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Building Australia's Digital Future in a Post-COVID World

A White Paper by the Australian Information Industry Association

Contents

Introduction & Steering Committee	1
Summary of Recommendations	4
How COVID-19 changed the way Australians live and work	9

Drivers

1. Harnessing technology and innovation to kick-start the economy	15
2. Supporting local skills development to secure the future	21
3. Meeting evolving customer and citizen needs	29
4. Securing our digital infrastructure	33
5. The role of government incentives to ensure Australian competitiveness in the Australian ICT and SME sector	39
6. The role of government in supporting Australian SMEs, citizens and business to reinvent themselves in a post COVID world	43

Appendices

A. About the Australian Tech sector	48
B. AIIA Survey – Digital State of the Nation Report 2020	49

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This white paper does not necessarily reflect the views and recommendations of individual members of the White Paper Steering Committee.

Introduction

Australia is the lucky country and we now have a unique window of opportunity to shape the future of generations who follow.

Australia truly is the lucky country. By any measure, Australian institutions and society have proven themselves to be the envy of the world. Leading into the COVID-19 pandemic there were concerns over our political leadership with six changes in Prime Ministers in a decade, the perceived demise of our institutions and our own perception of ourselves.

Today, Australia is leading the globe as part of the “first movers club” of nations dealing with and responding successfully to the COVID-19 pandemic. We have flattened the curve, have managed our economy well over the past decade so that governments could direct billions of dollars into the economy to support workers and businesses and we have one of the best health systems in the world. Our political and other institutions have led in this time of crisis, whereas many other countries have struggled.

With this initial success, it is imperative that we as a nation capitalise on this momentum and now focus on establishing the foundations for a new generation of economic growth. The opportunities the pandemic has presented for fast action and leadership are significant, but the opportunity has never been greater to get it right. It is in this context - both in the short and long term – that the AIIA submits this white paper as a contribution to the national debates now occurring within all levels of Federal, State and Territory Government.

Our future economic prosperity centres on our emerging from the pandemic successfully and in a way that responds to the opportunities and weaknesses that have prevailed themselves

through this period. This means parts of our economy and workforce should transition to increase sovereign capabilities, seek resilience in global and local supply chains and digitise our economy.

The COVID-19 pandemic has driven innovation and overnight changes in how government and businesses operate – leveraging the power of modern digital technologies.

The new normal sees digital transformation accelerate, further opening Australian businesses up to global competition, but equally providing opportunities. Government will have a critical role in enabling the future, not just through investment, but also lead through new regulation, policy and legislation.

Recent events have highlighted the need to compliment the existing IT ecosystem, which includes a strong and valuable multi-national presence, with additional sovereign capabilities in the digital supply chain. Australia must have the skills and innovation ecosystem to support a globally competitive economy as this step change into digital transformation occurs. Sovereign capability includes the critical large investments that multi-national corporations make in Australia and the corresponding IP transfer and significant local employments that comes with these investments. Investments into Australia need to be fostered and encouraged to secure both local capability and economic growth along with measures to support domestic and SME growth; the two are symbiotic.

Successive Australian governments have invested heavily in their ICT capability through both large scale transformation projects and through more agile citizen focused digital projects. These collective investments have proved themselves during the pandemic and enabled the Federal Government to quickly get the cashflow boost to businesses and assist in wages through the JobKeeper scheme as well as assist the unemployed through the Jobseeker payment. The ATO and Centrelink IT payment systems allowed for this rapid policy response which other countries have not been able to match. Continued digital government investment in IT capability and payments

systems should be seen as nation building infrastructure that aid rapid policy design and be responsive to crises.

Those countries, organisations and people that recognise the capability of digital technology on how they can shape and organise themselves will be those that thrive in the 21st Century and beyond. We have a once in lifetime opportunity for major reform and restructure of our economy and society. The AIIA White Paper will seek to give recommendations for governments to consider and adopt.

AIIA White Paper Steering Committee

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About the AIIA

The Australian Information Industry Association (AIIA) is Australia's peak representative body and advocacy group for organisations in the digital ecosystem. Since 1978 AIIA has pursued activities to stimulate and grow the digital ecosystem, to create a favourable business environment for members and to contribute to Australia's economic prosperity.

We do this by delivering outstanding member value by providing a strong voice of influence; building a sense of community through events and education; enabling a network for collaboration and inspiration; and developing compelling content and relevant and interesting information.

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Summary of Recommendations

This section provides a summary of recommendations made throughout the paper. They have been broken into immediate short-term options for governments to consider as part of upcoming budget and policy deliberations that will assist productivity, grow the economy and support job creation. Medium term opportunities are for consideration over the next 12-18 months and longer term present structural and policy changes for consideration in 24 months.

The recommendations in this paper fall broadly into 4 key areas, these being:

- Building a National Digital Backbone
- Building a Digital Australia that is Secure and Resilient
- Building Digital Skills for the future
- Tax, Incentive and Government procurement reform

Short-term

Government continue to promote technology enabled services that support citizen health outcomes and convenience that were accelerated during COVID.

Building a National Digital Backbone

That the Prime Minister urgently appoint a senior Minister, supported by the Department of Prime Minister and Cabinet and reporting directly to the Prime Minister. This Minister's role will be to advise Cabinet and have a whole of government and coordination role centred on the digital economy and policies.

That Government lead, in collaboration with industry, the development of a data sharing code of conduct (along the lines of other industry codes of conduct), that sits within the current privacy legislation and provides guidelines as to how government and industry

handle, manage, protect and use customer and citizen data.

That Government set-up a "digital standards commission" that is responsible for creating and enforcing a set of national standards for digital infrastructure ("the digital backbone" as referenced in Driver 1) across the public and private sector – including setting thresholds at which these standards would apply across industry.

That the Department of Prime Minister and Cabinet and the Department of Home Affairs engage with the AIIA when reviewing the Critical Infrastructure List in determining whether it supports both the immediate and long-term development of the digital economy

Building a Digital Australia that is Secure and Resilient

That Australia's 2020 Cyber Security strategy be extended to include business resiliency and enhance support to Australian SMEs through Cyber awareness and support programmes and continue to invest in Cyber Security skills, in particular the area of Operational Technology security.

That government continue the collaborative learning structure created through the national Joint Cyber Security Centres network to encourage knowledge transfer between government and industry around both cyber resiliency and cyber incidents and extend this support to SMEs

That the Federal Government introduce a technology enablement tax incentive to assist small business to become better technology enabled.

Building Digital Skills for the future

That the up-skilling of industry trainers be accelerated by reducing the mandatory Certificate IV in Training and Assessment course duration to 6 weeks rather than the current average of 11 months.

That a nationally recognised lifelong learning framework with skills passport be implemented to capture digital skills across VET, University and micro-credential certifications.

That the current JobKeeper payment scheme be updated with a portion of the current funding allocated to training credits for employers to re-skill their workforce in critical technical skills

That the Australian Industry Skills Council update the ICT Industry Training Package, so that ICT training and qualifications in the VET sector better reflect industry skills requirements.

Tax, Incentive and Government procurement reform

That AusIndustry consult with at least one relevant industry expert before making a formal finding against a company applicant.

That AusIndustry initiate and complete reviews within 90 days of receiving the R&D Registration application.

That a quarterly credits program be introduced to enable companies to access the RDTI during the income year.

That a new dedicated software development tax incentive be created, separate to RDTI.

Medium-term

Building a National Digital Backbone

That the government and industry partner to drive investment and policy to support regionalisation of government services and industry.

That Government (state and federal) set the example by being a “first mover” investing in and embracing technology and the new ways of working, and in doing so attracting investment from other sources (public and private), supporting competitiveness, enabling scalability and empowering innovation for entrepreneurs and Australian businesses.

That Government to continue, expand on and accelerate open data efforts, recognising the economic value unlocked to all companies.

That Government commit to accelerating the digital inclusion agenda, closing the divide by providing all Australians equal access to the benefits of digital transformation.

That Government support investment in an Australian data driven supply chain by:

- Improve the security and movement of goods by expanding the scope of the proposed National Freight Hub. The proposed Federal Government National Freight Hub platform has been scoped to provide more efficient reporting of freight statistics to Government to enable better economic forecasting and infrastructure planning. There is an opportunity to expand the scope to support a unified platform for the industry to share freight visibility data and ensure privacy for drivers, a major concern across the industry[1] and confidentiality of commercial information.
- Increase the availability of data for government and industry by mandating

vehicle telemetry and a standardised minimum set of real-time data reporting on trucks across light-rigid class and all heavier class and expand acceptable telemetry technology to low cost options.

- Integrate existing individual State, Federal and agency-level biosecurity digitisation initiatives into a single inbound biosecurity automation program under the control of the National Biosecurity Council, with a key focus on a framework to integrate existing disparate platforms and sources of data intelligence.
- Partner with industry to develop smart factories and increased employment.

Accelerate the evolution of Intelligent Transport system infrastructure by:

- a) ensuring new physical transport infrastructure includes future-proofing investment in intelligence to optimise the safe flow of goods and people;
- b) invest in uplift of intelligent management capability for existing freight transport infrastructure; and
- c) leverage the Inland Rail program as a hub for development and testing of new systems, platforms, processes and technology to be later diffused through the broader freight ecosystem in Australia.

Building a Digital Australia that is Secure and Resilient

That Policy reform and investment be initiated to attract global cybersecurity talent to address the immediate skills shortage.

Invest in technology innovators and continue to fund cyber security as one of the six Industry Growth Centres to promote the nascent Australian cyber security ecosystem and promote the adoption of better security hygiene across other industry sectors.

Secure remote working, access to secure infrastructure and robust business continuity solutions are key to supporting Australian businesses but investment in these areas will also stimulate employment, particularly across technology innovators and incubation hubs.

Building Digital Skills for the future

Issue government credit to employees to promote lifelong learning and up-skilling in critical technical skills

Tax, Incentive and Government procurement reform

That the Federal Government introduce a collaboration tax incentive to incentivise business to collaborate with Australian research institutions.

That incentives be provided to support small businesses to invest in cyber security upskilling. That the Federal Government introduce an innovation tax incentive to incentivise non-R&D based innovation.

That the Federal Government introduce a knowledge box tax incentive to encourage business to keep intellectual property.

That the Federal Government introduce a higher level of R&D tax benefit for projects of strategic importance to Australia

Long-term

Building a National Digital Backbone

That Government to initiate a joint task force with private sector, state and federal representatives, to establish a digital backbone strategy and roadmap that can support business and citizen digital infrastructure needs to 2030 and beyond.

- This task force will complete a feasibility study to build out the digital backbone,

establish the national vision, identify the changes required to current digital infrastructure and capabilities, what bodies need to exist to build and run this backbone, and define the investment roadmap to achieving the vision.

- A task force should be established to identify and prioritise macro risk scenarios that Australia could face in the future. These scenarios should be published to enable industry alignment.

In building the digital backbone, Government needs to focus on combining international best practice capabilities with domestic entrepreneurs and service providers, to create the foundation of a “best of breed” digital backbone. To achieve this, Government needs to ensure that it has the right sourcing and contracting policies to enable international businesses to work effectively in consortia with domestic organisations; this approach also supports the stimulus for local innovation. Underpinning this policy approach, Government needs to provide the incentives to retain platforms and capabilities onshore; with an emphasis on fostering and protecting national IP.

That the Federal Government establish a large, long-term and dedicated industry-focused program outside of normal research funding arrangements to:

- support ongoing research;
- stimulate investment in Quantum technologies and industry partnerships; and
- support the retention of existing talent and seek to attract the world’s best researchers and engineers.

That Government partners with industry and other manufacturing advisory groups to create a “digital business platform in a box for manufacturers” for start-ups and small to medium manufacturers.

That Government partners with small business industry associations and e-procurement platform providers to increase the number of SMEs adopting e-procurement and e-invoicing platforms.

Government support a national best practice for Smart Cities to support the Health safety and privacy of Australians and ensuring a framework for future investments.

Building Digital Skills for the future

Reform the Australian Curriculum to prioritise Digital Economy and Industry 4.0 capabilities for primary and secondary school students.

That funding be allocated to schools for training both students and teachers on digital skills, with a particular focus on underprivileged institutions.

Tax, Incentive and Government procurement reform

Review Whole-of-Government agreements so that they can be applied for local companies to streamline procurement and assist their access to government procurements.

That a target be set that 25 per cent of Australian Government spend on IT comes from Australian industry including SMEs by 2030.

That state and federal government procurement arrangements (One Government Buyer) be aligned, and prevent procurement teams from discriminating against a procurement arrangement solely on the basis that it originated from another Australian government.

That methods for procuring Australian innovative unproven solutions should be developed to support and promote start-up and SME involvement with government innovation.



How COVID-19 changed the way Australians live and work

The current global pandemic has accelerated rapid digitisation and globalisation to transform the future of work, workforce and workplace. Australia needs to seize the current opportunity to successfully transition and position our nation as a global leader of high value businesses, skilled citizens and collaborative ecosystems to support a strong economic outlook.

The COVID-19 crisis has created a window into the future of life and work. It has brought into sharp relief that this future will be underpinned by technology. But there is a critical need to develop the skills required to realise this technology-enabled future.

Federal and State and Territory Governments now have a unique opportunity to lead the way when it comes to developing the technology skills to sustain and grow the use of technology across all industries in the post-COVID era. This paper will examine the issue of skills requirements and recommendations in more detail under Driver 2.

A more resilient society

As a consequence of the pandemic we have become more cohesive and more willing to trust public authorities, though it is not yet clear whether this new state of affairs will only be temporary. Citizens have shown a willingness to sacrifice societal freedoms for a short period when it is conducive to securing the health and safety of the wider population. Between February and April 2020, confidence in the Federal Government, and State and Territory Governments rose from 27.3% to 56.6%¹. Social cohesion improved between February and April based on measures that Australians think most people can be trusted, that people are fair and that they are helpful².

In recognition of the adverse impact the COVID-19 pandemic has had both in Australia and internationally, there is growing acceptance of the need to change aspects of our way of life to protect jobs and health. Australians adapted well to the health restrictions that were enforced during the response phase, and are broadly accepting of the fact that testing, tracing, physical distancing and self-isolating will become routine until a vaccine becomes available³.

As a result of its response to the COVID-19 pandemic, Australia has developed a strong international reputation. This Australian success can be leveraged to attract further investment and, at a later phase in the recovery process, skilled migration while other parts of the world are still in the response phase. It is anticipated that there will be broad support pursuing such an opportunity, as public opinion continues to indicate that globalisation is generally good for Australia⁴.

1 *Hardship, distress, and resilience: The initial impacts of COVID-19 in Australia*, ANU Centre for Social Research and Methods, 7 May 2020: https://csrcm.cass.anu.edu.au/sites/default/files/docs/2020/5/The_initial_impacts_of_COVID-19_in_Australia_2020_4.pdf

2 Ibid

3 Hal Swerissen, *The New Normal: how we'll live with COVID-19*, Grattan Institute 13 May 2020 <https://grattan.edu.au/news/the-new-normal-how-well-live-with-covid-19/>

4 COVIDpoll: Lowy Institute Polling On Australian Attitudes To The Coronavirus Pandemic, 14 May 2020 <https://www.lowyinstitute.org/publications/covidpoll-lowy-institute-polling-australian-attitudes-coronavirus-pandemic#sec42551>

Underlying anxieties

Despite the positives, Australians are also more anxious and less satisfied with life. There are concerns over burgeoning unemployment – over one-in-four employed Australians determine the likelihood that they will be unemployed at some point in the next 12 months is greater than 50%⁵. Australians are also less satisfied with life, and more of us are experiencing psychological distress – an increase from 8.4% in February 2017 to 10.6% in April 2020.⁶

It is unclear how long this newfound social cohesion will last, especially with potential generational and socio-economic fault-lines emerging. The economic impact of the COVID-19 pandemic has fallen disproportionately on younger Australians, whereas the health impact most threatens older Australians⁷. Inequality is growing as certain professional sectors – hospitality, the arts and recreation services – have endured a heavier burden than the others⁸. In response to these impacts, from the earliest stages of the response strategy, governments have increased public spending to stimulate the economy and strengthen the social safety net. However, as governments begin to wind back spending, it is anticipated that economic and financial stresses will continue to multiply.

More agile government, delivering more

The manner in which governments respond to crises, both in terms of what they do and how they do it is, is changing rapidly. Federal and State Governments have assumed greater responsibility in determining the COVID-19 response, made faster, far-reaching decisions, and developed new approaches to accelerate service delivery. Governments have shown a willingness for increased economic intervention across a range of sectors, and selectively stepping into those industries experiencing market failure.

The Australian Public Service and state and territory public services rapidly developed new methods for supporting new public services, provide citizens a range of new and expanded health, economic and social services, often doing so in innovative ways. Additionally, the Federal Government is engaging the private sector in new and different ways. In an effort to ensure that Australian industries can contribute to the economic recovery, the Office of the Prime Minister and Cabinet has established the [National COVID-19 Coordination Commission](#).

The sum of all these changes means that, in future, all levels of Australian Government will need to become digital leaders. The broader public sector will need to rapidly invest in digital and technology capabilities to meet emerging challenges in core areas such as health, education and social services. The digital and technological transformation of the Australian public sector will ensure that it is more productive, more proactive in responding to community need and in turn ease government resourcing issues.

5 *Hardship, distress, and resilience: The initial impacts of COVID-19 in Australia*, ANU Centre for Social Research and Methods, 7 May 2020, p.iv https://csrcm.cass.anu.edu.au/sites/default/files/docs/2020/5/The_initial_impacts_of_COVID-19_in_Australia_2020_3.pdf

6 *Hardship, distress, and resilience: The initial impacts of COVID-19 in Australia*, ANU Centre for Social Research and Methods, 7 May 2020, p.v

7 Caitlin Fitzsimmons, *The uneven pain of the coronavirus downturn*, Sydney Morning Herald, 17 May 2020 <https://www.smh.com.au/business/the-economy/the-uneven-pain-of-the-coronavirus-downturn-20200515-p54tf8.html>

8 David Rumbens, *Deloitte Access Economics Weekly Economic Briefing*, 5 May 2020 <https://www2.deloitte.com/au/en/blog/economics-blog/2020/sharing-the-burden.html>

Work of the future

It is anticipated that one of the consequences of the COVID-19 pandemic will be attitudes towards work. Work will increasingly become about outputs and value, rather than time and activities. The onus will be on businesses to adapt new measures of success and new methods of organisation to succeed in a world with a renewed focus on working remotely.

Work will no longer be defined by a physical location and workplace engagement will be more than just physical presence⁹. NBN Co research indicates that a majority of people expect to work more home after the crisis has ended¹⁰. Organisations will challenge the idea that work should be performed in a specific physical location by exploring ways to digitize some or all work through advances in robotics, IoT, cloud and other technologies¹¹. Collaboration tools and platforms will also support dynamic work locations and asynchronous collaboration¹². Additionally, the recent experience of COVID-19 should motivate organisations to fully embed wellbeing into every aspect of the design and delivery of work itself¹³. Driver 1 will look deeper in the aspects of changes in the workplace due to COVID-19 and how digital technologies played a critical role in productivity during this time.

With the clear support that technology has provided to demonstrate the unessential nature of physical co-location of the workforce, government should focus policy on the regionalisation of government services and industry. This should also be supported by the design and new business and government service models that incorporate regionalisation and regional economic development.

State government can especially play a lead role in promoting links to centres of excellence in regional areas leveraging future infrastructure investments as well as tertiary and R&D linkages. This would also take pressure off Australia's main capital cities.

RECOMMENDATION

Examine how government and industry can partner to drive investment and policy to support regionalisation of government services and industry.

Connectivity and mobility patterns

These changes to work and life balance have manifested in increased localisation. While this trend is likely to ameliorate as we emerge from the crisis response, it will still have some impact on how we connect and move in the future. 70% of Australians say they are consciously support local businesses and 70% say they would like to support more local businesses but were restricted by their limited online presence¹⁴.

9 *Reinventing work after COVID-19*, Deloitte's COVID conversations, <https://www2.deloitte.com/au/en/pages/covid-19/articles/workforce-covid-conversations.html>

10 nbn Australian Covid-19 Behavioural Change Survey: 8 in 10 experiencing better work/life flexibility, 26 May 20 <https://www.nbnco.com.au/corporate-information/media-centre/media-statements/behavioural-change-survey>

11 *Increasing Organizational Resilience in the face of COVID-19*, Future of Work – Deloitte US, March 2022, p.5
12 Ibid

13 *Returning to work in the future of work*, Deloitte Insights, 15 May 2020

14 nbn Australian Covid-19 Behavioural Change Survey: 8 in 10 experiencing better work/life flexibility, 26 May 20 <https://www.nbnco.com.au/corporate-information/media-centre/media-statements/behavioural-change-survey>

The NBN has performed well during COVID-19, largely coping with surging demand¹⁵; congestion, network faults and outages remained at relatively low levels¹⁶. However, some trade-offs were required to reach this outcome. For example, the nbn requested online streaming services to reduce bandwidth in order to ease network congestion¹⁷. With an increasing number of Australians working remotely – and potentially more broadly distributed in the longer-term if there is greater population movement to regional and rural Australia – further investment will be required to ensure both bandwidth and network reach are able to support community need¹⁸.

Australia's mobile networks have coped similarly well with the extra demand for capacity. Some of the wider societal changes COVID-19 has driven will see changes in network traffic and geographic demand. Business strategies predicated on rolling the network out in high population density areas may need to be re-visited if localisation trends gather pace¹⁹. Conversely, the COVID-19 crisis has reinforced the need to build redundancy into supply chains and this changed risk tolerance may carry over to critical infrastructure. 5G may become a more attractive option within some industries, such as mining and logistics. Some providers may position 5G as a failsafe strategy for any additional strain placed on the NBN.

Privacy and security will become increasingly important as more digital services become embedded as part of our daily life. Use of online services has grown rapidly during the COVID-19 pandemic, and whilst many services will return to their physical operations it is expected that a number will continue to operate online. Trust in these new services will easily be eroded if flaws are exposed, so it is in the long-term interests of the Federal and State and Territory Governments and industry to invest more in privacy and security. These issues are looked at in more detail in Driver 3.

Education diversification and innovation

The COVID-19 pandemic poses serious short – to – medium term challenges for the Australian Higher Education Sector. At present, the sector is attempting to contend with reduced revenue due to restrictions on international students entering the country and increased demands for online learning.

Regardless, opportunities remain as Australia's prompt response to the COVID-19 pandemic relative to those in other key international student markets (i.e. United Kingdom, United States) could be leveraged to promote the sector once international travel resumes. The sector can use this downturn to pursue digital and cloud transformation for legacy systems, improve efficiency and flexibility, and diversify revenue streams. However, due to current revenue issues pursuing such a strategy may not be feasible at present.

EdTech presents an opportunity for growth in a weakened market, as opportunities exist in areas such as AR/VR, AI, robotics, machine learning and blockchain. These technologies have the ability to connect education with the learning needs of student and employees, and these can be done so at speed and at scale.

15 Chanticleer, 'NBN on time and passing the COVID test', Australian Financial Review, 14 May 2020 <https://www.afr.com/chanticleer/nbn-on-time-and-passing-the-covid-test-20200514-p54sy9>

16 nbn Australian Covid-19 Behavioural Change Survey: 8 in 10 experiencing better work/life flexibility, 26 May 20 <https://www.nbnco.com.au/corporate-information/media-centre/media-statements/behavioural-change-survey>

17 Netflix to crunch streaming bandwidth to ease broadband congestion, Sydney Morning Herald, 24 March 2020 <https://www.smh.com.au/business/companies/netflix-to-crunch-streaming-bandwidth-to-ease-broadband-congestion-20200324-p54ded.html>

18 AllIA Member Survey Response Summary, 14 April, p.6

19 Our New Reality: Predictions after COVID-19, KPMG Australia, May 2020 <https://home.kpmg/au/en/home/insights/2020/05/predictions-after-covid-19.html>

Vocational education can be a key enabler of Australia's post-COVID economic recovery, as it will be essential to re-skill and upskill workers in the hardest hit professional sectors. Additionally, if governments seek to encourage the development of certain industries to resolve specific supply chain issues, such as niche manufacturing, vocational education opportunities will be essential. Governments could consider providing incentives to those receiving JobKeeper to re-train and upskill by providing viable vocational education options. These issues on education and training are further explored in more detail in Driver 2.

Health and technology

The crisis is accelerating the trend towards virtual care²⁰, with the home more likely to become more of a hub for healthcare.

In order for this transition to be viable for a longer-term basis, it will be necessary for healthcare providers to leverage the full capabilities of the IoT, data analytics and connectivity. Additionally, it will be essential that there is coordination and integration across multiple data sources and to ensure that healthcare professionals have the requisite technological skills to fully utilise these systems.

Such a trend is most likely to be supported by insurance companies, who will need to consider their own digital transformation strategies as a consequence of increased demand in the wake of the pandemic. A number of insurers are expected to experience a cash windfall due to lower claims during the response phase, and are expected to invest in improved integration with healthcare providers.

Interim government funding for eHealth with a specific focus on mental health services has been vital during the pandemic, and its long-term viability is contingent on Federal Government and State and Territory Government decisions on funding. There are innovative opportunities to support wider

community access to mental healthcare services, such as chatbots to determine some treatment pathways,. Ongoing government support and funding would encourage healthcare providers to invest in and prototype such technologies to address anticipated future, in particular as Australians come to terms with the effects of the COVID-19 pandemic.

RECOMMENDATION

Government continue to promote technology enabled services that support citizen health outcomes and convenience that were accelerated during COVID.

20 Hal Swerissen, *The New Normal: how we'll live with COVID-19*, Grattan Institute 13 May <https://grattan.edu.au/news/the-new-normal-how-well-live-with-covid-19/>



Harnessing technology and innovation to kick-start the economy

Embracing a new working culture

The COVID-19 pandemic forced organisations to rapidly change the manner in which they operate; within a few weeks organisations were forced to either close or decrease operations and to introduce new systems to ensure that employees were able to transition to working remotely for an indefinite period of time. Significant disruptive events, whilst not necessarily introducing new change, are often the catalyst for accelerating the pace of existing change and the COVID-19 pandemic is one of those events.

Whilst the recent transition has been disruptive, many organisations have found remote working also presented new opportunities. A recent study commissioned by NBN co, indicates that 81% of participants found working remotely positively impacted their work/life balance, and 67% expect to work remotely even after organisations return to normal operations²¹. It is anticipated that the COVID-19 pandemic will act as a catalyst for altering work practices within a number of organisations. They will never go back to their previous ways of working and remote working will become standard practice within organisations moving forward.

The COVID-19 pandemic has seen an accelerated uptake of emerging and existing technologies to enable employees to work remotely. The pace of change is illustrated by the usage numbers for video conferencing technologies, such as Zoom. In December 2019 there were an average of 10 million daily meeting participants on Zoom, COVID-19 saw these numbers rise to over 300 million daily meeting participants by April 2020²².

Technology innovations, including virtual assistants and chatbots, have emerged within

organisations to enable and promote frequent communication both with employees and customers. Virtual assistants can be set up quickly, making them an attractive option for many organisations during this time. In a recent global executive survey, 97% of executives said that their organisation will deploy more AI tools in the next two years than they had prior to the pandemic²³.

In the post-COVID-19 world, organisations will need to further embrace technology and innovation so as to improve the productivity and efficiency of their workforce, both for office-based and remote staff.

It is important to note that a healthy remote workforce extends beyond network-access tools and meeting software. In parallel, organisations have been pressured to develop 'working-from-home models' that empower and enable their employees to work productively and efficiently. Sustaining communication, collaboration, capabilities and culture in a virtual operating model is now mandatory for organisations around the globe.

The challenge arises for organisations to establish new cultural norms that come with remote working in our new normal. The COVID-19 pandemic has helped to break down the perception that it is not possible to be productive working remotely.

21 NBN, *Behavioural Change Survey: 8 in 10 experiencing better work/life flexibility*, April 2020
 22 <https://blog.zoom.us/wordpress/2020/04/22/90-day-security-plan-progress-report-april-22/>

23 IBM Institute for Business Value, *Beyond the Great Lockdown: Emerging Stronger to a different normal*, 10 April, p5

Increased productivity through technology to support GDP recovery

Per Capita GDP performance is an important measure of the economy's health, indicating a nation's productivity. Protecting productivity is critical in uncertain times, and even more so in the face of new challenges such as remote working and disrupted supply chains.

In Australia, both the resources and agricultural sectors are major contributors to the nation's per capita GDP performance. As global economic conditions deteriorate, or new trade situations occur, the demand for Australian resources and agricultural products is expected to come under increased pressure.

The impact of this pressure is also expected to be felt across the economy, with other industries such as financial services, retail, health and education experiencing similar secondary effects.

A decline in overall GDP outcome and per capita productivity, risks eroding many of the benefits Australian's enjoy, including a world-class health system, universal access to education, and investment in infrastructure to support the community.

To address this risk, the Australian economy needs to focus on improving overall efficiency and individual outputs of the Australian worker, on average. To do this, the old adage of "work smarter, not harder" applies - and to work smarter in a 21st century economy means to embrace the integration of technology and continuous innovation into the workforce²⁴.

A comparative analysis of the G20 economies shows that Australia's GDP per capita is one of the highest in the world (see figure 1). However, when this is broken down, some industries contribute higher productivity per capita than others. For example, according to the RBA, the resources sector makes up almost 20% of the

nation's exports, however only employs 2.4% of the total Australian workforce.

If such high per capita sectors experience a downturn, other high employer sectors such as health, construction, financial services, education and travel will need to improve their efficiency to be able to protect Australia's overall productivity.

Analysis of countries that have higher per capita GDP, but don't rely on resources or agriculture, indicates that there is a potential relationship between productivity and domestic innovation and technology maturity. This is evident in particular in economies that have grown their productivity significantly in the past decade, such as Singapore, UK, France and Germany.

If this relationship is causal, then the Australian economy needs to invest in technologies that improve worker productivity, such as automation and artificial intelligence, removing impediments to continuous improvement and innovation, and rethinking policies, regulations, and business models to remove unproductive practices.

In particular, the sectors that are the big employers of Australians - health, construction, financial services, education and travel, require the most effort, and therefore the most help from government, to rapidly transform their businesses with a focus on productivity.

24 <https://www.rba.gov.au/speeches/2019/sp-so-2019-06-05.html#:~:text=The%20resource%20sector%20makes%20a,other%20parts%20of%20the%20economy>

Gross domestic product (GDP) Total, US dollars/capita, 2019 or latest available

Source: Aggregate National Accounts, SNA 2008 (or SNA 1993): Gross domestic product

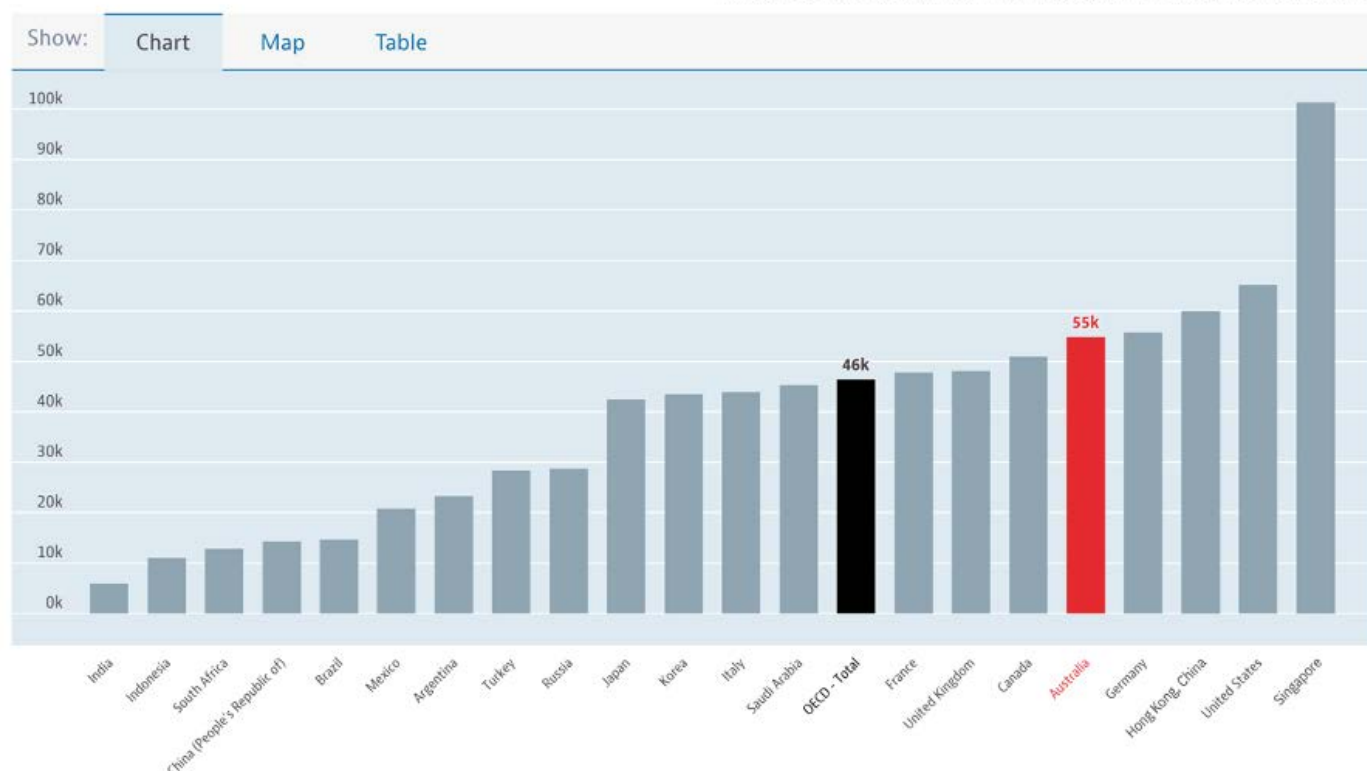


Figure 1: Growth Domestic Product (Per Capita) Comparison, showing Australia as one of the highest in the world²⁵

Harnessing the accelerated digital transformation

The shift to what we anticipate will become “business as usual” for most organisations in the future, cannot be achieved without a comprehensive national digital and technology infrastructure.

In our new normal, it will be vital for organisations to make the most of digital technologies to create operational resilience and flexibility; moving their workforce past crisis-neutral status toward becoming nationally and globally resilient. Historically, organisations have embraced new technology and digital transformation in order to stave off competition. The COVID-19 pandemic has forced many organisations to realise that such a strategy is now essential to ensure their long-term viability.

We have seen implementation timeframes reduced significantly, with changes that would previously have taken years being introduced

within weeks. Twitter, the social network company, was amongst those organisations who rapidly shifted their workforce to remote working during the pandemic, the success of this move prompted Jack Dorsey, the founder of Twitter to state “The past few months have proven we can make remote working work.”²⁶ So if our employees are in a role and situation that enables them to work from home and they want to continue to do so forever, we will make that happen.”

Historically, governments have invested primarily in physical infrastructure, such as roads, railways, bridges and buildings.

²⁵ <https://www.sbs.com.au/news/twitter-employees-can-work-from-home-forever-if-they-want-ceo-says>

²⁶ <https://data.oecd.org/gdp/gross-domestic-product-gdp.htm>

In the post-COVID-19 world, governments will need to reconsider their approach to infrastructure, specifically facilitating a strategic shift to ensure that digital technology becomes essential infrastructure and re-purposing investment accordingly.

In the same way that government partners with private entities to build physical infrastructure, the same should be considered for our digital infrastructure, with a corresponding rethinking of the business and investment models for our new digital capabilities.

To truly harness the power of technology, Australian industries and government will need to embrace a more open business and technical platform approach that leverages new and emerging technologies, to meet the growing complexity of citizen demand, societal change and regulatory needs. At the same time ensuring that our digital infrastructure is secure and resilient.

These business and technology platforms will be built around key foundational elements:

- **Embrace Cloud computing** - Organisations must utilise the power of the cloud and cloud services as they have a foundational role in enabling AI and the next wave of technologies through scalability, and agility with processing data.
- **Modernise legacy systems** - Legacy systems and IT architectures that organisations have assembled over decades can complicate efforts to install advanced technologies. Organisations need to modernise their backend processes, phase out legacy systems and keep pace with the customer and citizen facing channels.
- **Optimise access to data and information** – The access to data and information needs to be optimised, so that useful analytics

and insights can be drawn to give a better view and understanding of our citizens and customers, enabling tailored and proactive permission-based engagement for services.

This new technology infrastructure gives both governments and organisations the opportunity to reassess their business models. In doing so there are three key concepts that should be considered:

1. **A top-to-bottom connected organisation: “Customer” Experience to the core**
The entire organisation is connected from top to bottom, with an outside-in focus on delivering customer and employee experience and value, through to dynamic and AI-enabled business processes, down to next-generation applications providing core services and insight on secure cloud environments.
2. **Business platforms are the building block of the organisation**
The future operating model is established around the “business platform” which is a set of services that can be owned, orchestrated or outsourced to achieve the objectives of an organisation.
3. **Business platforms combine data, workflows and expertise to drive citizen value**
Each business platform is designed around people, cognitive workflows, internal and external data, and technologies, including exponential capabilities such as artificial intelligence, automation, IoT and blockchain.

Treating technology as a “National Asset”, working with private sector to support digital technology as core infrastructure, Australia has the opportunity to transform our country into a leading global digital player, along with becoming a destination of choice for innovators.

Digital infrastructure and data go hand in hand; once the digital infrastructure is in place, organisations and governments need to leverage and utilise data in a permission based, trusted, transparent and secure manner. With only 20% of the world's data searchable and

80% sitting within organisations and behind firewalls, the potential is incredible²⁷. Unleashing the power of new technology will enable organisations to develop deeper insights, make exponentially better decisions and engage customers as never before.

RECOMMENDATIONS

1. Government to initiate a joint task force with private sector, state and federal representatives, to establish a digital backbone strategy and roadmap that can support business and citizen digital infrastructure needs to 2030 and beyond. This task force will complete a feasibility study to build out the digital backbone, establish the national vision, identify the changes required to current digital infrastructure and capabilities, what bodies need to exist to build and run this backbone, and define the investment roadmap to achieving the vision.
2. In building the digital backbone, Government needs to focus on combining international best practice capabilities with domestic entrepreneurs and service providers, to create the foundation of a "best of breed" digital backbone. To achieve this, Government needs to ensure that it has the right sourcing and contracting policies to enable international businesses to work effectively in consortia with domestic organisations; this approach also supports the stimulus for local innovation. Underpinning this policy approach, Government needs to provide the incentives to retain platforms and capabilities onshore; with an emphasis on fostering and protecting national IP.
3. Government (state and federal) needs to set the example by being a "first mover" investing in and embracing technology and the new ways of working, and in doing so attracting investment from other sources (public and private), supporting competitiveness, enabling scalability and empowering innovation for entrepreneurs and Australian businesses.

²⁷ <https://hbr.org/2017/07/dont-try-to-protect-the-past>



Supporting local skills development to secure the future

Future of work

The Future of Work provides Australia the opportunity to transition into more profitable domestic businesses, producing high demand products and services by leveraging the global trends of Industry 4.0 and the Digital Economy.

Industry 4.0 connects the physical world with the digital world through technology such as automation and robotics to enable smart factories and automated manufacturing.

The Digital Economy leverages cloud computing, AI, IoT and data to support new and disruptive business models that offer a major boost to Australia's economic competitiveness. The Digital Economy has provided the platform for new businesses to challenge incumbent business and transform industries globally.

In McKinsey's 2019 report, Australia's Automation Opportunity: Reigniting opportunity and inclusive income growth, the firm highlighted the economic potential to add \$1.1 trillion to \$4 trillion to the economy over the next 15 years, providing all Australian's with \$4,000 to \$15,000 in additional income per year by 2030²⁸. McKinsey estimates that 25-46% of current work activities in Australia could be automated by 2030²⁹.

The Australian government has assessed the need for Australia to embrace Industry 4.0 to boost our nation's economic competitiveness to "... be at the vanguard of this fourth industrial revolution and support its SMEs and advanced manufacturing sector to increase its competitiveness."

In 2019, the Federal Government assessed the need to embrace Industry 4.0 and the

Department of Industry, Science, Energy and Resources commissioned Australia's Tech Future to develop Australia's Digital Economy Strategy³⁰, with a focus on 4 key areas:

- developing Australia's digital skills and leaving no one behind
- how government can better deliver digital services
- building infrastructure and providing secure access to high-quality data
- maintaining our cyber security and reviewing our regulatory systems

The skilled workforce required to respond to these future needs was lacking pre-COVID-19, and the effects of the pandemic has only served to exacerbate this gap.

Over the past decade, it has been necessary for ICT companies to source skilled professionals from overseas relating address domestic skills deficits in areas such as applications development, coding and analytics –skills which will be even more in-demand as we emerge from the pandemic.

Cyber security skills were already in demand prior to the pandemic, and as a consequence of the prompt transition to online service provision this deficit is expected to widen. In 2019, AustCyber had estimated that nearly 18,000 more roles would be required by 2026. The impact of COVID-19 is likely to heighten skills demand as cyber security becomes more important.

²⁸ <https://www.mckinsey.com/>

²⁹ Ibid

³⁰ <https://www.industry.gov.au/strategies-for-the-future/participating-in-the-digital-economy>

Critical national capabilities recommended for investment in technology	Key Needs
Advanced manufacturing	Capacity, agility, digitisation and workforce development
Health	Domestic capability, supply chain resilience, digitisation, workforce development
Energy	Clean electricity, accelerated transformation of the electricity market, system and infrastructure, and hydrogen generation and storage
Information & communication technology	Capacity of the NBN, digital skills
Agribusiness	Biosecurity, cross-sectoral connectivity, traceability

A number of sectors that will be crucial to Australia's recovery will rely heavily on technology skills. The Australian Academy of Technology and Engineering has identified sectors with critical needs:

Future of workforce

For Australia to position as a global leader in the Future of Work, we need embrace a national learning culture through investing in a cohort of skilled trainers to up-skill both new and existing workers with the digital skills required for the Future of Workforce.

In the short to medium-term Australia will also be unable to rely on the skilled migration, so there is an urgent need to redeploy and reskill within Australia. To meet these immediate demands requires short, industry-based training through the VET system or directly from industry and platform providers. The Future of Workforce includes 5 key technical skill sets, namely Artificial Intelligence & Data, Cloud Computing, Cyber Security, Automation and Internet of Things. To produce a workforce that can transform and disrupt industry, we need employable industry competencies that augment the technical skills sets with soft skills such as leadership, teamwork and communication as well as leveraging business innovation and entrepreneurship.

Internationally, a number of countries are developing strategies to incentivise and attract skilled technology professionals to the teaching profession, so as to support skills development for future generations. The challenge is attracting ICT professionals, as industry salaries are significantly higher than VET or University staff. Combined with the individual's wealth of industry experience and aptitude, candidates are unincentivized to certify their qualification via a lengthy and expensive course to teach at an income lower than their industry salary.

Beyond traditional vocational and tertiary models, there are advantages to models that incorporate on-the-job training in addition to or instead of class-based instruction³¹. Success in this area could be bolstered by offering 'digital apprenticeships', which would provide a way to build skills in a work environment³². Universities have piloted some approaches in this area and should be encouraged to further grow this model.

³¹ *The path to prosperity: Why the future of work is human*, Building the Lucky Country No.7, June 2019, p.iv

³² *The path to prosperity: Why the future of work is human*, Building the Lucky Country No.7, June 2019, p.31

Delivering such models requires partnership between governments, educational institutions and industry. There has been some success with such schemes so far, and industry partners have expressed some interests in discussing ways to broaden such a scheme.

Partnerships between academia and industry needs to go beyond joint research and encourage greater mobility between the sectors. The movement between sectors tends to be one-way – from academia to private sector. Universities, industry and government need to consider measures to make this a two-way street.

RECOMMENDATION

Accelerate the up-skilling of industry trainers by reducing the mandatory Certificate IV in Training and Assessment course duration to 6 weeks rather than the current average of 11 months.

RECOMMENDATION

Implement a nationally recognised lifelong learning framework with skills passport to capture digital skills across VET, University and micro-credential certifications.

RECOMMENDATION

Issue government credit to employees to promote lifelong learning and up-skilling.

The emergence of microcredentialling

The concept of microcredentialling has emerged in response to the skills gap caused by new technologies. While the primary rationale of microcredentialling is to be able to accredit the attainment of new skills, there is, however, no current single definition accepted by education providers (at all levels), employers (and their representative employer peak bodies), professional associations or government policy makers. This definitional discrepancy needs to be recognised in

formulating any coherent policy agenda. Indeed, as different organisations in the 'skilling value chain' progress towards developing their own microcredentialling approach, the danger lies in further reducing the effectiveness of micro-credentials as a skills-based lever for career development and employer needs.

While not a specific requirement, we have a situation where higher education providers largely focus on an approach to microcredentialling with the AQF as a foundation (that is, comprising minimum volumes of learning hours, assessments, and definition 'learning outcomes' often without reference to specific skills gained). As a consequence, educational institutions are now separating 'Digital Badging' from formal microcredentialling courses as they are not compatible under this AQF framework approach. At the same time this is a mismatch with industry views where digital badging is but one form of microcredentialling.

Undoubtedly, branding and accreditation of both digital badges and formal microcredentialling offers enormous value to the individual because it allows the individual to demonstrate their attained in-demand competencies, whilst at the same time leveraging on the reputation of the institution. Similar benefits are provided through credentials provided by individual employers themselves, such as particular technical skills relating to technical capabilities of their firm (i.e. AWS cloud certification).

However, while accreditation of credentials delivers value for the individual, it is only when there is both industry-wide acceptance and recognition credentials are aligned to skills, that true value can be created. If such recognition and transferability can be achieved credentials (both in the form of digital badges and formal AQF-aligned micro-credentials) can become 'stackable' to build on previously acquired credentials to progress into award pathways and achieve industry-wide recognition.

Continuous learning through microcredentialling and short courses will be essential for the existing workforce.³³ Microcredentialling allows skills that are highly valuable to employers to be formally recognised.³⁴ However, as existing Australian providers face capacity constraints and competition from sophisticated overseas providers, such as Massive Open Online Courses (MOOCs), it will be essential for both industry and government to work with providers to establish the policy framework and provide relevant incentives for them to scale to meet growing demand.

It is clear that the system of training to address skills needs in demand by employers is fractured; both the policy environment and the qualification levers are siloed and inconsistent.

While there are positive signs that market adjustments will occur over time, driven by changes in government policy setting, the agenda must to be defined by the representative voices of employers across industry. This requires robust and proactive responses by employers as a representative group, to adequately re-shape the skills support environment as well as alignment across the skill provision ecosystem.

The spike in unemployment created by COVID-19 has had a devastating impact, but it presents an opportunity to accelerate the upskilling and re-training of workers to move into technology-focused roles. Federal and State Governments should explore giving incentives to study technology skills for those on JobSeeker and other unemployment benefits. The Prime Minister announced³⁵ on 26th May the proposed JobMaker scheme which in part looks at incentives to get people into training. These incentives could come in the form of credits for study or a different level / duration of payment

in return for completion of relevant training. The result will be a more skilled workforce as the economy recovers.

RECOMMENDATION

Update the current JobKeeper payment scheme with a portion of the current funding allocated to training credits for employers to re-skill their workforce.

Importing skills and the need to invest in cybersecurity skills

At present, the digital skills gap is substantial and it is not yet possible to rely on domestic professionals to resolve this issue. It is therefore necessary to continue to attract international talent to supply core skills and expertise.

Skilled Australians living overseas represent a rich vein of talent to tap into for technology skills. Prior to the COVID-19 pandemic, an estimated one million Australians living and working overseas. While the number is likely to have declined, many are still abroad working in technology and technology-affiliated industries. The Federal Government should consider an incentives-based scheme to attract skilled workers back to Australia, potentially in the form of tax relief.

Where Australia is unable to develop relevant skills domestically or entice Australians to return to the domestic workforce, it will be necessary to continue to attract international talent to address the digital skills deficit for the foreseeable future.. Australia should seek to leverage its advanced position in combating COVID-19, and opportunities for career advancement as drawcards for skilled migration.

³³ *Increasing Organizational Resilience in the face of COVID-19*, Future of Work – Deloitte US, March 2022, p.5

³⁴ *The path to prosperity: Why the future of work is human*, Building the Lucky Country No.7, June 2019, p.32

³⁵ <https://www.pm.gov.au/media/address-national-press-club-260520>

The Australian government has recognised both the US and Germany as global leaders in the Prime Ministers Industry 4.0 Taskforce and we now highlight the Cyber NYC initiative. The announcement by the New York City Economic Development Corporation of \$30 million investment of city funds, coupled with up to \$70 million in private investment to create up to 10,000 high value jobs and to transform New York City “into a global leader of cybersecurity innovation and talent to combat one of the world’s greatest threats” (<https://edc.nyc/program/cyber-nyc/>).

The Cyber NYC initiative is collaborating closely with industry including global talent. Israel’s [SOSA](#) is implementing the “state-of-the-art Global Cyber Center, launched in partnership with the City of New York, and Corporate Innovation program connects the international community of corporations, investors, startups, and talent to foster collaboration and innovation in New York City’s growing ecosystem”. While Jerusalem Venture Partners is supporting the start-ups scene and bringing the best talent from Israel (<https://www.jvpvc.com/press-releases/new-york-city-jvp-launch-international-cyber-center-transform-nyc-cyber-innovation-capital-word/>).

The global effort is supported with local multi-nationals Goldman Sachs, Mastercard and PricewaterhouseCoopers participating in advisory roles and with training and hiring.

The real driver behind a project like Cyber NYC is the nation’s urgent need for improved cybersecurity at all levels of corporate and government operations.

The Department of the Prime Minister and Cabinet led the The Cyber Security Review which highlighted that cybercrime is costing the Australian economy in excess of \$1 billion annually in direct costs alone. (<https://www.acic.gov.au/about-crime/organised-crime-groups/cybercrime>)

Australia is currently not meeting demand for these essential cybersecurity skills to protect our nation. The skill shortage is liable for greater than \$400 million in revenue and wages lost. Australia has estimated 2300 workers unfilled in cyber security currently, which is expected to increase in demand by an additional 17,600 professionals by 2026. (<https://www.institutedata.com/blog/is-cyber-security-in-demand-in-australia/>)

RECOMMENDATION

Policy reform and investment to attract global cybersecurity talent to address the immediate skills shortage.

RECOMMENDATION

Partner with industry to develop smart factories and increased employment.

Future of school

Long-term success in developing the required skills begins in the primary and secondary education systems. We need Australian school leavers to be more interested in STEM, in particular computer science and technology. Federal and State and Territory Governments should commission an audit of the National STEM School Education Strategy to 2026 to consider what changes are required to elevate the importance of technology and digital skills in light of the COVID-19 pandemic. An important aspect of this audit will be the supply of qualified teachers – some 30% of STEM teachers in years 7-10 do not have a qualification in the subject.³⁶

³⁶ ‘Experts say a lack of qualified teachers is turning students off maths’, The Age, 10 October 2019
www.theage.com.au

Closing the skills gap can be greatly aided by addressing the gender imbalance in STEM. The challenge is systemic, beginning in school. Female students are enrolling in Year 12 ICT and Design and Technology subjects at comparatively low rates compared to males (26.3% versus 39.4% in 2017) and the rates continue to decline.³⁷ This flows through to university, where almost 80% of males complete a STEM qualification compared to 20% of women.³⁸

Every school curriculum area should cultivate students' individual creativity and enable them to master the critical thinking, communication, and collaboration skills, required for later academic, career, and life success. Primary and secondary schools should expand assessment beyond memorisation and recall and move to a more multi-dimensional approach to assessment.

Technology companies and other employers deeply value these competencies among their own workers and recognise the growing worldwide demand for these critical skills. Employers and teachers alike agree that these skills are not adequately taught in schools.

Addressing this massive workforce need at scale will require meaningful changes to education policies and practices, including providing schools with the flexibility and resources required to more richly engage and support students in their learning.

RECOMMENDATION

Australian Curriculum reform to prioritise Digital Economy and Industry 4.0 capabilities for primary and secondary school students.

RECOMMENDATION

Funding should be allocated to schools for training both students and teachers on digital skills, with a particular focus on underprivileged institutions.

Future of research

To ensure that Australia is well positioned to drive economic benefits in a post-COVID environment, we must focus on areas of strategic national advantage. Fortunately, Australia holds a key competitive advantage in a technology that may usher in future waves of digital transformation – Quantum Computing.

Since the late 1990s, research at Australian institutions such as UNSW, ANU, and the University of Melbourne, has built a domestic capability that places Australia within a handful of countries well-prepared to take advantage of this next wave. Companies such as IBM, Intel and Microsoft have already invested in Australian quantum research partnerships because they recognise Australia's globally significant expertise in what is likely to be the next forefront of computing technology.

According to a recently published CSIRO Futures report³⁹ - quantum computing and related quantum technologies could become a \$86-billion-a-year industry by 2040. More importantly, with a coordinated and strategic approach, leveraging our existing advantages, Australia's share of that new industry could generate 16,000 jobs and be worth more than \$4 billion per annum to the Australian economy.

³⁷ *Women in STEM at a glance, Advancing Women in STEM Strategy*, Australian Government Department of Industry, Science, Energy and Resources www.industry.gov.au

³⁸ *Women in STEM at a glance, Advancing Women in STEM Strategy*, Australian Government Department of Industry, Science, Energy and Resources www.industry.gov.au

³⁹ <https://www.csiro.au/en/Showcase/quantum>

RECOMMENDATION

That the Federal Government establish a large, long-term and dedicated industry-focused program outside of normal research funding arrangements to:

- support ongoing research;
- stimulate investment in Quantum technologies and industry partnerships; and
- support the retention of existing talent and seek to attract the world's best researchers and engineers.

RECOMMENDATION

That the Australian Industry Skills Council update the ICT Industry Training Package, so that ICT training and qualifications in the VET sector better reflect industry skills requirements.



Meeting evolving customer and citizen needs

Bridging the “technology divide” - Meeting citizen and customer expectations and demands

The COVID-19 pandemic has seen a rapid increase in transitioning to different ways of working by citizens. A knock-on effect has been an accelerated need for organisations to effectively manage increased contact volumes and enable seamless access to services across multiple different digital channels.

As the Federal Government increased unemployment benefits, there was increased citizen demand to register and acquire more information on the new payments and eligibility requirements. As users were encouraged to register for claims online, unprecedented user volumes saw existing infrastructure struggle to meet public demand as 100,000 people simultaneously tried to access online services.⁴⁰

As the effects of the pandemic contributed to increased demand for online communication tools, we have seen a breaking down of barriers on the use of digital channels, with unprecedented numbers embracing new technologies in ways never seen before; 75% of people using digital channels for the first time indicate that they will continue to use them when things return to “normal.”⁴¹

However, technology is not the only enabler in meeting the evolving needs of the Australian community. It is also essential that Federal, State and Territory Governments work to address the digital divide across Australia in order to capitalise on this emerging momentum. More than 2.5 million Australians currently do not have internet access⁴², whilst many of those who do currently lack the skills to fully benefit from this connectivity. Australian governments and civil society groups need to ensure that

all people are empowered and enabled to access digital tools and have the ability to fully utilise relevant technology.

Accessible technology respects the uniqueness of every individual; our focus should be on advancing all of the human condition, regardless of age and ability. Moving forward, organisations must place accessibility at the forefront of the design and development process to ensure that users have more personal and adaptive experiences.

Government and industry working in partnership will have a key role to play in addressing this digital divide.

Critical role of data in tailoring customer services

In future, customers will expect services to be tailored to their specific needs and personal preferences. This includes knowing who they are, responding to specific demands, and proactively personalising the experience to what is relevant to them, especially for our more vulnerable citizens. Technology and data are only as good as the insights they gain in order to better respond to customer needs. Accordingly, organisations will need to review their existing platforms to determine whether they are able to meet such demands.

⁴⁰ <https://www.theguardian.com/>

⁴¹ <https://www.mckinsey.com/>

⁴² <https://www.csi.edu.au/>

However, in order to provide differential, tailored services, both the government and organisations need access to the appropriate data and information, and citizens need to be prepared to share that information. Historically, access to such data has been a significant challenge, given the plethora of systems and organisations who hold the data, along with privacy laws and the willingness of citizens to “openly” share their data.

Government and organisations must seek to overcome this barrier in order to provide a truly optimised experience. There are key elements that need to be addressed to be successful, such as the concept of “value exchange” – whereby there must be a perceived benefit for the individual to allow access to their data. In a recent global survey, 84% of respondents said they are open to sharing their personally identifiable information and 41% would be comfortable with it being shared between government agencies in exchange for more personalised customer service.⁴³

Additionally, it is critical to instil trust that organisations have the requisite technology and controls in place to secure personal data and provide information on how data is used. In a recent Digital Trust Survey, only 25% of respondents believe companies handle their data responsibly.⁴⁴

The role of privacy and trust in realising the potential of data

When it comes to data, governments are more accountable to their customers than their industry counterparts. In sharing data there is not only an expectation of “value-exchange” on the part of citizens, there is also an implicit ‘contract’ between themselves and the government – if they allow access to their data, the government will in return ensure it is kept safe and secure.

As an example, the Federal Government’s COVIDSafe app surpassed 1.13 million downloads within the first 12 hours.⁴⁵ The latest government data show over 6 million Australians have now downloaded the app. However, despite the app’s early success, privacy and security concerns, along with concerns over how and where data is held, lingered and remained an issue for some⁴⁶.

It is evident that there is need for all levels of government to build trust within our society, to provide tangible guarantees to assure citizens that personal data shared with the government is secure, and is used solely for the purpose of drawing useful data insights to improve public services and service provision.

In order to achieve these aims, it is necessary to review data retention and usage, what is required to provide effective public services and how this is balanced with ‘consumer’ demand.

One method of securing public trust in this context is to create a set of national standards for digital infrastructure, including how data and information is retained, this would be an important first step in addressing this issue.

In the same vein that employees and citizens can be safe in the knowledge that public infrastructure, such as roads, bridges and public buildings, must meet certain standards, so too could they feel confident sharing personal data if defined standards on privacy, security and trust were met.

43 <https://newsroom.accenture.com/>

44 PwC, Digital Trust Insights, November 2019

45 <https://www.news.com.au/>

46 <https://www.abc.net.au/>

Having a clear set-of standards could accelerate the potential benefits of data, not just across government but across industry, taking away key barriers to proliferation and trust. The AIIA supports the work of global standards as they are critical to ensuring industry alignment and consistency on products and software. Global standards also ensure that companies that operate across jurisdictions do not have to develop different products for each country.

The AIIA is also strongly committed to open borders and trade and the international flow of data. The G20 in 2019 saw the advancement

of global digital policy discussions. Under Japan's leadership, the G20 launched the Osaka Track to accelerate and support the ongoing digital trade discussions at the World Trade Organisation (WTO) and created the concept of Data Free Flows with Trust (DFFT) in recognition of the fact that open cross-border data flows are the lifeblood of all industries, and that strong protections for privacy and cybersecurity go hand-in-hand with the transparent, non-discriminatory transfer of data across borders. The AIIA strongly supports these objectives and recommendations made here are consistent with these objectives.

RECOMMENDATIONS:

1. Government to commit to accelerating the digital inclusion agenda, closing the divide by providing all Australians equal access to the benefits of digital transformation.
2. Government to lead, in collaboration with industry, the development of a data sharing code of conduct (along the lines of other industry codes of conduct), that sits within the current privacy legislation and provides guidelines as to how government and industry handle, manage, protect and use customer and citizen data.
3. Government to set-up a "digital standards commission" that is responsible for creating and enforcing a set of national standards for digital infrastructure ("the digital backbone" as referenced in Driver 2) across the public and private sector – including setting thresholds at which these standards would apply across industry.

Governments around the world are dealing with the explosion of digital technologies and the resultant impact on privacy due the massive amounts of data now being collected. Governments are also harnessing the power of citizen and user data for public policy purposes. As governments continue to institute regulatory and legal frameworks to manage citizen expectations around data privacy, the AIIA has developed a set of guiding principles. These principles should act as a guide to the Australian Government's upcoming review of the Privacy Act.

AIIA Data Regulatory Guiding Principles

- The digital ecosystem is complex and interconnected.
- Ensure policy is targeted to the part of the digital ecosystem for which it is intended to

ensure it doesn't adversely affect other parts of the ecosystem.

- Recognise the difference between controllers of data and processors of data.
- Work with industry to ensure government understands how this digital ecosystem works; how platforms, software and infrastructure form the digital spine of the Australian economy and loosely targeted regulations and laws can adversely impact on the economy.
- Work with industry experts in drafting policy that in any way affects this digital spine so that it can be correctly targeted.
- New regulations should be carefully considered and not rushed taking into account emerging global standards and multi-jurisdictional nature of privacy laws which multi-national companies must operate under.



Securing our digital infrastructure

Investing in the future

Australian investment in technology positioned us well for our response to COVID-19 and supported the recent transition to digitisation and remote working. In some cases, investment in new technologies such as 5G has been accelerated to support new ways of conducting business. For all Australians, the pandemic has changed the way we live, shop, work, engage in education and health care and remain connected with our friends and family in ways that rely on technology in more ways than ever before. The demand for resilient, secure and innovative solutions mean that ongoing focused investment in new technologies will be required to ensure Australia remains on the forefront of technology innovation. This investment will also support employment, both in terms of generation and retention, in a post COVID-19 world.

Movement of goods

The movement of goods during the COVID-19 pandemic has highlighted a major issue for most governments, including Australia. Supply

chain resilience and agility have long been considered key, however focus in recent years has predominately been on supply chain efficiency. Visibility is critical to securing and improving the supply chain – be it efficiency, agility, resilience or importantly safety.

Visibility means having a timely and unified view of what stock is where in the supply chain and underpins any data-driven decisioning. *“The pandemic has highlighted how important data and data analysis is to sound decision making. The freight industry is a long way from transitioning to a digital, interoperable system”*⁴⁷ Delivering a change in visibility will require lifting the level of digitisation in the transport and logistics industry and removing friction in the sharing of data across the supply chain.

The speed of processing goods from international markets is impacted by our biosecurity requirements. Australia benefits from a physically isolated ecosystem which is a key differentiator, allowing us unfettered access to external markets and the ability to command a premium on some goods. Our ability to protect has relied on a strong inspection regime but our

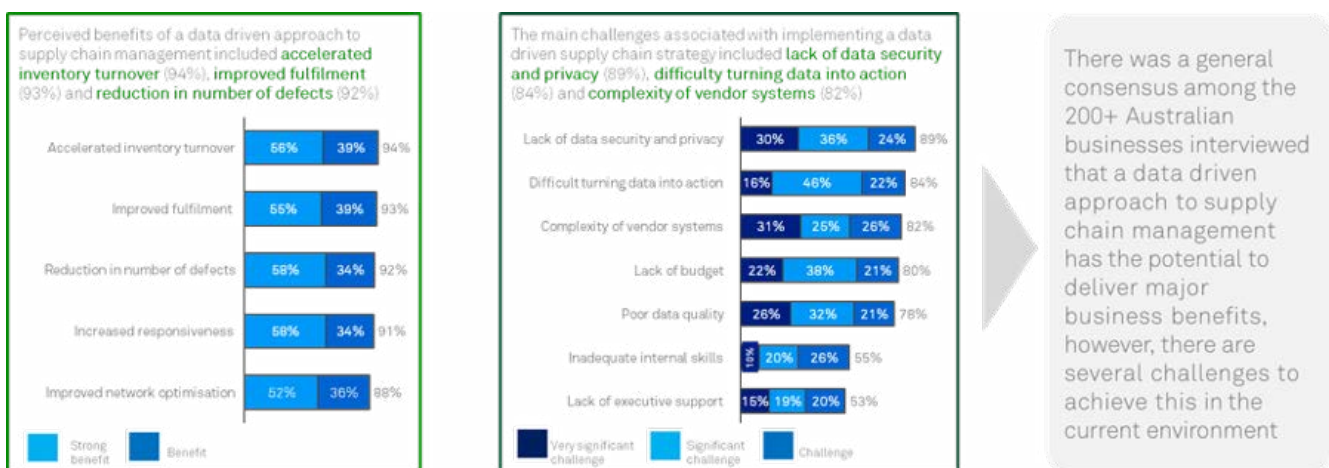


Figure 1: Customers confirmed that a data driven approach to supply chain management will drive major business benefits⁴⁸

47 Renata Berglas, CEO of Queensland Transport and Logistics Council - <https://imoveaustralia.com/news-articles/freight-and-logistics/renata-berglas-covid-19-transport-2/>

48 The data driven supply chain <https://labs.telstra.com/wp-content/uploads/2019/09/The-data-driven-supply-chain-whitepaper.pdf>

current approach is unsustainable. Escalating global trade volumes and an increase in receipt of goods from less regulated jurisdictions is placing unprecedented pressure on manual inspection rates. The ability to scale to meet these demands will require AI-based threat scoring, machine vision and automated pest traps supported by an overarching framework and sharing of data and intelligence.

The increase of global trade is stretching the capacity of ports and road networks. In many cities, we are reaching the end of our ability to increase capacity by building more infrastructure. Alternatively, we need to make our existing infrastructure more efficient through using data to accurately forecast transport

arrivals and departures, intelligently manage assets such as container straddles, cranes and loading docks and Intelligent Transport Systems that continuously measure and dynamically manage traffic flows.

Securing digital Infrastructure and backbone

Access to secure infrastructure is required to further reduce instances of customer data being compromised through malware and phishing. The COVID-19 pandemic has been a catalyst for change and mandatory social distancing resulting in healthcare, education, work and commerce now largely being performed online. Whilst cyber security was a large and growing area of risk, the COVID-19

RECOMMENDATIONS

1. Improve the security and movement of goods by expanding the scope of the proposed National Freight Hub. The proposed Federal Government National Freight Hub platform has been scoped to provide more efficient reporting of freight statistics to Government to enable better economic forecasting and infrastructure planning. There is an opportunity to expand the scope to support a unified platform for the industry to share freight visibility data and ensure privacy for drivers, a major concern across the industry[1] and confidentiality of commercial information.
2. Increase the availability of data for government and industry by mandating vehicle telemetry and a standardised minimum set of real-time data reporting on trucks across light-rigid class and all heavier class and expand acceptable telemetry technology to low cost options.
3. Integrate existing individual State, Federal and agency-level biosecurity digitisation initiatives into a single inbound biosecurity automation program under the control of the National Biosecurity Council, with a key focus on a framework to integrate existing disparate platforms and sources of data intelligence.
4. Accelerate the evolution of Intelligent Transport system infrastructure by:
 - a) ensuring new physical transport infrastructure includes future-proofing investment in intelligence to optimise the safe flow of goods and people;
 - b) invest in uplift of intelligent management capability for existing freight transport infrastructure; and
 - c) leverage the Inland Rail program as a hub for development and testing of new systems, platforms, processes and technology to be later diffused through the broader freight ecosystem in Australia
5. Support investment in an Australian data driven supply chain.

pandemic has amplified this risk as a majority of business and social interactions were undertaken exclusively online. “Cyber threats continue to shift, evolve and increase and as the threats evolve so must our response. It requires a coordinated response between government, law enforcement, industry and the community”.⁴⁹ Whilst Cyber Security is a shared responsibility, further initiatives, such as the Telstra Cleaner Pipes project, are required to help protect Australian businesses and individuals.

With the onset of the pandemic there was a marked increase in COVID-19 being used as a phishing lure by criminal actors. The Australian Cyber Security Centre (ACSC) received on average two cybercrime reports per day about Australians losing money or personal information due to COVID-19-related scams and online fraud.⁵⁰ Scamwatch reported a 61% increase in the number of scams reported from March to April and over 2700 COVID-19 related scams. The most common forms of cybercrime incidents continue to increase, with Business Email Compromise (BEC) doubling each year and incidents involving the use of Ransomware continuing to increase.⁵¹

Ransomware continues to affect Australian organisations of all sizes with SMEs being the most vulnerable.

Small business is the target of 43% of cybercrime with over 22% of small businesses affected by ransomware unable to continue operating.⁵² Smaller organisations do not have the cyber skills to support them in comparison to their larger counterparts which may reduce their ability to compete.

Critical Infrastructure is increasingly becoming a target for Cyber Crime. Operational Technology used in critical infrastructure, manufacturing, sensors or building controllers traditionally operated on separate networks with different protocols, but recent years have seen the line blurred with these devices

becoming IP-enabled or connected to IoT-type devices. There has also been an increase in malware targeted at Operational Technology devices, in particular Ransomware.⁵³ Whilst the Cyber Security industry has long suffered a shortage of skills, there is an even larger gap of experts who understand the traditionally engineering focused domain of Operational Technology and Cyber Security.

Business Continuity and Resilience

The ability for Australian businesses to continue to operate during the COVID-19 restrictions highlighted a major deficiency in Business Continuity Planning across all areas of industry. From remote working through to gaming and entertainment⁵⁴ Across Australia, businesses experienced shortages in laptops and home office equipment as individuals rapidly transitioned to remote working arrangements. Remote access solutions struggled under the increased load, and organisations quickly adopted remote access and collaboration tooling without due consideration for ongoing management, security or compliance, potentially exposing them to risk.

Australian SMEs contribute 57% to Australian GDP and are a significant contributor to private sector employment, yet they were the least prepared for Business Continuity.⁵⁵ They were also the most likely to use free, often less secure or robust technology to facilitate remote working or customer service provision. Organisations such as the Joint Cyber Security centre are in place to support partners who

49 Andy Penn, CEO Telstra <https://exchange.telstra.com.au/safer-online-and-the-new-normal/>

50 Threat update: COVID-19 malicious cyber activity <https://www.cyber.gov.au/threats/threat-update-covid-19-malicious-cyber-activity-20-apr-2020>

51 Telstra Security Report 2019 www.telstra.com.au/security/report

52 ASBFEO <https://www.asbfeo.gov.au/sites/default/files/documents/ASBFEO-cyber-security-guide.pdf>

53 In Search of Cybersecurity experts <https://www.automationworld.com/home/article/13319558/in-search-of-industrial-cybersecurity-experts>

54 Need to replace with better source <https://www.abc.net.au/news/2020-04-01/coronavirus-internet-speeds-covid19-affects-data-downloads/12107334>

maintain ICT security personnel in Australia. The 2016 Australian Cyber Security strategy provided Grants through the Cyber Security Small Business program however these were not fully utilised.

Although Australian organisations needed to pivot rapidly in response to the COVID-19 pandemic, this was undertaken over the course of a few weeks. An incident such as a large-scale cyber-attack can happen in a matter of hours, resulting in businesses being unable to operate over extended periods. To ensure the resilience of Australian organisations, in particular SMEs, improved access to secure, compliant remote access connectivity and collaboration tooling is required as well as better awareness of support and education to manage compliance and risk.

In addition, the Australian Cyber Security Strategy “Action Plan 2016” called for strong cyber defences to ensure networks and systems are hard to compromise and resilient to cyber-attacks⁵⁶ however it does not extend to support business continuity. There is a need for investment in education and programs to ensure businesses become more resilient.

As we emerge from the COVID-19 restrictions, there is a need to ensure ongoing public safety. Governments around the world are investing in “Smart Cities” and private enterprise are beginning to invest in “Smart Buildings”. There is an opportunity to leverage these investments to facilitate the return to work and public spaces, in particular the ability to monitor pedestrian traffic flows and body temperature sensors, however this must be balanced with expectations of privacy. A standard co-ordinated approach to designing these “Smart Cities” and associated framework is needed to for future investment.

Supply chain security and resiliency

The security and resiliency of supply chains has been a growing area of risk for Australian organisations which was compounded during the COVID-19 pandemic.

In some cases, incoming regulation, such as APRA Prudential standard CPS234, Telecommunications Sector Security Reforms and Security of Critical Infrastructure Act have highlighted the need for review of those service providers and supply chains which represent a material risk. However, for other areas of industry, this risk is currently not well understood.

Existing offshore call centres and service providers were unable to meet the regulatory needs of some Australian Businesses as the COVID-19 restrictions were implemented across the world. When Australian data is sent offshore, Australian businesses must ensure that its processing and call centres or providers continue to meet the Regulatory requirements required by Australian law. As overseas employees were moved to remote locations, new processes and technology were required to be rapidly assessed, placing additional workloads on teams and, in some cases, required the rapid identification and onboarding of an alternate provider.

55 MTM Whitepaper https://business.nab.com.au/wp-content/uploads/2017/06/J002580_MTM-Whitepaper-IPSO5-FINAL_C1-2.pdf

56 <https://cybersecuritystrategy.homeaffairs.gov.au/>

RECOMMENDATIONS

1. Secure remote working, access to secure infrastructure and robust business continuity solutions are key to supporting Australian businesses but investment in these areas will also stimulate employment, particularly across technology innovators and incubation hubs.
2. Extend Australia's 2020 Cyber Security strategy to include Cyber Resiliency and enhance and promote support to Australian SMEs through Cyber awareness and support programmes and continue to invest in Cyber Security skills, in particular the area of Operational Technology security.
3. Improved Governance and operational initiatives to strengthen the collaborative learning structure created through the national Joint Cyber Security Centres network to encourage knowledge transfer between government and industry around both cyber resiliency and cyber incidents and further extend this support to SMEs.
4. That the Australian Signals Directorate (ACSC) continues to take a leadership role in advising and providing support on cyber security issues.
5. Provide incentives to support small businesses to invest in cyber security upskilling and better promote available initiatives.
6. Support a national best practice for Smart Cities to support the Health safety and privacy of Australians and ensuring a framework for future investments.



The role of government incentives to ensure Australian competitiveness in the Australian ICT and SME sector

Australian incentives framework for businesses and SMEs

Innovation is a key economic driver. Despite this, in comparison to other OECD countries, Australia underinvests in research and development.⁵⁷ Increasingly technology is fundamental to innovation, across all sectors of the economy. Australia has instituted a number of programs to incentivise greater levels of innovation, including technology innovation. For industry, the primary program is the R&D Tax Incentive (RDTI), which has been available to businesses (in various iterations) since 1986. Additionally, numerous funding and grant programs have been introduced, the most prominent being the Entrepreneurs' Program. Unfortunately, in spite of the existence of such incentives, investment by industry in innovation – in particular in R&D – has continued to decline as a percentage of GDP over the last ten years.

The effects of this decline, coupled with the associated costs of retaining these programs, has prompted the Federal Government to reconsider its approach in incentivisation. However, any changes must be subject to scrutiny to ensure they do not further reduce industry confidence in government support programs. It is important to recognise that as a consequence of the COVID-19 pandemic, a majority of companies have been forced to either reduce or pause their respective innovation projects. If these are not resumed soon, this will have a longer-term negative impact on the Australian economy. In light of this, it is even more important that the Federal Government introduce a range of incentives to assist businesses to re-position itself in the post COVID-19 world, including greater support for the ICT sector and the adoption of technology-based solutions across all sectors and industries.



Source: Adapted from Innovation and Science Australia, [Australian Business Investment in Innovation](#), January 2020.

⁵⁷ OECD (2020), Gross domestic spending on R&D (indicator). doi: 10.1787/d8b068b4-en (Accessed on 05 June 2020)

Proposed tax changes to support kick-starting the economy

In an effort to revitalise the Australian economy, the Federal Government should consider a range of targeted tax incentives. Consideration should be given to the following measures:

1. The Federal Government has previously expressed concerns that the small business sector is less technology enabled and lags behind other OECD countries. This could be addressed by offering small business a tax incentive (or accelerated depreciation) for investing in technology to support business development.

RECOMMENDATION

That the Federal Government introduce a technology enablement tax incentive to assist small business to become better technology enabled.

2. With a downturn in international students, a tax incentive for industry to engage with research institutions will assist institutions to derive income from the private sector and incentivise business to collaborate with research institutions. This was recommended in both the 2016 Review of the R&D Tax Incentive⁵⁸ and 2017 Innovation and Science Australia's [Prosperity 2030 Report](#).⁵⁹ Both reviews recommended a 20% non-refundable tax offset for expenditure on Australian research institutions and STEM postgraduates as a means of encouraging collaboration.

RECOMMENDATION

That the Federal Government introduce a collaboration tax incentive to incentivise business to collaborate with Australian research institutions.

3. With the increasingly narrow interpretation of R&D under RDTI, providing a separate tax incentive for non-R&D based innovation should be considered. The 2020 Innovation

and Science Australia report on Australian Business Investment in Innovation⁶⁰ highlighted that close to half of all innovation in Australia is non-R&D based.

RECOMMENDATION

That the Federal Government introduce an innovation tax incentive to incentivise non-R&D based innovation.

4. Commonly known as patent boxes or Intellectual Property (IP) regimes, a knowledge box tax incentive reduces the tax payable on income associated with locally developed IP. At present a majority of Australian innovations are sent offshore for commercialisation – introduction of a knowledge box regime would help keep commercialisation onshore.

RECOMMENDATION

That the Federal Government introduce a knowledge box tax incentive to encourage business to keep intellectual property.

R&D Tax Incentive

The RDTI should remain in place and that the proposed reductions contained in Treasury Laws Amendment (Research and Development Tax Incentive) Bill 2019 be withdrawn. This will reduce the R&D tax benefit for all companies, which would hit SMEs hardest (the R&D benefit would reduce for most SMEs with a turnover of more than \$20m from 8.5% to 4.5%). Business requires stable and consistent support from government, and numerous proposed changes to the RDTI along with overzealous regulator activity⁶¹ have eroded business confidence in the program. This is of particular concern to the ICT sector, which accounts for a significant proportion of all R&D tax claims.

⁵⁸ [Review of the R&D Tax Incentive \(April 2016\)](#)

⁵⁹ [Innovation and Science Australia's Prosperity 2030 Report \(November 2017\)](#)

⁶⁰ [Australian Business Investment in Innovation \(January 2020\)](#)

⁶¹ Australian Small Business and Family Enterprise Ombudsman's [Review of the R&D Tax Incentive](#) (December 2019)

In the short-to-medium term, some options to improve the efficacy of the RDTI are:

1. Require AusIndustry to initiate and complete reviews within 90 days of receiving the R&D Registration application and require AusIndustry to consult with at least one relevant industry expert before making a formal finding against any applicant.

RECOMMENDATIONS

1. That AusIndustry initiate and complete reviews within 90 days of receiving the R&D Registration application.
 2. That AusIndustry consult with at least one relevant industry expert before making a formal finding against a company applicant.
2. Introduction of a quarterly credits program to allow companies to access the RDTI during the income year. This would help even out cashflow without having a material impact on the cost of the program. Previous concerns raised in 2013 could be addressed through greater consultation on any draft legislation and engagement with industry, the ATO and AusIndustry about the workability of its proposed implementation.

RECOMMENDATION

Introduce a quarterly credits program to enable companies to access the RDTI during the income year.

3. Introduction of a higher level of R&D tax benefit for projects of strategic importance to Australia. This would require minor amendment to the RDTI and could be administered through a new type of Advance Finding. It would allow Government to provide a more significant incentive for projects aimed at solving problems of significant strategic importance to Australia's future economy (i.e. projects aligned with Australia's [Industry Growth Centres](#)).

RECOMMENDATION

Introduction of a higher level of R&D tax benefit for projects of strategic importance to Australia.

4. **Create a new dedicated software development tax incentive.** A poor fit of the definition of R&D activities in the R&D provisions coupled with an ever narrower interpretation of the definition and AusIndustry's inadequate understanding of software development has caused enormous frustration and setback within industry.⁶² Creating a specialised software development tax incentive would provide much needed support to build Australia's software development capabilities. Ideally, the new tax incentive would be administered by those with software development expertise.

RECOMMENDATION

Creation of a new dedicated software development tax incentive, separate to RDTI.

Economic stimulus and post-COVID-19 restart

The post-pandemic economic stimulus strategy will need to be applicable to all industries, but in such a way that it enables them to adapt to post-COVID-19 markets and operating models. There has already been a significant shift in working arrangements, as businesses were forced to transition to remote working within the space of a few weeks. This trend is expected to continue and remote working will become a new norm. To support this transition further public investment will be required to improve technology infrastructure, in particular networks and cybersecurity.

⁶² [R&D debacle: Will Aussie startups be dissuaded from taking advantage of tax incentive? \(SmartCompany, 11 December 2018\)](#)



The role of government in supporting Australian SMEs, citizens and business to reinvent themselves in a post COVID world

Becoming a leading digital economy

The COVID-19 pandemic has reshaped the global economy and had an immediate impact on Australia's international trade. This has reduced income from many sectors that Australia has been heavily dependent on and in turn created a challenging business environment. As Australia emerges from the pandemic it will require further technological innovation in every sector in order to remain economically viable in the longer term. The question these circumstances pose is material to this long-term strategy: What needs to be done to ensure Australia becomes a leading digital economy by 2030?

While significant growth and success has occurred in traditional and new digital sectors previously identified in this paper, the COVID-19 pandemic presents both challenges and opportunities. The pandemic has resulted in the decentralisation of human capital in part through technology. Currently, this decentralisation has largely been limited to Australian jobs, but changes in business behaviour have removed issues in moving human capital-intensive work to lower-cost geographies. Without intervention, Australia is at risk of a subdued recovery as a result of being a high-cost operating environment for business combined with relatively low IT capabilities.

State governments, such as Western Australia and New South Wales, have been proactive in ensuring they can respond rapidly to engage with local SMEs as a response to building local capacity, jobs and the economy.⁶³ The Digital Transformation Agency's recently released Cloud Marketplace tender has an evaluation category called "benefits to the Australian economy" where applicants need to

demonstrate "the extent to which the proposed approach to the provision of Cloud Offerings provides benefits to the Australian Economy".

"I am well and truly on the record in saying that government should be using procurement as one of the levers [for building capability]"⁶⁴

– Minister For Industry, Hon Karen Andrews

There are two commitments in the [Commonwealth Procurement Rules](#) (CPRs) relating to whole of government SME participation:

1. an overall commitment to procure at least 10 per cent of contracts by value from SMEs; and
2. an additional target to procure at least 35 per cent of contracts by value of all contracts up to \$20 million from SMEs. The CPR was amended on 1 March, 2017 to ensure entities consider the [economic benefit](#) to the Australian economy as part of the value for money assessment for procurements valued above \$4 million for non-construction services and \$7.5 million for construction services

Further, [Australian Industry Participation](#) policies and programs encourage full, fair and reasonable opportunity for Australian businesses to compete for work in major public and private projects in Australia and the Department of Defence also has in place initiatives that aim to maximise opportunities for [Australian industry participation](#) at the national and local level, to meet Australia's Defence capability goals.

⁶³ <https://www.mediastatements.wa.gov.au/>

⁶⁴ <https://www.innovationaus.com/>

Despite these rules, Prime suppliers have no specific obligation to engage SMEs and the value for money assessments don't always place a value or premium on supporting Australian industry capability. This paper is suggesting increasing the requirement for Australian participation in procurements which would cover SMEs thus boosting local capability.

The UK Government has a strategy to achieve 33 per cent of all government procurements via its SME sector by 2022.⁶⁵ In 2015, it achieved its goal of 25 per cent.

RECOMMENDATION

Australia sets a target that 25 per cent of Australian Government spend on IT comes from Australian industry including SMEs by 2030.

Preparing the Australian ICT Industry for the next crisis

As the COVID-19 pandemic emerged, a majority of states gave priority to protecting their respective citizens. At the same time, companies reassessed their activities and moved to innovate in order to support their country. As the former Australian Secretary of Defence, Dennis Richardson, put it, "When the chips are down, everyone looks after their own country first".

A future crisis by its nature is hard to predict. Regardless technology-based solutions will be at the forefront of response strategies as these crises emerge. Separately from economic risk, Australia has a critical IT infrastructure preparedness risk and technology investments into Australia from multi-national corporations should be considered a critical element of sovereign capability in addition to supporting Australian produced IP and businesses; both are essential requirements for Australia to prosper and succeed in the digital economy

RECOMMENDATION

A task force should be established to identify and prioritise macro risk scenarios that Australia could face in the future. These scenarios should be published to enable industry alignment.

The AIIA understands the government is examining the Critical Infrastructure (CI) List and whether it supports the digital economy now and into the future. Any such review should engage the AIIA, especially in areas such as cloud infrastructure businesses. The AIIA is concerned that any reviews in these critical areas could lead to ineffective policy without consultation.

Any such review in critical areas such as this which are instituted without broad industry consultation could contribute to unnecessary regulatory and compliance issues within the Australian ICT sector. A suggested alternative approach is to examine at essential workforces, corresponding future quarantine measures, and clearly defining essential ICT workforces to maintain the operation of essential digital services.

RECOMMENDATION

That the Department of Prime Minister and Cabinet and the Department of Home Affairs engage with the AIIA when reviewing the CI List in determining whether it supports both the immediate and long-term development of the digital economy.

Supporting the Australian ICT Industry

The COVID-19 pandemic has seen a push by numerous governments to repatriate business operations:

- Indian Prime Minister, Narendra Modi, told the nation that a new era of economic self-reliance has begun;
- Japan's COVID-19 stimulus includes subsidies for firms that repatriate factories;

⁶⁵ <https://assets.publishing.service.gov.uk/>

- European Union officials talk of “strategic autonomy,” creating a fund to buy stakes in firms; and
- The United States is urging Intel to build plants at home.

Multinational firms may cut their cross-border investment by a third this year according to The Economist, May 6th 2020. So far this year countries representing 59% of world GDP have tightened their rules on foreign investment.

Supporting the manufacturing industry to address resilience in Australia will require capital (land, buildings, machinery, workforce and technology) and a marketplace. As economies around the world seek alternate and reliable sources of supply, Australia has the ability to evolve into a global leader in the supply of essential items.

Manufacturers as an industry group have specific ICT capability needs. In addition to general business operation capabilities, (i.e. Sourcing and Procurement, Asset Management, Finance, Human Resources and Payroll) manufacturers also require a “Design to Operate” process which commences with Product Design, Planning, progresses to the procurement of raw materials, manufacture of assemblies and finished products, customer orders and delivery. A major challenge for small to medium sized manufacturers is establishing this technology foundation. There is a material upfront cost and time required to procure, integrate and implement the required capabilities. There are integrated suites of manufacturing specific business ICT solutions however these are designed for large enterprise level businesses.

To bridge this gap, Federal and State and Territory Governments should consider entering into partnerships with industry and other manufacturing advisory groups to create a “digital business platform in a box for manufacturers” for start-ups and small to

medium manufacturers. This would deliver a secure, scalable and robust digital platform providing speed to market for small to medium manufactures and help them scale and grow.

RECOMMENDATION

Governments to partner with industry and other manufacturing advisory groups to create a “digital business platform in a box for manufacturers” for start-ups and small to medium manufacturers.

Revisiting and revising government procurement processes

A significant area of opportunity for small business in Australia is the digitisation of source to pay procurement processes (i.e. e-invoicing and e-procurement).

The Australian Taxation Office (ATO) has identified that e-invoicing reduces transaction costs by around 30 percent, ensures fewer errors by removing manual intervention and matching invoices to approved purchase orders are matched to procurement orders. Fewer errors mean faster payment times as there will be less invoices in dispute between the buyer and seller.

RECOMMENDATIONS

1. Governments partner with small business industry associations and e-procurement platform providers to increase the number of SMEs adopting e-procurement and e-invoicing platforms.
2. Review Whole-of-Government agreements so that they can be applied for local companies to streamline processes and assist their access to government procurements.
3. Methods for procuring Australian innovative unproven solutions should be developed to support and promote start-up and SME involvement with government innovation.

Crisis brings out and magnifies challenges and issues. At present, there is a shortcoming of data driven policy development which has become more apparent in the current environment. Undeniably technology will have a critical role in any crisis or disaster response strategy, to be driving decision making and insights. Transparency and insight comes via a data driven approach. Enabling a data driven government can assist in making informed decisions based on security and transparency.

RECOMMENDATION

Government to continue and expand on open data efforts, recognising the economic value unlocked to all companies.

Aligning federal, state, and local government

Companies seeking to provide services to government all suffer inefficiencies by having to negotiate and maintain multiple contracting arrangements with multiple levels of government. Government often ends up buying the same service at different prices due to complex contracting agreements. This results in lower value for money for all parties, but this disproportionately affects SMEs as transactions tend to be of smaller value with proportionally higher transaction costs.

Once One Government Buyer is in place, each part of government will be able to support SME's and in doing so open up government procurement at a scale that will enable SMEs to grow to industry leaders.

RECOMMENDATION

Align state and federal government procurement arrangements (One Government Buyer), and prevent procurement teams from discriminating against a procurement arrangement solely on the basis that it originated from another Australian government.

Digital policy is fragmented across federal government departments with responsibilities split across Home Affairs, Attorney-General,

Defence (ASD), Digital Transformation Agency, Communications and Industry portfolios.

Given this fragmentation, there is no central coordination of advice to the Prime Minister and Cabinet on many critical issues. We must have a cohesive approach and understanding by portfolio Ministers to issues such as cyber security and sovereignty, supply chains, skills, and data as major decisions are being made in these areas.

Creating a central coordinating senior ministerial role, at cabinet level would prove to be effective in both industry engagement and policy prosecution across and inside government. The creation of a Minister for Digital Capability will also allow industry to engage with government taking a whole of government approach to digital capability and cut through often opaque areas of government policy making in areas like national and cyber security.

The Minister should be a conduit for industry and coordinate policies supporting Australian sovereign digital capabilities, whole of government digital policies, government procurement policies and economy wide digital transformation requirements including state and federal coordination. The role would not subvert existing Ministerial responsibilities and could be a new Minister or added to the remit of an existing cabinet Minister with oversight and coordination responsibilities with industry engagement a core objective.

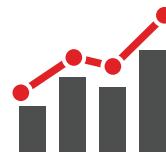
RECOMMENDATION

The Prime Minister urgently appoint a senior Cabinet level Minister, supported by the Department of Prime Minister and Cabinet and report directly to the Prime Minister, to advise Cabinet and have a whole of government and coordination role centred on the digital economy and policies.



Appendix A: About the Australian Tech sector

\$122 Billion
 & 6.6% Gross Domestic Product

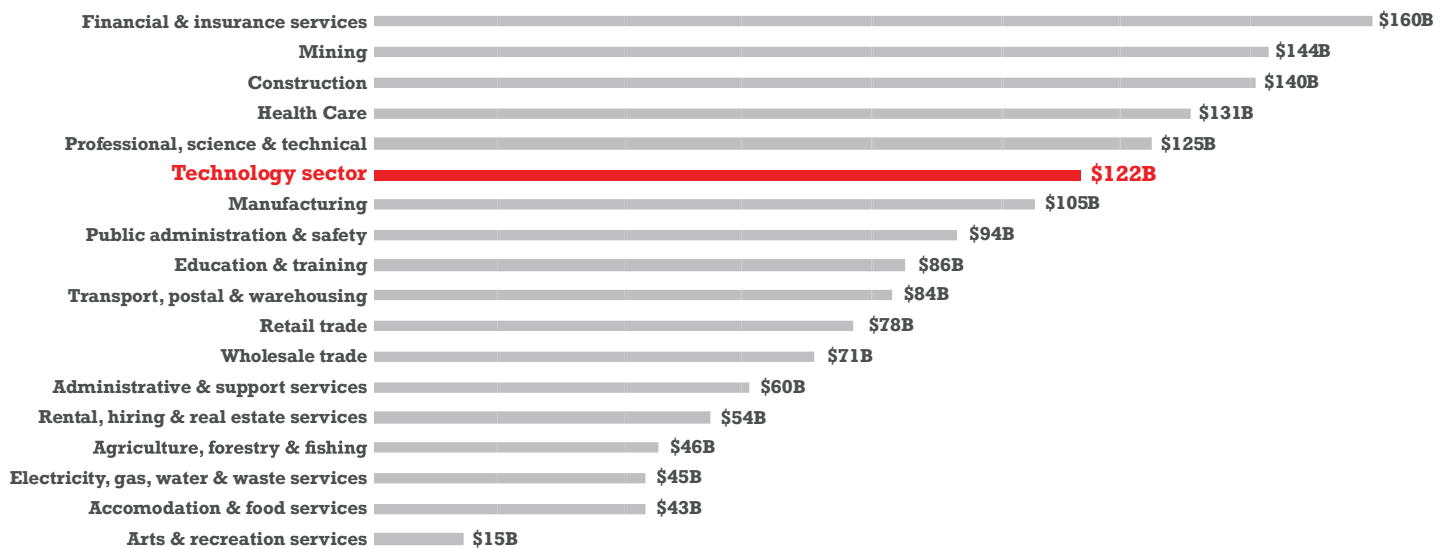


Tech services exports worth \$3.78 Billion

Tech trade surplus grown in one year from \$170m to \$515m in 2018



If the tech sector were an industry it would make the sixth-largest contribution to Australia's GDP

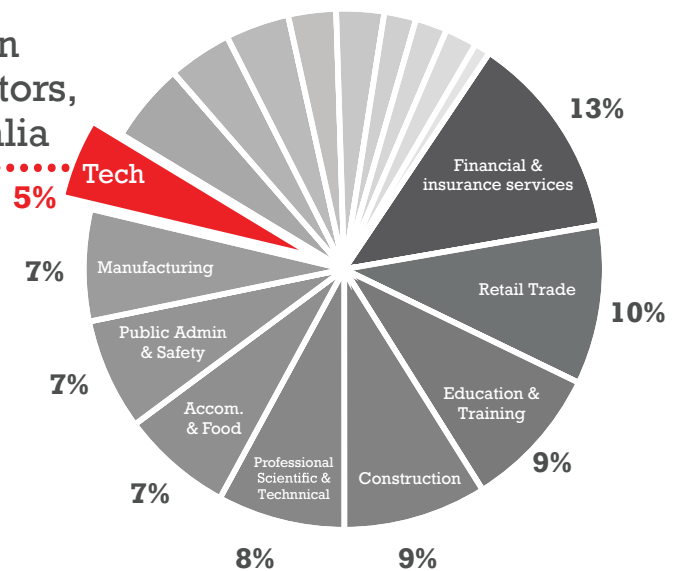


Industry contribution to Australia's GDP, Gross Value Added \$B 2018



The tech sector, including workers in tech-based occupations in other sectors, is the 9th largest employee in Australia

Share of Australian workers by industry, %, 2018



With **723,334 Australians** employed in tech sector, the Australian tech sector accounts for **5.7%** of the workforce. Average trend growth of 2.5% between 2011 and 2018. Outpacing overall labour market of 1.7%. By 2024 tech workforce to grow by another 100,000. Health tech workforce to grow by 50% over this period.

Sources: Alphabeta analysis of ABS 2016, Census of Population & Housing
 Note: The technology sector does not provide a perfect industry comparison as it includes employees from other industries



Tech workers more productive and earn more

Tech workers earn 47% more than the average Australian worker and are 60% more productive. Labour productivity in Australia's tech sector has significantly outpaced rest of the economy, growing 3.8% per year against the average of 1.5% for all industries.

Sources: Deloitte Access Economics, Digital Pulse, ACS, 2019; Alphabeta, Australia's Digital Opportunity, DIGI, 2019

Appendix B: AIIA Survey – Digital State of the Nation Report 2020

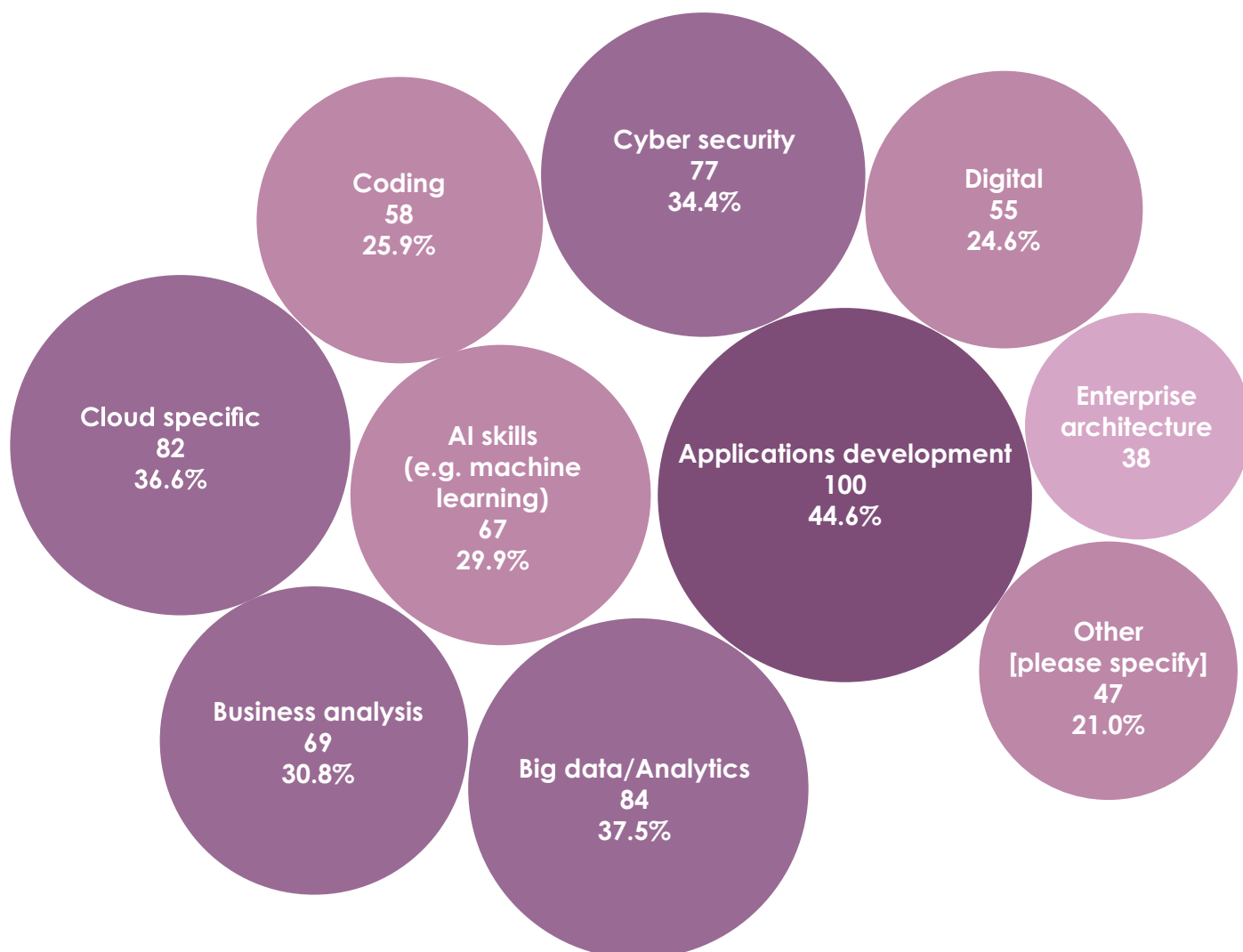
In February 2020, the AIIA conducted a nationwide survey of the Australian technology sector.

Whilst the survey pre-dates the full impact of the COVID-19 pandemic, it did provide critical insights into the role of the government, with 72% of respondents stating that a federal budget surplus was less important than supporting economic growth. This would indicate that the Federal Government, and State Governments, going into deficits to stimulate economic activity would be supported by the majority of ICT companies.

A real concern, however, is that only 21% of respondents stated they believed governments understood the importance of the tech sector to the Australian economy, and the two leading areas for government focus should be on addressing the skills deficit (66%) and promoting a digitised society and economy (61%).

Given the current urgent requirement to facilitate remote work technology solutions, one hopes there is a better general understanding of the socio-economic benefits of technology.

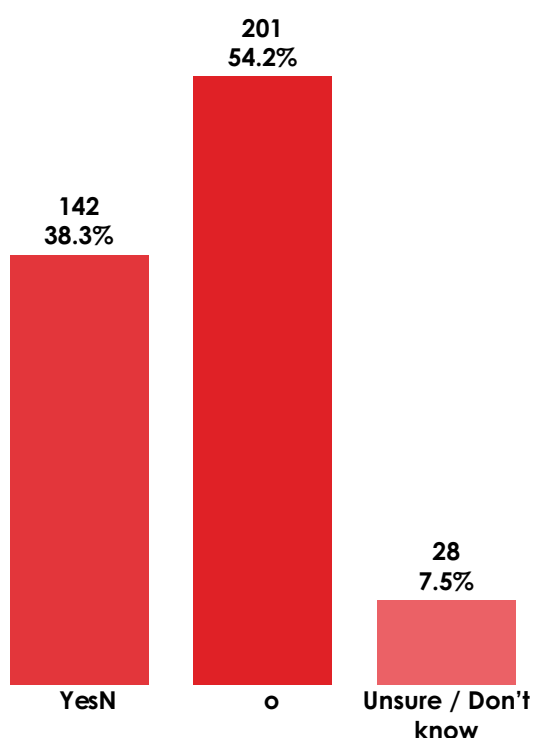
In terms of specific skills of the future, what skills will you looking to be hiring in 2020?



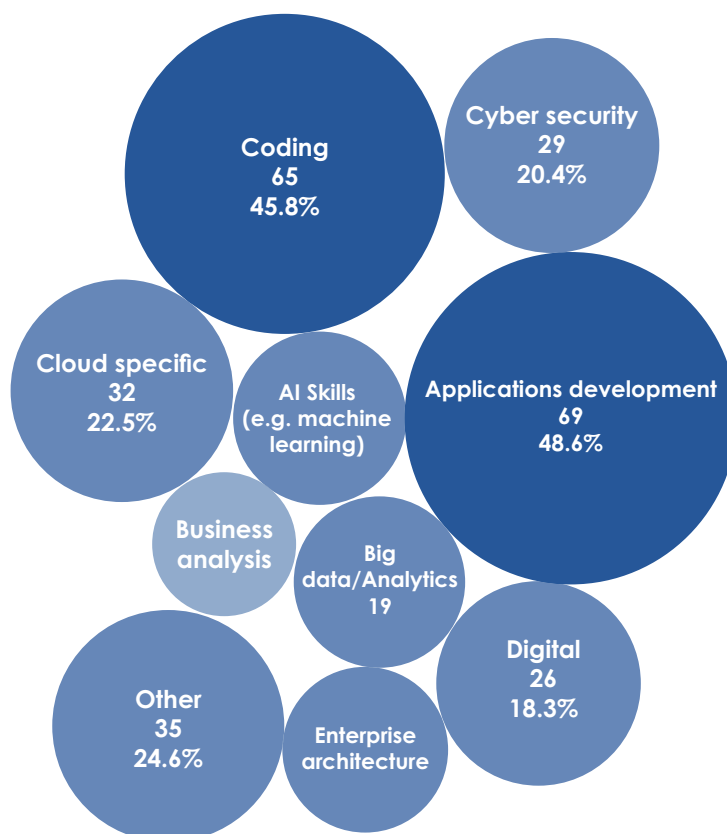
The majority of respondents (60%) said they would be looking to grow their FTEs in 2020 with only 20% saying they had no intention of hiring (with 20% unsure). The tech sector business sentiment in February was strong with over 38% saying they expected revenue growth of over 10%, another 40% of 0 to 10% growth (only 5% indicated revenue declines).

Tech sector business sentiment in February was strong, with over 38% saying they expected revenue growth of over 10%, and another 40% of 0 to 10% growth (only 5% indicated revenue declines).

Have you previously outsourced globally due to skills unavailable in Australia?



What were the skills unavailable in Australia?



When surveyed, a majority of respondents (60%) said they would seek to grow their FTEs in 2020. The skills for these hires were split across the major technology categories, with applications development leading on 50.8% (following by big data, analytics, cloud skills, cyber security, business analytics and AI skills last but still a significant 33.5%). Australia will be the main source of hires for most companies with the major skills shortages occurring in applications development (57.5%) and coding (54.2%).

The top three tech growth sectors were government and infrastructure (73.8%), health (62.7%) and financial services (50.3%), with the main driving ICT factors being increased operational efficiency (70%) and enhancing the customer experience (60.8%) as clear leaders.

Report methodology and segmentation

The AIIA leveraged its substantial database comprising both members and non members which included a statistical significant sample of government tech leaders (11.4%). We had 370 respondents to the survey delivered electronically through direct email during the second half of February 2020 with coverage from every state and territory.

The majority of respondents (42.7%) were from professional services companies with software companies comprising 15.7% with an even split among the other categories of telco, hardware, digital, cloud etc. With 86.9% of respondents at either senior manager, managing director of director/owner level these results increase in significance as the respondents have direct control over their business units and insights into their business and market.

Pleasingly the survey had an even split of small and large businesses with respondents working in businesses of more than 1000 FTEs accounting for 24% and 0-10 FTEs 28.5% with the remainder across the other categories between 11 and 9999 FTEs.



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