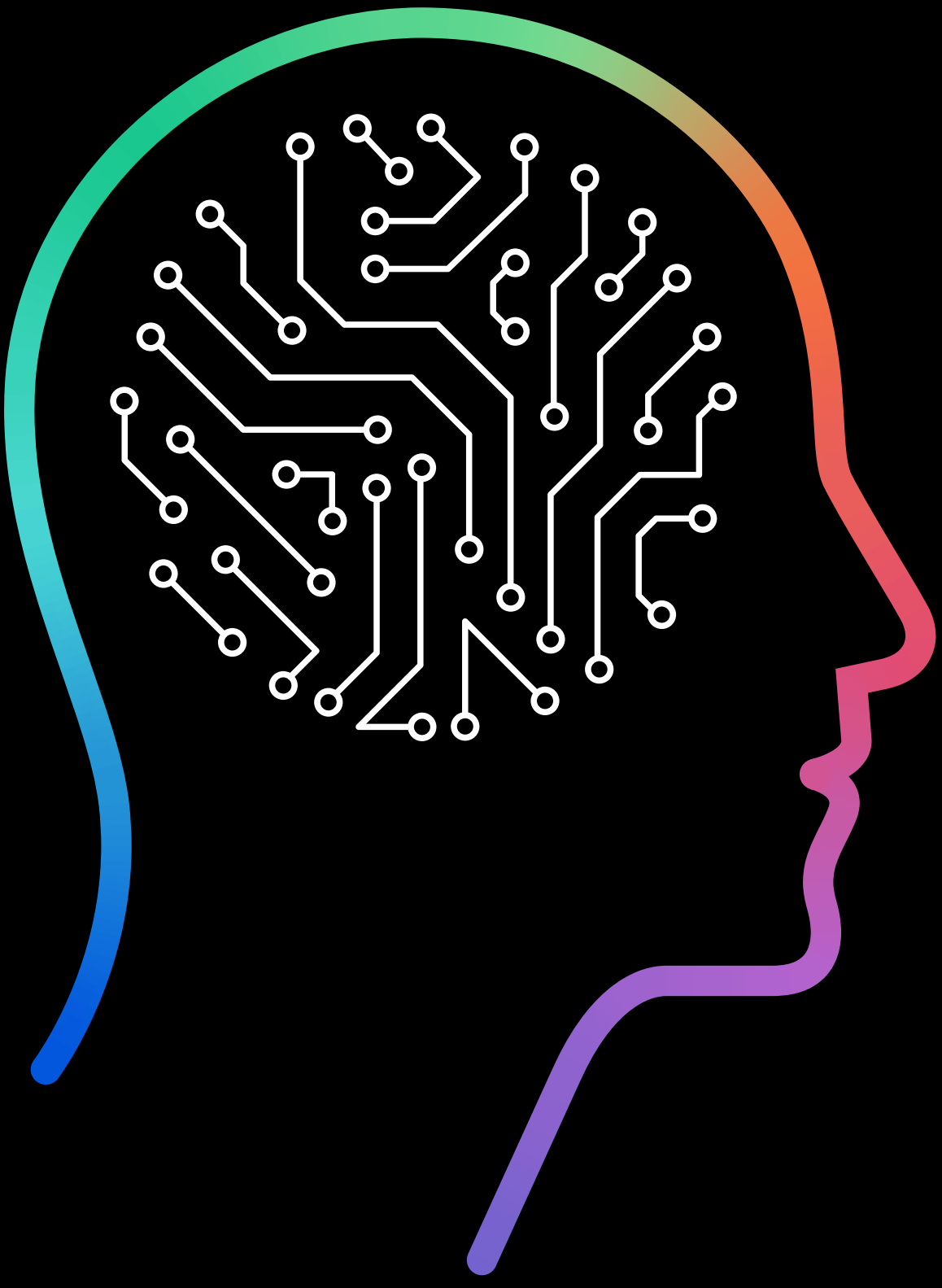
Executive Summary
The future of Artificial Intelligence (AI) in Australia

COMMITTEE FOR MELBOURNE



December 2020
Shaping Melbourne's future

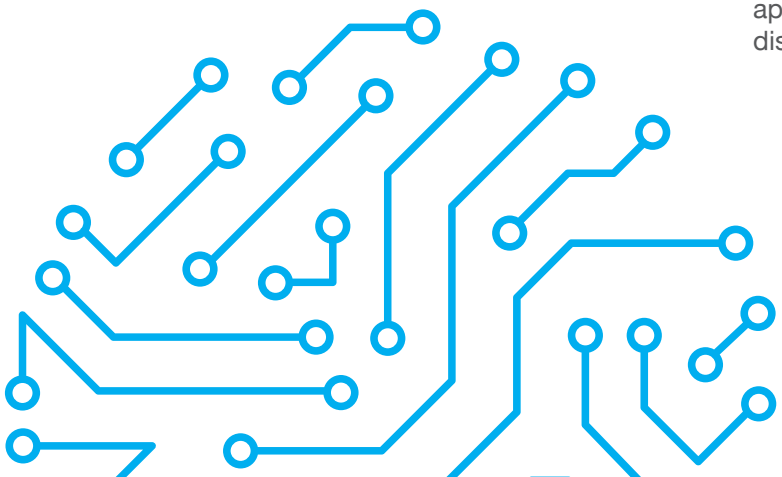
1 Foreword

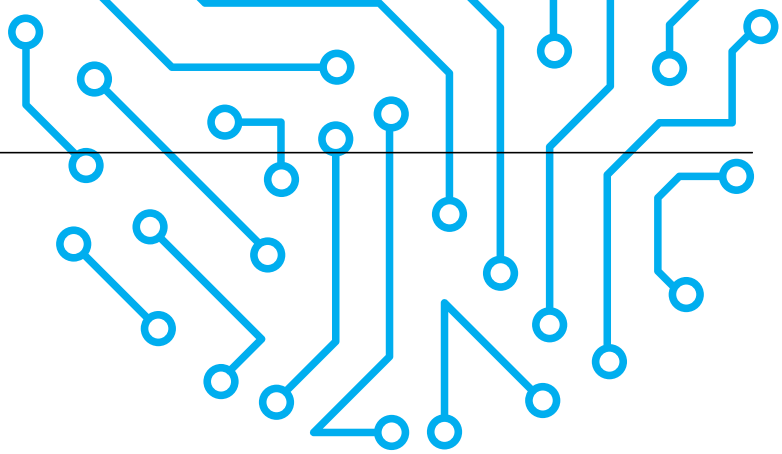
Committee for Melbourne's (the Committee's) members recognise the extraordinary benefits that Artificial Intelligence (AI) is already delivering via efficiency and effectiveness gains in augmented decision-making (e.g. medical diagnosis) and autonomous decision-making (e.g. cybersecurity). Our members also recognise the importance of Melbourne and Australia being at the forefront of the development, adoption and deployment of AI. With the sustained level of investment being made in AI, the pace of advances will continue to accelerate.

AI has made it easier and more efficient for consumers to make online purchases and to connect with friends and family via online applications. Businesses can be made more efficient and profitable through the use of technology underpinned by AI, in order to better target products and services and improve their operations. Research and development can be greatly enhanced through the application of AI, such as effective data analysis and research trials. The community benefits from AI applications that improve the delivery of health, education and insurance services.

Melbourne's economic prosperity and growth is linked to the success of particular sectors, such as: health; supply chain logistics; advanced manufacturing; education; research; and the experience economy – all of which can be underpinned by effective use of AI. The Australian Government has recognised that sectors such as natural resources and environment; health, ageing and disability; and cities, towns and infrastructure will benefit from a strategic approach to AI. AI will underpin innovation and research, drive growth and accelerate proficiencies in these sectors into the future.

The proliferation of AI applications in our lives is already raising questions about data and privacy, security and human rights. Higher internet speeds and further miniaturisation of massive computing power and memory / storage will further enable AI applications to be better connected, predictive, distributed and ubiquitous.





Whilst we discover more innovative applications for AI, we must ensure that we consider the ethical, social and human implications of deployment, and that our regulatory and legal systems at least keep pace with the challenges, or – even better – anticipate them.

This is especially true when AI is deployed in systems and processes which critically underpin community trust and well-being. These systems need an ethical framework within which to operate, with a special emphasis on harm minimisation. Furthermore, such systems need to be able to rapidly identify, rectify and remediate problems, and the accountability for achieving desired outcomes also needs to be clearly defined.

Collaboration between government and the private sector will be essential to ensure that required protections are in place for the benefit of the community.

Committee for Melbourne's AI Taskforce has identified in this report the key stakeholder collaboration mechanisms and governance frameworks for the ethical development, adoption and deployment of AI.

The Victorian All-Party Parliamentary Group on AI has already been established and should be re-convened. The establishment of an AI hub would also enable greater networks and collaboration across Greater Melbourne and potentially also facilitate pilot programs that could test and implement future AI initiatives.

In June, the Victorian Government committed $1.5 million to fund the establishment of an accelerator and investment fund for AI scaleups. This is an important initiative which recognises that startups in AI need particular support. Backed by LaunchVic, Boab AI (in partnership with Artesian), Victorian universities and Artesian's international partner programs, the new accelerator will help AI scaleups access much needed private sector capital.

The impact of the COVID-19 pandemic on businesses, jobs, society and the community has created a generational challenge. We are being compelled to do new things at speed. AI will have numerous critical roles to play on our road to recovery. As such, the initiatives outlined in this report are more important than ever and warrant urgent consideration.

We trust that the recommendations in this report and continued collaboration between the public and private sector will enable Melbourne to play a leading role in promoting the ethical application of AI for Australia and other parts of the world.

Scott Tanner
Chair,
Committee
for Melbourne

Martine Letts
CEO,
Committee
for Melbourne

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Background

In September 2016, the Committee launched its Melbourne 4.0 strategy to help prepare Greater Melbourne for the accelerating speed of innovation and disruption that has catapulted us to the early stages of the 'Fourth Industrial Revolution'. The Committee's Melbourne 4.0 project makes it clear that if we keep progressing with 'business as usual', the future of our city may not be all that bright. The Committee therefore identified nine strategic needs that we must address if we are serious about underpinning a liveable and flourishing Greater Melbourne in the future.

Two of the strategic needs identified were 'digital capability' and 'competitive internet' and how to prepare Greater Melbourne and Victoria for the challenges and opportunities of the 21st century. Artificial Intelligence (AI) was considered to be the key issue in the context of the digital capability and increasing technological requirements of our community. AI is arguably one of the most important technological issues facing us in the future. AI offers many benefits and opportunities, as well as many challenges – we now need a prominent and informed public debate about AI in Victoria.

As part of its overall report, the Committee's AI Taskforce considered eight key areas in relation to AI:

- Data
- Governance
- Equity and Equality
- Skills
- Trade
- Infrastructure
- Entrepreneurship and Innovation
- Security

The full report provides detailed recommendations under each of those areas. This executive summary provides the high-level recommendations that have been extracted based on the detailed recommendations.

To read the full report click here.

3 Introduction to Artificial Intelligence

Artificial Intelligence (AI)

There is no commonly agreed definition of Artificial Intelligence (AI), but the definition identified by the Australian Government in its AI roadmap in November 2019 titled *Artificial Intelligence: Solving problems, growing the economy and improving our quality of life* **(Commonwealth Government Roadmap)** was:

> *"Artificial intelligence (AI) may be defined as a collection of interrelated technologies used to solve problems autonomously and perform tasks to achieve defined objectives, in some cases without explicit guidance from a human being. Subfields of AI include machine learning, computer vision, human language technologies, robotics, knowledge representation and other scientific fields. The power of AI comes from a convergence of technologies."* [1]

AI applications can be broadly classified into two categories based on their purpose, enabling Augmented Intelligence or Autonomous Intelligence.

- **Augmented Intelligence:** Augmented Intelligence, as defined by Gartner, is a design pattern for a human-centred partnership model of people and AI working together to enhance cognitive performance, including learning, decision making and new experiences. Essentially, Augmented Intelligence applications would involve a human as part of the action or decision-making chain where the AI system provides the information required to enable the decision. For instance, an AI algorithm can analyse a patient's symptoms and vital signs, compare it with the history of the patient, her family and those other patients it has in store, and give her doctor suggested diagnoses for him to decide upon. Siri and the Google assistant are forms of AI that fall into this category.[2]
- **Autonomous Intelligence:** Autonomous systems operate in complex and open-ended environments with high levels of independence and self-determination. For instance, unmanned or self-driving vehicles, autopilot systems in aeroplanes and drone-based delivery systems are AI systems that fall into this category. Such systems differ from Augmented Intelligence systems due to the fact that they can make a decision and execute on it without requiring a human in the loop.[3]

[1] Hajkowicz SA[1+], Karimi S[1], Wark T[1], Chen C[1], Evans M[1], Rens N[3], Dawson D[1], Charlton A[2], Brennan T[2], Moffatt C[2], Srikumar S[2], Tong KJ[2] (2019). *Artificial Intelligence: Solving problems, growing the economy and improving our quality of life.* CSIRO Data61, Australia, p2.

[2] See for example: https://www.gartner.com/en/information-technology/glossary/augmented-intelligence

[3] See for example: https://www.bosch.com/research/fields-of-innovation/fully-autonomous-systems/ https://www.businessinsider.com.au/autonomous-artificial-intelligence-is-the-real-threat-2015-9?r=US&IR=T

AI is pervasive in our society and its use and application throughout our society is having a profound impact on individuals' quality of life, business operations, government services, economics and democratic processes.

In March 2018, VAPPGAI released an Artificial Intelligence Primer **(VAPPGAI Primer)**. The VAPPGAI Primer highlighted that there are many uses and benefits that have been delivered from AI for the community. For example:

- **Consumers** are more readily able to purchase goods and services online, make travel bookings, access news and information and connect with friends and family through social media.
- **Businesses** are able to understand consumers' preferences and deliver on their needs with greater understanding, accuracy and efficiency.
- **Governments** are using AI to provide services, research policies and to campaign and advertise to voters.
- **Community** benefits in many sectors such as health, education, insurance and retail have been derived from the use of AI.

There are a range of sectors that have benefitted from AI. As the EU describes:

> *"AI technologies can be **extremely beneficial from an economic and social point of view** and are already being used in areas such as healthcare (for instance, to find effective treatments for cancer) and transport (for instance, to predict traffic conditions and guide autonomous vehicles), or to efficiently manage energy and water consumption. AI increasingly affects our daily lives, and its potential range of application is so broad that it is sometimes referred to as the fourth industrial revolution."* [4]

However, there are also a number of potential issues and risks that arise from the use of AI, such as ethical, legal and economic concerns. Therefore, a balance needs to be struck to ensure these concerns can be dealt with, while ensuring that the benefits outlined above can be achieved for the whole of society.

The development of AI

The VAPPGAI Primer highlights that AI is developing exponentially and that:

> *"We can expect massive advances in AI in the near future – making it hard to predict where AI might take us in the short to medium term, let alone long term."*

The pace of innovation in AI, and use of AI, has been accelerating faster than the ability of governments to understand and regulate its development and use. Accordingly, there are concerns about how AI could be used to breach the rights of individuals (such as to facilitate mass data collection or surveillance), be applied for anti-competitive practices and undermine democratic processes (amongst many potential concerns). The threat of jobs losses and skills shortages due to lagging education programs are also of concern. It is important to note that the risk of 'bias' associated with the use of AI, resulting from a variety of factors including bias in data inputs, is also a considerable challenge being faced.

The capacity to benefit from, and adapt to, the challenges and opportunities presented by AI is one of the major strategic issues facing Victoria and Australia. Already many countries around the world are considering ways of meeting the challenges of AI. As outlined in the Commonwealth Government's Discussion Paper, *'Artificial Intelligence, Australia's Ethics Framework'*[5], CSIRO Data 61's analysis reveals that over the past few years, 14 countries and international organisations have announced AU$86 billion for AI programs looking at the ethical issues associated with AI development (as depicted in the infographic below from the same Discussion Paper).

[4] Tambiama Madiega, *EU Guidelines on Ethics in Artificial Intelligence: context and implementation*, EU Briefing, European Parliamentary Research Service, Members' Research Service, PE 640.163 – September 2019 http://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_BRI(2019)640163 (accessed 3 February 2020): *EPRS briefing on Economic impacts of artificial intelligence* by Marcin Szczepański, July 2019.

[5] Dawson D and Schleiger E*, Horton J, McLaughlin J, Robinson C∞, Quezada G, Scowcroft J, and Hajkowicz S† (2019) Artificial Intelligence: Australia's Ethics Framework. Data61 CSIRO, Australia, p 4. *Joint first authors ∞CSIRO Land and Water †Corresponding author

4 Summary of key recommendations

Key recommendations

Key Recommendations for the Commonwealth Government in AI

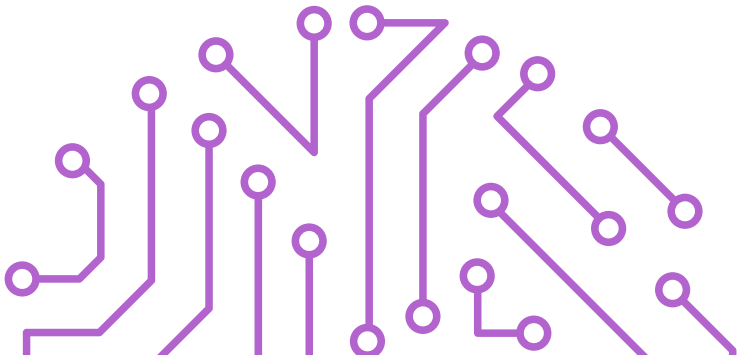
1. Key Recommendation 1: Set up a National Centre of AI Ethics and Innovation (NCAIEI)
2. Key Recommendation 2: Set up an AI Ombudsman
3. Key Recommendation 3: Amend relevant Commonwealth laws or enact new laws and adopt new standards for AI
4. Key Recommendation 4: Equip regulators to enforce the laws
5. Key Recommendation 5: Provide information and education (including to set up AAPGAI)
6. Key Recommendation 6: Set up an AI Fund
7. Key Recommendation 7: Develop skills, curriculum and general AI literacy

Key Recommendations for the Victorian Government in AI

8. Key Recommendation 8: Conduct feasibility study into an AI Precinct
9. Key Recommendation 9: Amend relevant Victorian laws or enact new laws for the Victorian public sector
10. Key Recommendation 10: Develop skills, curriculum and general AI literacy
11. Key Recommendation 11: Create an AI Fund
12. Key Recommendation 12: Provide information and education

Key Recommendations for VAPPGAI

13. Key Recommendation 13: Provide information and education, through a continued VAPPGAI meetings program
14. Key Recommendation 14: Accept the Committee's report and work with the Victorian Government to implement the recommendations



Key recommendations for the Commonwealth Government in AI

The Committee congratulates the Commonwealth Government for having already developed a proactive agenda of activities focused on progressing Australia's strategy on AI, including releasing Australia's AI Ethics Framework and AI Technology Roadmap, both in 2019[6]. The Office of the Australian Information Commissioner (OAIC) also published a Guide to Data Analytics and Australian Privacy Principles in 2018.

The Commonwealth Government has a significant role in the following areas:

- development and enforcement of appropriate laws regulating the use of AI
- adopting or defining standards and frameworks for the use of AI (including assigning responsibility)
- information sharing
- providing incentives and support for development of AI initiatives
- ensuring a pipeline of talent is attracted to and retained in Australia

There are a number of recommendations for the Commonwealth in this report, including the establishment of a **National Centre of AI Ethics and Innovation (NCAIEI)**. Such a body might have significant roles, including to: develop policy, technical standards, codes of practice and frameworks; drive strategy and initiatives; and provide technical support or guidance to regulators in enforcing laws where there is AI involvement (such as privacy, discrimination, competition and corporate misconduct) as well as information where trends are changing in the industry. The NCAIEI should proactively engage with business, government and technology firms to establish consistent guidelines that help define the roles and responsibilities of the AI industry generally and also any organisations involved in developing, testing and using AI, including promoting fair, transparent, explainable and secure use of AI in a manner that is consistent with appropriate ethical considerations and community expectations. The NCAIEI should be instructed to take a measured approach that balances technological progress and commercial interests with the importance of embedding human rights and ethical decision-making as the norms in the development and use of AI algorithms across the private and public sectors.

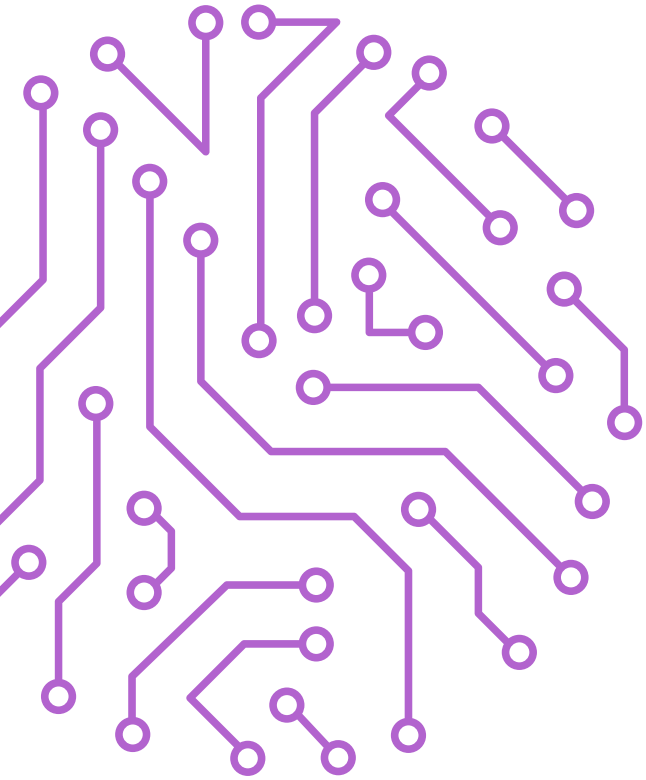
[6] Hajkowicz SA[1+], Karimi S[1], Wark T[1], Chen C[1], Evans M[1], Rens N[3], Dawson D[1], Charlton A[2], Brennan T[2], Moffatt C[2], Srikumar S[2], Tong KJ[2] (2019) *Artificial intelligence: Solving problems, growing the economy and improving our quality of life.* CSIRO Data61, Australia.

At present, existing laws and governance frameworks are either not in place or not fit-for-purpose for AI. Although contract law, tort law, discrimination law and consumer protection laws may have some application in specific circumstances, there is uncertainty surrounding the extent of their application. At best, current laws indirectly regulate the use of AI by regulating the uses of information as an input to AI systems through privacy and data protection laws. Accordingly, the Commonwealth Government (through the Federal Parliament) must also propose **appropriate and balanced legislative reforms to areas of the law affected by AI**, such as privacy, discrimination, competition and corporations laws. However, any changes to these legislative frameworks to apply them to AI will require careful consideration of what amendments should be made to achieve the desired protections. Due to Australia's federal system of laws, some of this legislative change will need to be undertaken at a state level and some reforms will need to occur at a Commonwealth level. However, it is important that these changes are consistent.

The Commonwealth Government must also **equip the existing regulators in these areas to enforce these new laws –** and to ensure that these regulators have the ability to enforce these new laws in the context of AI. This would require that these regulators have the necessary understanding of AI technologies and capabilities, whether as an internal resource or available to them externally. This might include the provision of technical support or guidance from the NCAIEI.

As a separate body, an **'AI Ombudsman'** could act as an independent complaints resolution service for the public on AI related issues.

The Commonwealth also has a role in sharing information and educating the community, including government, businesses, academia and other stakeholders about the importance, uses and trends of AI. In order to be nimble and able to respond to that information, a bi-partisan approach may be needed. Accordingly, just as the Victorian Parliament has established the VAPPGAI, an **Australian All-Party Parliamentary Group on Artificial Intelligence (AAPPGAI)** might be established to achieve those aims.



Key recommendations for the Victorian Government in AI

The Committee congratulates the Victorian Government for having already developed an important agenda of activities on AI. The Committee has collaborated with the Victorian Government on some of these initiatives, such as the VAPPGAI and – for the last two years – the **Committee's AI Summit** held to coincide with the Victorian Government's yearly **Digital Innovation Festival.**

To further the AI agenda, the Victorian Government has a significant role in:

- educating the community about their rights and the benefits that can be obtained from AI;
- educating and equipping the workforce with skills to ensure that we can attract and retain the right talent in Australia and Victoria for the innovation and application of AI;
- assisting stakeholders (public, private, educational etc) to commercialise, use, adapt and share information – including through practical use and testing of AI;
- development of appropriate regulation; and
- providing incentives and support for development of AI initiatives, innovation, business development and attracting talent from overseas.

This report, recognising the work already being done by the Victorian Government, identifies some key areas that could be considered by the Victorian Government to further the AI agenda. One of the key recommendations for the Victorian Government in this context is to take the lead on development of a **world class AI Precinct.**

The Victorian Government should consult industry, community and local councils to identify an AI precinct program. This might involve a **feasibility study** in the first instance, conducted in **partnership with some major industry investors.**

It is anticipated that an AI Precinct would play a role as a 'hub' for AI technology (including for the regions), whereby other innovation precincts and hubs around Victoria could connect virtually into the central coordination centre. There are a lot of initiatives already available to organisations in Victoria, and for coordination purposes and to ensure that people within and external to Australia are able to take advantage of those initiatives, it would be beneficial to have a central coordination role for that activity. Coordination and prioritisation of AI activity will be critical to limit duplication within the ecosystem and enable knowledge sharing.

The AI Precinct would also have the benefit of being a 'physical space' where learning and innovation could take place, including where AI initiatives could be publicly piloted and tested, showcased and developed with citizens engaged in the design and uptake process in order to demonstrate the benefits of AI. This would also enable the testing of public support for AI infrastructure and initiatives before committing to larger Smart City-scale rollouts, such as those via City Deals. The AI Precinct should ideally:

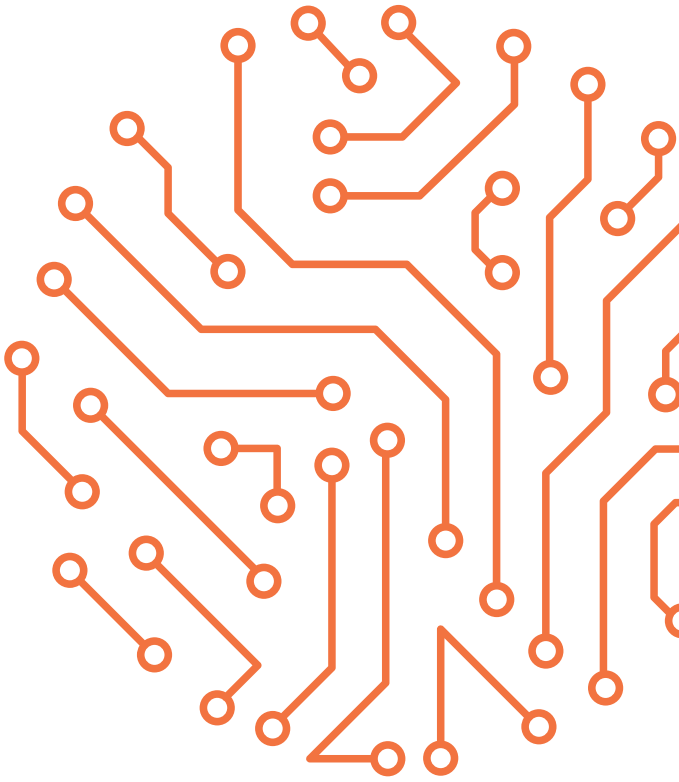
- be populous and have world class digital connectivity;
- be highly accessible to public and private research communities;
- have close proximity or connection to cities that offer an attractive lifestyle – to ensure the attraction and retention of skills; and
- have a mix of business, industry, academia, residential and artistic community groups.

Finally, any legislative reforms to be proposed in Victoria should be consistent with any changes that are occurring at a Commonwealth level. For example, changes to existing privacy laws to cover the use of AI systems in automated processing by Victorian public sector agencies would need to be made at a Victorian level, while reforms relating to the use of AI systems by businesses and Commonwealth Government entities will need to be made at a Commonwealth level. Nevertheless, there are significant opportunities for Victoria to take a leading role in these discussions and to influence a national discussion on the use of AI.

The key recommendations and more detailed supporting recommendations for the Victorian Government are summarised in the tables below.

Key recommendations for VAPPGAI

With assistance and advocacy from the Committee, members of the Victorian Parliament established VAPPGAI as a bi-partisan group to learn more about AI and to educate government, industry and the community about the impacts of AI.



VAPPGAI is intended to play an important bi-partisan role in educating the community, facilitating reform and advocating for important policy change on AI. Therefore, VAPPGAI has a crucial role in continuing to educate the government and community about AI and ensure that there are continued avenues for dialogue and discussion. The continued efforts of VAPPGAI, following the meeting at the Victorian Parliament on 27 August 2019, must include a continued program of **VAPPGAI meetings in 2020**.

The Committee's AI report will be delivered to VAPPGAI, governments at all levels and broader community stakeholder groups, to continue the discussion and encourage practical actions and outcomes.

Key Recommendations for VAPPGAI

13 **Key Recommendation 13:** Provide information and education, through a continued VAPPGAI meetings program

14 **Key Recommendation 14:** Accept the Committee's report and work with the Victorian Government to implement the recommendations

About Committee for Melbourne

The Committee is an apolitical, not-for-profit, member-based entity that brings together over 150 organisations from greater Melbourne's business, academic and civic sectors, who share a common vision to make Melbourne a better place to live, work and do business.

As an independent organisation we represent no single interest group or political position but seek to challenge conventional thinking and to develop innovative ideas to continue to enhance our position as an economically prosperous and highly liveable global city.

We would like to thank Committee members for their helpful comments and contributions.

Report designed by R-Co Brand

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