as noted above, Australia is still at an early stage of involvement in AI and positive measures from Government will be critical, with more work that can be done to make us globally competitive. Regulation is an important area that could make or break the growth of an industry at its early stages of development. The extent to which AI is regulated can act as an investment barrier and diminish our attractiveness relative to other jurisdictions.

We note that some of these interrelated consultations are occurring concurrently with similar tight deadlines, particularly towards the end of the year (e.g. Attorney General's Department (AGD) Review of the Privacy Act, and the Department of Home Affairs (Home Affairs) consultation on its *Protecting Critical Infrastructure and Systems of National Significance* Exposure Draft Bill). In terms of process, we recommend that better coordination should be undertaken by DISER and other relevant Government agencies to enable for proper consultation for both this consultation and others underway.

Below is a non-exhaustive list of various government consultations and initiatives that are relevant for consideration in relation to this consultation (in addition to those already discussed above). Where possible, we have also referenced our previous submissions covering similar issues that may be relevant to the questions raised in this Discussion Paper:

- ACCC's *Digital Platforms Inquiry* – Government's response to this Inquiry includes policy reforms in the area of privacy and data regulation.[1] Following this Inquiry, the Attorney General's Department has now commenced its *Review of the Privacy Act*.[2]

- Department of Infrastructure, Transport, Regional Development and Communications' (DITRDC) consultation on a new *Online Safety Act* – online safety proposals may be relevant to this consultation.[3]

[1] Ai Group submission to Treasury (September 2019), Link: https://cdn.aigroup.com.au/Submissions/Technology/AiGroup_submission_Digital_Platforms_Inquiry.pdf.
[2] Attorney-General, Review of the Privacy Act 1988, Link: https://www.ag.gov.au/integrity/consultations/review-privacy-act-1988.
[3] Ai Group submission to Department of Infrastructure, Transport, Regional Development & Communications, Consultation on a new Online Safety Act (February 2020), Link: https://cdn.aigroup.com.au/Submissions/Technology/New_Online_Safety_Act_Proposals_21Feb_2020.pdf.

- DITRDC consideration of National Emerging Aviation Technologies Policy which includes consideration of AI and cyber security as enabling themes.[4]

- Home Affairs' *Voluntary Code of Practice: Securing the Internet of Things for Consumers* – a range of matters with respect to the proposed Code of Practice that may be relevant to this consultation.[5]

- Home Affairs' consultation on *Protecting Critical Infrastructure and Systems of National Significance* – our submission raises several issues including details that currently remain unclear and require further consultation such as the nature of the reforms, scope, definitions, measures and cost-benefit impact.[6]

- Home Affairs' consultation on its draft *Critical Technology Supply Chain Principles* – a range of matters including principles that may be relevant to this consultation.[7]

- Treasury consultation on *Major reforms to the Foreign Investment Review Framework* – we consider that there are potential interactions between Home Affairs' critical infrastructure security reforms and Treasury's reforms.[8]

- Treasury's consultation on its *Inquiry into Future Directions for the Consumer Data Right* – we raised several interrelated issues including on privacy, data protection and cyber security.[9]

- Treasury's consultation on *Improving the Effectiveness of the Consumer Product Safety System* – AI considerations may also fall under the scope of Treasury's consultation if it leads to consumer safety issues.[10]

- Parliamentary Joint Committee on Intelligence and Security (PJCIS) and Independent National Security Legislation Monitor (INSLM) reviews relating to the *Telecommunications and other Legislation Amendment (Assistance & Access) Act 2018* (Cth) (TOLA Act) – there are concerns about the potential negative impact of this Act on cyber security and privacy of products and services.[11] We have recently made a supplementary submission supporting the INSLM's recommendations.[12]

---

[4] DITRDC, National Aviation Policy Issues Paper on Emerging Aviation Technologies, Link: https://www.infrastructure.gov.au/aviation/drones/.

[5] Ai Group submission to Home Affairs (February 2020), Link: https://cdn.aigroup.com.au/Submissions/Technology/Securing_IoT_for_Consumers_Voluntary_Code_of_Practice_Feb_2020.pdf.

[6] Ai Group submission to Home Affairs (September 2020), Link: https://cdn.aigroup.com.au/Submissions/Technology/Dept_Home_Affairs_Critical_Infrastructure_Security_Reforms_Sept2020.pdf.

[7] Ai Group submission to Home Affairs (November 2020), Link: https://cdn.aigroup.com.au/Submissions/Technology/Home_Affairs_Critical_Technology_Supply_Chain_Principles_Discussion_Paper_12Nov.pdf.

[8] Ai Group submission to Treasury (September 2020), Link: https://cdn.aigroup.com.au/Submissions/Trade_and_Export/Submission_FATA_reforms_September_2020.pdf.

[9] Ai Group submission to Treasury (June 2020), Link: https://cdn.aigroup.com.au/Submissions/Technology/Treasury_CDR_Inquiry_5Jun_2020.pdf.

[10] Treasury, Improving the Effectiveness of the Consumer Product Safety System, Link: https://consult.treasury.gov.au/market-and-competition-policy-division-internal/main-consultation.

[11] Joint submission to PJCIS, Review of the amendments made by the Telecommunications and Other Legislation Amendment (Assistance and Access) Act 2018 (TOLA Act) (Submission No. 23, July 2019), Link: https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Intelligence_and_Security/AmendmentsTOLAAct2018/Submissions; Joint submission to INSLM, Review of the TOLA Act (Submission No. 15, September 2019), Link: https://www.inslm.gov.au/submissions/tola; Ai Group submission to INSLM, Review of the TOLA Act (Submission No. 12, September 2019), Link: https://www.inslm.gov.au/submissions/tola; Australian Strategic Policy Institute, Perceptions survey: Industry views on the economic implications of the Assistance and Access Bill 2018 (December 2018), p. 3.

[12] Ai Group supplementary submission to PJCIS (Submission No. 23.1, July 2020), Link: https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Intelligence_and_Security/AmendmentsTOLAAct2018/Submissions.

- PJCIS review into the effectiveness of the *Telecommunications Legislation Amendment (International Production Orders) Bill 2020* – we consider this Bill is interrelated with the TOLA Act review.[13]

- Standing Committee on Communications and the Arts *Inquiry into 5G in Australia* – while cyber security has been excluded from this Inquiry, there are interrelated considerations with respect to the operation of 5G and IoT.[14]

- Ambassador for Cyber Affairs and Critical Technology within DFAT has been consulting on *Australia's International Cyber and Critical Technology Engagement Strategy*, which will potentially be relevant to this consultation.[15]

- Australian Human Rights Commission's (AHRC) consultation into *Human Rights and Technology* – as the title suggests, the AHRC have been exploring the impact of emerging technologies on human rights.[16]

- With respect to standards, there already exists standards (especially international such as ISO/IEC) and initiatives to support industry standards relevant to AI and other related standards (such as on privacy and cyber security) that may be relevant to this consultation. For instance, Standards Australia's *AI Standards Roadmap* includes references to standards.[17] Also, Ai Group is involved in a partnership with the NSW Government, Standards Australia, AustCyber and other key industry stakeholders to harmonise cyber security standards across several key sectors. There is an opportunity for the scope of this work to be expanded to other sectors.

Beyond its visionary and coordinating roles in the domestic context, Government can also provide leadership in representing Australian industry in global forums to ensure AI policy, regulation and standards are internationally consistent. See our response in section 3.1 below.

### 1.3 What can be done to reduce barriers to AI adoption in Australia?

#### *1.3.1 Regulatory barriers and government incentives*

Regulation is an important area that could make or break the growth of an industry at its early stages of development. The extent to which AI is regulated can act as an investment barrier and diminish our attractiveness relative to other jurisdictions. We are not suggesting that there should be free rein for rogue AI operators, but there should be careful consideration of any new forms of regulation against global best practice approaches and the extent of AI industry support overseas. A similar argument could be extended to other new and emerging technologies as well.

As suggested above, there are various initiatives that promote and provide incentives to adopt and invest in technologies such as AI, while there are other proposed regulatory reforms that have the potential to stifle investment. An action plan that can help resolve these differences through better coordination and connecting opportunities where AI can be promoted as a solution would provide a strong signal of a more strategic approach.

For instance, there are positive initiatives such as those arising recently from the Federal Budget including the $1.3b Modern Manufacturing Initiative, $107.2m Supply Chain Resilience Initiative,

---

[13] Ai Group submission to PJCIS (Submission No. 32, May 2020), Link: https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Intelligence_and_Security/IPOBill2020/Submissions.

[14] Ai Group submission to Standing Committee on Communications and the Arts, Inquiry into 5G in Australia (Submission No. 356, November 2019), Link: https://www.aph.gov.au/Parliamentary_Business/Committees/House/Communications/5G/Submissions.

[15] DFAT, International Cyber and Critical Technology Engagement Strategy, Link: https://www.dfat.gov.au/international-relations/themes/cyber-affairs/public-consultation-international-cyber-and-critical-technology-engagement-strategy.

[16] Ai Group submission to AHRC, Discussion Paper on Human Rights and Technology, Link: https://cdn.aigroup.com.au/Submissions/Technology/AHRC_Human_Rights_and_Technology_Discussion_Paper_26Mar_2020.pdf.

[17] Standards Australia, Artificial Intelligence Standards Roadmap: Making Australia's Voice Heard (March 2020), Link: https://www.standards.org.au/news/standards-australia-sets-priorities-for-artificial-intelligence.

$52.8m Manufacturing Modernisation Fund round two, $800m JobMaker Digital Business Plan, $1.7b cyber security investment, and many others. There are existing initiatives that are working effectively e.g. Industry Growth Centres, Cooperative Research Centres such as the Innovative Manufacturing Cooperative Research Centre (IMCRC), and the Entrepreneurs' Programme. These initiatives are designed to address various objectives and present opportunities where AI could be integrated into these initiatives if appropriate.

But as highlighted above, there are various regulatory initiatives underway that have their own specific mandate that may inadvertently stifle innovation and investment in productivity enhancing initiatives such as AI. It is therefore important to reiterate the need for better government coordination between those activities. For instance, when agencies undertake RIS assessments, do they consider as part of their regulatory process other government initiatives aimed to promote investment such as AI and whether their proposal might inhibit that activity? Incorporating considerations such as these within regulatory thinking might help to implement a more balanced and productivity-considered approach towards regulation.

A possible step to address such barriers could be to assess key regulatory challenges to the uptake of AI across sectors, especially in regulated industries. This could lead to the identification of cross-cutting gaps and themes, alignment with industry AI use cases, and use this to assist in prioritising, coordinating and integrating Government funded research, for example, to address them (and also reducing duplicative research activity). This also leads to a wider conversation about innovation policy and providing opportunities for exploring AI in a safe and collaborative environment – see our responses in sections 2 and 3 below.

### *1.3.2 Other barriers*

Beyond regulation and connecting and integrating various initiatives, it is also important to appreciate other barriers that could contribute to stifling AI investment in Australia.

In Ai Group's 2019 Fourth Industrial Revolution Report, we highlighted the journey of some businesses, especially manufacturers, transitioning to and within Industry 4.0 (or the Fourth Industrial Revolution).[18] Here, AI could fall under this umbrella term as it is an enabling technology.

Indeed, many SMEs are progressing Industry 4.0 strategies without using this label. Instead, their primary objectives are to implement new approaches to enable them to manage their operations, become more energy efficient, improve productivity, lower costs or meet new demands from customers. On the other hand, others are not yet adopting Industry 4.0 building blocks under any label.

As expected, such steps are often neither perfect nor easy and present successes along with their own practical challenges. The following were some anecdotal feedback that we have come across with respect to Industry 4.0:

- Changing organisational mindsets: getting the organisation to appreciate the impact of digitalisation; and overcoming fear of failure.
- Leadership: technology helps leaders focus on leading yet also highlights where they do not; need for people managers and critical thinkers, not traditional process leaders; and capability required in change management.
- Justifying expenditure: Some businesses with digitalisation strategies had difficulties justifying expenditure on particular Industry 4.0 initiatives.
- Incremental success: Some businesses started small – rather than changing everything at once – to demonstrate success and sought approval afterwards.
- Trusting and adapting to technology: getting traditional workers to trust data more than their experience and intuition; getting people used to AI and chatbots; need for a technology adaptive culture; and a dilemma for some companies is whether it is easier to hire a new generation of workers with new skills or retrain a senior workforce that may be resistant to change.
- Perceptions: no matter how much businesses were doing and how big they were, they all thought they were beginners on Industry 4.0; and for some manufacturers, difficulty in attracting people to work in manufacturing was more of a challenge than skill shortages –

[18] Ai Group, "The Fourth Industrial Revolution: Australian businesses in transition" (August 2019), Link: https://www.aigroup.com.au/policy-and-research/mediacentre/releases/industry4-report-6Aug/.

while concepts like gamification might make jobs more interesting, many factory processes were still largely predigital and the work itself not as easily attractive.
- Data use: lots of data were being collected already but some businesses were not sure what to do with it all; finding the right people to turn the collected data into insights; people have technical ability but not the mindset to maximise the use of data; and uncertainty as to who controls or owns the data.
- Interoperability issues: system integration was a challenge; and middleware was used to overcome different standards and proprietary systems.
- Supplier capability: a major constraint was matching suppliers with the capability required by the company; and if digitalisation enables companies to increase just-in-time production, especially globally, a model will be required for addressing delays in physical delivery.
- Digital innovation: one company wrote its own software because it saw it as a business opportunity; and another company used digital collaboration along its supply chain to allow for global problem solving and live design.

And more generally with respect to digital technologies, anecdotal feedback from businesses (particularly SMEs) over the last several years have offered reasons for barriers to digital technology uptake, including:

- Not knowing where to start.
- The speed of change makes it hard to keep up and adapt, even for innovative companies.
- Wanting to understand what others are doing to determine the industry benchmark.
- Not having the time to assess digital technologies to know what is relevant to them and what the benefits may be.
- While there may be interest from businesses in digital technologies, development and implementation of a business case is the real challenge. (This may also be partly due to the lack of skills, knowledge or capability within the organisation.)

Arguably these challenges raised by businesses with Industry 4.0 and digital technologies in general may be transferrable to some extent with AI, which is an enabling technology.

And now anecdotal reports suggest that businesses who already have digital transformation projects underway have reprioritised and accelerated their projects to respond to the immediate impact of COVID-19, driven by social distancing and quarantine safety measures. But the gap between Industry 4.0 leaders and other businesses could be substantial – and this current pandemic has the potential to swing that pendulum either way.

There are potentially various ways that this can be addressed. We have suggested better integration and connectedness between government initiatives that promote investment, where AI could be included as part of that consideration. There are also other additional ways which we discuss further below.

## 2. Pillar One: Business

### 2.1 How can we lower the barriers to entry for businesses and government developing, piloting or assessing the value of AI while ensuring appropriate consumer safeguards?

We are supportive of alternative measures to traditional heavy-handed regulation. For instance, in an AHRC paper, it proposed for a regulatory sandbox to test AI with respect to human rights, which may be worth considering. However, to maximise the utilisation of such sandboxes, we suggest that participants should also be given the option of selecting a closed “one-on-one” environment between the relevant regulator and their business if they are concerned about protecting their intellectual property.

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 the economy. For example, the TOLA Act was rushed through Australian Parliament at the end of 2018 without full consideration of the impact that this could create for a broad range of stakeholders including industry, civil society, and technical and privacy experts. This has led to unintended consequences, including Australia’s image overseas in relation to trust in Australian products and services, and concern that the legislation could lead to the weakening of existing cyber security and privacy of businesses and its customers.

Part of this regulatory response could be due to criticism and concern that legislators and regulators are generally not moving fast and flexibly enough to adapt and respond to the pace of technological change. There could also be a lack of understanding of the broader context, such as: the technology; business models; the effect of globalisation; and the role of the different government regulators and other agencies in this environment.

While regulation has a role in addressing reasonable public concerns such as around security, safety, privacy and environmental issues, there are also often alternative approaches to the regulatory "stick". Regulatory barriers should only be introduced where there are clear net community benefits.

We therefore support for further consideration the use of regulatory sandboxes (including the option of doing this in a closed one-on-one environment) and other alternative light-handed approaches (e.g. innovation hubs) to test AI with respect to human rights.

## 3. Pillar Two: Research

### 3.1 How can government help ensure that AI research, including international collaboration, is undertaken safely, ethically and responsibly?

We note that there are several initiatives underway that may be considering similar questions and it would be worthwhile for DISER to connect and leverage on these activities (if not done so already). For example, as noted above, Home Affairs has recently consulted on proposed *Critical Technology Supply Chain Principles*, which includes consideration of ethics and trust. There is also the potential role for the Australian Ambassador for Cyber Affairs and Critical Technology to promote AI safety, ethics and responsibility in the international arena.

As the Discussion Paper notes, Standards Australia released in March its AI Standards Roadmap, which included recommendations aimed to help Australia effectively support AI and its future across the globe. Various stakeholders have contributed to the development of this roadmap, including Ai Group. We welcome initiatives such as this, as it brings together a diverse range of stakeholders to share their ideas and has the potential to help address issues such as those raised in the Discussion Paper.

Standards are as relevant to AI as any other product or item used by Australians. There should be a national focus in standards on AI through Standards Australia. Standards Australia can also provide a gateway to international involvement (including ISO/IEC) and it is the most logical pathway to it. Finally, standards can play a role in multiple areas including technical, management and governance. Applied in these different areas, standards can enable government and businesses to establish an ethical and governance framework for AI as opposed to requiring a regulatory approach.

*3.1.1 General statement about standards*

More broadly, standards are fundamental to promoting digitalisation because they can enable an ecosystem for technological innovation, competition, international trade and interoperability. Standards, when called up by regulation, offer a mechanism to quickly respond to changing markets. Australia's regulatory and standards framework needs to be sufficiently flexible to accommodate rapid changes in technologies that lead to new types of business models and competition, while also protecting consumers' interests.

Much global standards work seeks to address broad systems approaches to significant challenges, including AI, as well as other related topics such as smart factories, smart grids, smart cities, digital platforms, Internet of Things and Industry 4.0. These challenges require a new level of coordination and effort, and development of new ways to exchange knowledge between the public and private sectors, academia, standards and conformity institutions.

It is vital that Australian industry and consumers have support and access to all international fora involved in standards development to ensure our national interests are preserved. This will allow for effective contribution to standards development at an ideal stage in which products and services are still under development. Australia is generally known to play a strong role in standards development. Accelerating technological change makes this role even more important to facilitate fast adoption of new technology and realisation of its benefits.

More generally, Australia should strive for a more judicious and effective mix of standards and regulation in lifting public safety, consumer confidence and business performance.

There is considerable potential for the more effective use of consensus-developed standards in addressing a range of economic and social opportunities and challenges. In some cases, standards can work alongside formal regulatory approaches (such as when standards are called up in regulatory instruments) and at other times as a lower-cost substitute for formal regulation.

There has been a tendency for government to move away from the use of Australian standards. While international consistency and efficiency have clear value, international standards development processes may be unduly influenced by particular interests without adequate opportunities for Australian input reflecting domestic expertise, local conditions and needs. The Australian Government should continue to help fund Australian involvement in international standards development and it should ensure that an Australian filter is applied before the adoption of international standards in Australia.

There is also a disturbing inclination for Australian government agencies to forego the well-regarded model of the transparent, consensus approach to the development of standards in favour of rules and regulations developed by the agencies themselves (e.g. with respect to product energy efficiency). Government agencies typically do not have the technical expertise, the practical experience or the proficiency in effective and structured consultation with industry and others in the community. The result is often sub-standard, and government should be more willing to back and expedite the use of the more transparent consensus driven standards development model.

**3.2 What are the problems Australia is facing where the development and application of AI could provide long-term solutions and how could these be prioritised?**
**How can Australia best coordinate its national research effort around areas of national priority?**

As with other forms of digital technologies, AI can play a critical part of Australia's technology led recovery to the COVID-19 pandemic.

For instance, COVID-19 has highlighted questions about the resilience of our supply chains and sovereign industrial capability including in manufacturing.

Well before COVID-19, Australian manufacturing was evolving into more advanced modes, requiring very different mindsets, business models, skills and capabilities. These innovative approaches built on digital technologies are often referred to as Industry 4.0 or Smart Manufacturing.

Now, amidst a pandemic-driven recession, businesses are facing challenges greater than any in living memory. The pandemic has also highlighted broader economic vulnerabilities, raising questions about the scope of our domestic capabilities and resilience of global supply chains.

This unstable environment presents an opportunity for industry to emerge more globally competitive by taking fuller advantage of Industry 4.0 and digitalisation.

Striking the right balance between local production capability and reliance on global markets does not mean insulating Australia from international engagement and competition. One of the major intrinsic benefits of advanced manufacturing is the increased capacity to export to global markets and integrate with global value and supply chains. In this area, Industry 4.0 technologies and digitalisation can also play a role in building resilience in our global network.

For example, there are opportunities to shift from slow and complex manual management of supply chains to a more agile approach, and improve whole of supply chain transparency to identify weak links and gaps through increased monitoring of global suppliers.[19] Embracing global standards will be

[19] "Coronavirus and the antifragile supply chain" (March 2020), Link: https://www.supplychaindigital.com/supply-chain/coronavirus-and-antifragile-supply-chain.

an important success factor in enabling this shift.[20] Technologies including AI have the potential to help address these issues.[21]

While just-in-time manufacturing has helped increase efficiencies and reduce supply chain costs for manufacturers (especially in high tech industries) in recent decades, COVID-19 has highlighted its vulnerability to sudden shocks and supply shortages. Greater use of AI could help decision makers to identify and predict supply and demand patterns.[22]

Increased attention to local manufacturing and immediate concerns with human social distancing may also spark a renewed conversation about leveraging deeper into technologies including AI to boost our manufacturing capability and resilience.[23]

There are many other relevant technologies and applications with new business use cases continually evolving. These innovations are an important piece for solving the larger puzzle of growing Australia's competitiveness.

But investment in technologies such as AI only form part of the paradigm. In the policy context, other areas for action require building a policy environment that incentivises investment in innovation and R&D; lowering regulatory barriers for companies to compete globally; reforming workplace relations to increase flexibility and productivity; and developing the appropriate skills and talent to help businesses innovate and compete.

### 3.3 How can we better support industry-researcher engagement?

This appears to raise a broader question that is not limited to AI. Our response is therefore on a much wider scale.

Innovation can be distinguished from business or organisational improvement in general by the greater novelty of changes and the greater likelihood that they extend the frontiers of efficiency and economic activity rather than move organisations towards existing frontiers.

Whether or not innovation involves the introduction of wholly novel changes to business models, processes, products, services or distribution, it inevitably builds on and extends existing practice and is most likely to be generated by new or established innovation-ready organisations and entrepreneurs with a keen awareness of leading practice.

#### *3.3.1 Centres of excellence and industry networks*

Organisations and networks that keep abreast of leading business practices, technologies and other developments in relevant fields can play central roles in improving innovation readiness and lifting awareness of new opportunities for Australian businesses. Critically, they can help keep stock of existing domestic capabilities and gaps in those capabilities and would assist in developing strategies to build resilience and preparedness to address disruptions like those highlighted during the early months of the COVID-19 crisis.

The Growth Centres, various CRCs, Centres of Excellence, some specialist industry associations and research organisations such as CSIRO already perform these roles to different degrees. Greater focus on opening, extending and linking existing networks would disperse benefits more broadly with commensurate improvements in economy-wide payoffs. Current coverage is far from exhaustive and there are strong opportunities to create new networks and Centres of Excellence. Gains from these initiatives can be extended if their successes are celebrated and publicised. More extensive use of accessible case study material has the potential to lift awareness of specific opportunities. More

[20] "Coronavirus is proving we need more resilient supply chains" (March 2020), Link: https://hbr.org/2020/03/coronavirus-is-proving-that-we-need-more-resilient-supply-chains.
[21] "How IoT, AI and blockchain can transform supply chains in 3 steps" (May 2020), Link: https://www.forbes.com/sites/hodfleishman/2020/05/28/how-iot-ai-and-blockchain-can-trasform-supply-chains-in-3-steps/.
[22] "Coronavirus: How AI, 3D printing and blockchain can help overcome supply problems in a crisis" (March 2020), Link: https://theconversation.com/coronavirus-how-ai-3d-printing-and-blockchain-can-help-overcome-supply-problems-in-a-crisis-133826.
[23] "The coronavirus has thrust human limitations into the spotlight. Will it mark the rise of automation?" (May 2020), Link: https://theconversation.com/the-coronavirus-has-thrust-human-limitations-into-the-spotlight-will-it-mark-the-rise-of-automation-139198.

generally, they can promote interest in collaborative approaches to innovation and help break down the cultural and information barriers to greater business-research collaboration.

There is scope also to build the capabilities of Centres of Excellence and their associated networks by ongoing critical examination and dissemination of leading practices, successes and failures.

### *3.3.2 Business-Research collaboration*

Lifting the frequency and quality of collaborative innovation between Australian businesses and our substantial capabilities in scientific research is essential to improve competitiveness and open new commercial opportunities. To build on recent progress a number of steps could be taken:

- Continue and expand the Innovation Connections element of the Entrepreneurs' Programme;
- Consider wider access beyond the Entrepreneurs' Programme to incentives for employment of recent STEM graduates in innovation roles;
- Promote case studies and best practices for collaboration to both business and researchers, including the benefits of cross-organisational teams and deeper 'stage zero' collaboration that starts from joint problem analysis rather than contracting out solution delivery; and
- Assess the success of recent efforts to link public sector research funding to industry collaboration and real-world impact and refine the formulae and metrics if warranted in consultation with industry and the research community.

### *3.3.3 Supporting business research and development (R&D)*

While recognising it as but one element of innovation, Ai Group is a strong supporter of business R&D activity as a key driver of improvements in productivity and, through that, of higher incomes and commensurate benefits across the broader community.

We also recognise the external benefits that can flow from business R&D by its contribution to knowledge that can be used by others without payment. These "positive externalities" or "spillovers" are benefits that accrue to others and are not captured by the individual business undertaking the R&D. Because of this, an individual business left to its own devices would finance less R&D than is socially optimal because it does not get rewarded for the full benefits flowing from the R&D activity.

Accordingly, Ai Group supports public backing for business R&D activity as a means of lifting the total amount of business R&D to more closely approximate its optimum level.

## 4. Pillar Three: People

### 4.1 What is the best way to ensure Australians have the skills and capabilities they will need for an AI enabled future?

The Discussion Paper raises several potential actions that Ai Group agrees are key measures in building the capabilities of individuals in this area. Ai Group agrees the necessary capabilities can only be achieved via a multi-pronged approach that ensures that government, businesses and individuals are all party to it.

Ai Group has been vocal in its view that digitally transforming work environments are necessitating skill shifts and therefore changing the demand for skill groupings needed. It is apparent that in a matter of months COVID-19 has led companies to accelerate the digitisation of their customer and supply chain interactions and internal operations by three to four years.[24] Increasingly more work is being broken down into constituent bundles of tasks – driven by automation, the platform economy and corporate strategies.[25] Individuals must be prepared for hybrid occupations that are mixes of current professions and trades.

---

[24] "How COVID-19 has pushed companies over the technology tipping point – and transformed business forever" (October 2020), Link: https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/how-covid-19-has-pushed-companies-over-the-technology-tipping-point-and-transformed-business-forever.
[25] "The future is now: Creating decent work post-pandemic" (June 2020), Link: https://ppforum.ca/publications/the-future-is-now-creating-decent-work-post-pandemic/.

Industry will need a workforce prepared for closer collaboration between humans and smart machines, willing to problem solve with AI, to interpret data, and supported by agile spaces and cross-functional teaming. A wider range of digital skills, including advanced technical skills, general STEM skills and human capabilities are all needed. Leaders and managers will need to know how to move to, thrive and innovate in new environments incorporating AI. In many cases, technology in organisations now is about relationships – concentrated on how work is organised and managed. It is the creativity – the human factor – that we need to develop as partners with our machines, but we also need the skills to use our machines.

Because in industry it is machines that are becoming the producers/doers, and humans the value creators, Australians can best develop these skills where education and training systems integrate human skills within their learning and development. Since 2016, the World Economic Forum (WEF) has been stating that the dichotomy between the sciences and humanities disciplines in tertiary education will become obsolete. The WEF states that to master this new epoch, we need both sciences and humanities – and we need to integrate them as never before.

In our education and training system, all individuals, whether AI specialists or otherwise, must increasingly be developed to cope with learning new skills at work on a daily basis; to understand that learning now cannot be separate from doing; that employees' learning experiences cannot be one-off and must be integral to their lives. The new leap by more companies to an increasingly sophisticated mix of human and technological capabilities reaches into all learning and development. The options for learning whenever and wherever they are undertaken should include face to face and online activities, coaching, social learning platforms and learner input to content.

The Australian Government has implemented a range of support measures during the pandemic to ensure the education and training necessary for skill demands is available to individuals. The Government's commitment and actions to overhaul the VET system must remain ambitious and include additional funding to redress the long term decline in funding by all levels of government. As covered in the Discussion Paper, the broader reforms around the VET system underway are a crucial part of developing individuals for an AI-enabled future. These include the National Skills Commission work, the National Careers Institute initiatives and reinvigorated training product development through the pilots to implement a new Skills Organisations system.

### 4.2 What is the best way to ensure Australian businesses have access to the AI workforce they need for an AI enabled future?

#### *4.2.1 Closer partnerships*

Industry needs the education and training that meets AI skill demands to be related to business growth directions, integrated with industry strategies and to include innovative approaches that better anticipate immediate-, short- and medium- term skill priorities for industry sectors.

Employers have invested in rapid upskilling of existing workers during the pandemic. As this investment continues so too will the need for ongoing partnerships with the government, including programs that involve employment subsidies and tax incentives. Differently sized companies need support in different ways to upskill and reskill their employees. They need to find the right mix of inhouse training and external training provision; the type of learning management system to keep track of their skills pool, and the range of short courses, micro-credentials or full qualifications needed.

The pandemic and the unexpected acceleration of digitalisation should be seen as a watershed moment for collaboration between the industry sector and the tertiary education and training sector. A step change to embed co-involvement cultures will assist the success of both sectors. There is now even greater value in employer-led programs, flexible training adapted to a company's needs, co-location, coaching and digitally delivered solutions.

Australia needs more industry-skills development hubs which can take a number of forms and are best developed organically. They can be multi-partner – large and small companies, universities, TAFEs, schools, government – involving some or all of knowledge development, training, placements, projects, competitions, research, incubation, co-location. These are particularly good models to increase the capability of our dominant SME structure in Australia.

#### *4.2.2 Fluid credentials*

While employers recognise they need entry level workers with broad, foundational qualifications, for example in AI-related disciplines, they have been stating for some time that they need more flexible, specific training to be available to re-skill and up-skill existing workers increasingly often.

The tertiary education and training sector must be nimble and move to ensure it can be a partner before and after individuals enter the workforce in order to make available learning that is needed for entry level education and training, as well as reskilling and upskilling.

There is a need for deeper fluidity within qualifications/credentials, including across disciplines. Given more fluid qualifications' architecture, the offer from education and training providers could include entry level qualifications and upskilling capabilities. The recommendations for a new Australian Qualifications Framework have been accepted by the Australian Government and can be an enabler in this. Here is an opportunity to rethink and design qualifications differently to support and build upon the dynamic combination of skills and knowledge more fit for an AI-enabled economy.

#### *4.2.3 Applied learning*

Ai Group believes a new paradigm is needed for work integrated learning (WIL). Ai Group has long been encouraging businesses to make WIL connections for their own benefit, and for individuals. A range of activities – placements, projects, student consultancies, hackathons – should now be developed as the norm in both university and VET qualifications. The Australian Government's National Priorities Industry Linkage Fund should result in an upscaling of WIL and create innovative examples.

We also see employment-based qualification pathways as an enabler in developing the right skills needed for AI roles. The apprenticeship model in VET has been a long-recognised approach to develop high-quality, fully integrated learning and employment experiences at the leading edge of economic transformation. There is an opportunity to broaden this model to include cadetships at higher qualification levels. Ai Group's successful pilot program, the Industry 4.0 Higher Apprenticeship, was a good example of this in a field relevant to AI. It is now being rolled out in most states.

Ai Group has been supporting the proposal put forward by the Mitchell Institute, Victoria University and University of South Australia in October to introduce a national cadetship program for VET and university students.[26] It would provide apprenticeship-style subsidies for employers that assist them to take on students as interns at scale using existing system infrastructure.

#### *4.2.4 Skilled migration*

Much of the activity proposed above involves long term systemic change. To meet employers' short term AI-related skill gaps, as suggested in the Discussion Paper, Australian companies will need to have access to skilled migrants who hold AI-specific capabilities.

## 5. Pillar Four: Society

### 5.1 Is there more the government can do to support responsible and human centred development and use of AI in Australia?

As discussed above, there is an opportunity to improve collaboration and integrate between the various government activities. This collaboration can lead to greater access to a wider range of relevant stakeholders on AI and consideration of various issues in the areas of standards, education and training, cyber security and privacy, and innovation.

Forming part of a national strategic approach, an option to bring together and coordinate these relevant stakeholders, including across governments and industries, could be through a national forum. This forum could be tasked to help to reduce complexity and address multiple issues associated with AI and other emerging technologies. Alternatively, we had previously offered a possible configuration of a national body that can explore fundamental questions and issues around AI to inform the work of

[26] "Averting an escalating labour market crisis for young people in Australia: A proposed national cadet program" (October 2020), Link: https://www.vu.edu.au/mitchell-institute/pathways-after-school/averting-an-escalating-labour-market-crisis-in-australia-a-proposed-national-job-cadet-program.

existing bodies, for example.[27] This national forum or body could consider a range of possible concerns with AI, not limited to a human rights dimension e.g. economic disruption and resulting social impact, existential threats and transhumanism.

**5.2 What approach should Australia take internationally, to steward its values and commitment to the responsible and ethical use of the AI?**
**How can Australia support its partners and neighbours in their efforts to make the most of AI?**

See our response in section 3.1 above.

**5.3 What security issues associated with AI systems should be considered?**

As noted above, there are several consultations and initiatives underway that are potentially relevant to this question regarding AI and security issues. These include national security related consultations such as by Home Affairs on *Critical Technology Supply Chain Principles* and *Protecting Critical Infrastructure and Systems of National Significance* reforms, and Ambassador for Cyber Affairs and Critical Technology on *Australia's International Cyber and Critical Technology Engagement Strategy*.

Also, as mentioned above, there are standards activities underway relating to harmonisation of cyber security standards that would be relevant to this question.

If you would like clarification about this submission, please do not hesitate to contact me or our Lead Adviser – Industry Development and Defence Industry Policy, Charles Hoang (02 9466 5462, charles.hoang@aigroup.com.au).

Yours sincerely,

**Louise McGrath**
**Head of Industry Development and Policy**

[27] Note that we previously cautioned against creating new functions and powers that are already addressed through existing bodies to tackle AI. We also suggested that if existing functions or powers proposed are not currently covered, and do serve a clearly articulated purpose, consideration could be given to a new body. Establishment of a new body should be assessed against appropriate criteria such as: long term community cost-benefit analysis; impact on global competitiveness; proportionality of response; and impacts on investment incentives or barriers for business.