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# Australia's moment

Increasingly, digital success is economic success. Between 2005 and 2014, during a period where global flows of goods and finance were flattening, global data flows increased by 45x, and are projected to increase by another 9x by 2020[1]. This increase in data flows drove a $2.8 trillion US dollar rise in global GDP, greater than the impact of increased trade in physical goods over the same period.

Research shows that embracing digital technology brings benefits across the economy. In Australia, small and medium businesses that are advanced in their use of digital technology compared to those at a basic level are 8x more likely to be creating jobs, 7x more likely to be exporting, earn 1.4x more revenue, and are 14x more likely to be innovating[2].

Some are calling the process of implementing digital tools and business models the fourth industrial revolution. What is clear is that the consumer productivity benefits that technology has delivered are now being sought by businesses and governments.

The potential impact of this productivity revolution is evidenced by the scale of consumer benefits currently not being captured in traditional GDP. During 2015 Google's products in Australia alone supported $14.8 billion dollars of consumer benefits, alongside $15.1 billion of benefits to business captured by GDP[3].

Although regulatory barriers remain, business and governments are increasingly able to access the tools consumers have come to take for granted, including cloud services protected by world-class security technology, user-centric platforms, social collaboration tools, and information retrieval and analysis at scale.

Across the economy, the adoption of productivity enhancing technology presents a $2.2 trillion dollar opportunity for Australia through the years to 2030[4]. Importantly, it will be impossible for Australia to realise the full benefits of this change without bringing Australian business investment in technology to the level of global peers, and concurrently supporting the Australian workforce in a transition to an environment in which higher emphasis is placed on interpersonal, creative and decision-making skills.

The importance of getting Australia's *Digital Economy Strategy* right cannot be overstated. On the strength of current trends this plan will be essential to Australia's core economic strategy and maintaining Australia's productivity advantage. We thank the Department of Industry, Innovation and Science for the opportunity to participate in its development.

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[1] *Digital Globalisation: The New Era of Global Flows*, McKinsey Global Institute, 2016
[2] *Connected Small Business 2016*, Deloitte Access Economics, 2016
[3] *Google Economic Impact: Australia 2015*, Alphabeta, 2016
[4] *The Automation Advantage*, Alphabeta, 2017


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# Google in Australia

Every day, Google helps millions of Australians and Australian businesses harness the benefits of technology to communicate, collaborate and find the information they need. For more than a decade, Google Australia's employees have been developing innovative products here in Australia, helping improve Google to the benefit of Australian users and billions of others globally.

Google invests more than $400 million dollars per year in Australia and employs more than 1,300 people, about half of whom work in our engineering division, maintaining Google's core systems and developing a diverse range of products including Google Maps, Google Photos, and new technology for internet users in the developing world.

The technology that has developed into Google Maps was first invented by an Australian startup acquired by Google, and to this day Google Australia hosts one of the biggest Google Maps engineering teams in the world. Google Australia also plans to host the product team working on Google Photos, drawing on Google's deep machine learning expertise from around the world and transferring those skills to Australian engineers.

Google's Australian teams help local businesses compete effectively in the global digital economy. Google's products and services support more than than $15.1 billion dollars worth of economic activity annually for the approximately 840,000 Australian businesses who connect with consumers through Google[5].


*Some of Google's Australian employees gather for a team photo*

[5] *Google Economic Impact: Australia 2015*, Alphabeta, 2016

# Australia's ~~Digital~~ Economy

Australia's digital economy contributed $79 billion (or 5.1%) to GDP in 2013-14, having grown by 50% in real terms over the preceding three years. If the digital economy was an industry it would be larger than Australia's agriculture, transport or retail industries. By 2020, it is estimated that the digital economy could be worth 7.3% of GDP[6].

These figures demonstrate rapid growth of Australia's digital economy, but if Australia is to compete effectively in its region, skilling and investment in new technology must be encouraged in every sector of the economy employing every worker in every city, town and regional centre across Australia.

*"The transition to a digital economy is a major policy priority for all countries."*
**United Nations Conference on Trade and Development, World Investment Report 2017**

The scale of the opportunity presented by technological trends is profound. Over the 15 years between 2015 and 2030 the total economic benefit from improving technology adoption rates and ensuring workers are able to adapt to the future workplace could be $2.2 trillion dollars, or an additional $400 million per year of GDP for Australia in 2030[7].

Although Australia's consumers are generally sophisticated users of technology, Australia's publicly listed businesses lag global leaders in automation. Only 9% of Australia's publicly listed companies are engaging in automation, compared to 14% on average amongst peer countries and more than 20% in leading nations like the United States, and Australia's 9% figure is substantially bolstered by mining industry investment[8].

We do not see a lack of interest from Australian companies in technology adoption compared to global peers, but there remain substantial structural barriers in place hampering economic modernisation. Some regulations have not kept pace with technological change, like Australia's outdated Copyright Safe Harbours protections and regulations around computing services that were designed for a pre-cloud era, while others problems have been created more recently, for example changes to Australia's skilled migration system in 2017 that put in place barriers preventing Australian workers accessing necessary skills.

The opportunity for Australian business keeping pace with consumer patterns of technology adoption is underscored by the the digital economy's impact on national welfare through consumer benefits, which are already estimated to be worth around $75 billion to Australia per year[9]. Google's products alone provided $14.8 billion dollars of consumer benefits in 2015, saving the average Australian 31 hours finding information and 29 hours in transport time. Google helped students answer 25 million homework questions every night, and the 13.5 hours Google Maps saved Australians on the road alone equated to $500 million in fuel savings across the economy[10].

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[6] *The Connected Continent II,* Deloitte Access Economics, 2015
[7] *The Automation Advantage*, Alphabeta, 2017
[8] ibid
[9] *The Connected Continent II,* Deloitte Access Economics, 2015
[10] *Google Economic Impact: Australia 2015,* Alphabeta, 2016

# Trends in Technology

Technology is now so closely integrated in the personal lives of most Australians that we forget most of what we take for granted is new. Tim Berners-Lee is credited with inventing the World Wide Web in 1989 and tools like web servers and browsers in 1990, but consumers only began to access this technology in earnest the following decade. By 2000, in the developed world, only 31% of people had access to the internet, and only 7% of people had that same access globally. In the middle of the first decade of the new millennium smartphones captured the imagination of consumers everywhere, but by 2010 only 66% of people in the developed world were internet users, and 29% globally[11].

Companies like Google that helped democratise consumers' access to new technology during this period of expansion have grown rapidly with the market, but the benefits of technology have accrued primarily to consumers. Today, organisations in the public and private sectors are working to internalise this revolution in consumer benefit. Global investment in cloud computing infrastructure is driving commoditisation of computing resources for organisations, lowering costs and allowing organisations of all scales to get access to highly secure environments and sophisticated data analysis capabilities that they could not develop alone. The next wave of productivity will be driven by organisations upskilling workers to engage with existing and emerging technology in a way that adds value to their operations and brings business and government technology to the standard consumers are used to engaging with in their everyday lives.

For Australia, investments in telecommunication infrastructure domestically and in the indo-pacific region, including the Indigo subsea cable in which Google is a partner, will allow businesses in Australia to engage in real time (including via video) with consumers in the region and around the world, and in the longer term provide services via augmented and virtual reality. Neural machine translation enabled by deep learning will dramatically reduce language barriers, allowing Australian organisations and consumers to communicate with customers, partners, friends and family more easily across the indo-pacific.

*"We are on the cusp of unprecedented technological change. Done right, this technological revolution will drive the next wave of jobs, and growth in productivity and living standards. Harnessing this change to build and sustain a just and productive Australia is one of the fundamental challenges for Australia's leadership – for government and the public service, and for business and the community."*

**Dr Martin Parkinson AC PSM, Secretary of the Department of Prime Minister and Cabinet [12]**

[11] International Telecommunication Union - ICT Indicators database

[12] *Technological change: Making the most of the technological revolution*, a speech by Secretary of the Department of Prime Minister and Cabinet Dr Martin Parkinson AC PSM, 2017


*Route of the Indigo subsea cable*

These technology developments will combine with rising regional internet penetration, primarily driven by expanding cellular networks and the availability of low-cost devices operating Google's open source Android operating system, to expand regional markets for Australia's services exporters.

In Australia, where mobile penetration rates are over 84%[13], consumers will move towards new modes of technology engagement. Google Home, launched in Australia in July 2017, provides an example in which users engage by voice, a feat which is only possible due to recent advances in machine learning that enable natural language recognition. Over the long term, access to computing will be integrated seamlessly into human environments and our methods of interaction with machines will expand from fingers on a keyboard to more natural human modes of communication such as voice and gesture.

Enabling these more natural modes of interaction will reduce the barriers to social and economic engagement for elderly Australians who are not digital natives, Australians with lower levels of English proficiency (where Google's systems have developed expertise in their native language), and differently abled Australians who may have difficulty interacting with technology using traditional methods.

[13] *Australia edition, Deloitte Global Mobile Consumer Survey*, Deloitte, 2016

## The Role of Government

As technology adoption is a whole of economy issue, many of the structural approaches to policy and policymaking that have assisted Australia in maintaining its economic growth since the reforms of the 1980s and 1990s will continue to pay dividends. However, as in previous periods when economic reform became necessary for Australia to maintain its competitive advantage, Australia in 2017 sits at a crossroads.

Down one path, an open and dynamic economy that embraces technology as an economic enabler, optimising its regulatory structure to extend its reach and competitive advantage, and building citizens' trust in government. Down another, an economy that retains substantial barriers to innovation, eroding its competitive advantage compared to regional peers and fomenting political instability at home.

> *"...digital technology offers opportunities for economic reform greater than those of the 1980s and 90s, or the opening of China to the world..."*
>
> **The Australian's Economics Editor David Uren, paraphrasing a speech by Former Prime Minister Paul Keating[14]**

Australia's economic opening combined with the China's appetite for natural resources to create an opportunity that has fuelled a quarter century of uninterrupted economic growth. Mining investment and minerals exports were not only a gift of Australia's stable geology and proximity to growing markets, but also of stability in the political system and a strong rule of law that provided investment certainty.

The strength of Australia's public institutions continues to be important from an investment perspective. Australia has highly professional independent regulators, public servants who are committed to evidence-based policymaking, and generally undertakes policy and legislative development in consultation with the stakeholders its decisions are going to affect.

Another factor for government as technology continues to transform the economy will be maintaining a strong domestic skill base through sustained public investment in health and education. Changing skilling requirements over the lifetimes of individual workers will necessitate reforms to education delivery, and Australia's immigration policy must be repaired to ensure Australian workers can get access to the skills that will help them contribute in a technology-enabled workforce.

Australia's well-supported workforce will continue to benefit from 'open by default' regulatory structures that maximise the scope of possibility for innovation. In the context of Australia's economy, 80% of which falls into the services sector that employs more than 9 million people[15], the government's stalwart support of free trade will allow Australia to argue strongly for market access for its services exporters as technology-driven export market expansion accelerates in the Indo-Pacific over the coming decades.

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[14] *Digital danger as potential ignored, Paul Keating warns*, David Uren, The Australian, 2017
[15] *Australian Industry Report 2016*, Department of Industry, Innovation and Science, 2016

The public sector employs nearly 2 million people across Federal, State and Local government[16]. Its services are used by 24.75 million Australians, including at times when they are most vulnerable. Government services, from transport, to tax, to health, generate or have the potential to generate significant amounts of useful data. Implicit and explicit choices made by government in the requirements suppliers and partners must meet, policies that affect the government's approach to technology adoption, and the way the government structures and licenses its data, will play a powerful role in shaping public and private sector behaviour.

Finally, the scope of government and multiple points of interaction it has in the lives of individuals and business operators provide an opportunity to create scalable programs and put them in front of an audience. Digital skills education and digital inclusion initiatives, for individuals and businesses, may be appropriate test cases for a scalable, digitally-delivered approach.

# The Role of Industry

Workforce Development

The productive capability of 12.3 million employed Australians[17] is shaped primarily by their experiences at work. That experience, including both formal and informal training, is among the most significant forms of education Australians receive. It is informed by the leaders and mentors with whom they interact, the technology and digital systems they use, the organisational culture they operate in, and their collaboration with colleagues and business associates within Australia and in other economies and around the world.

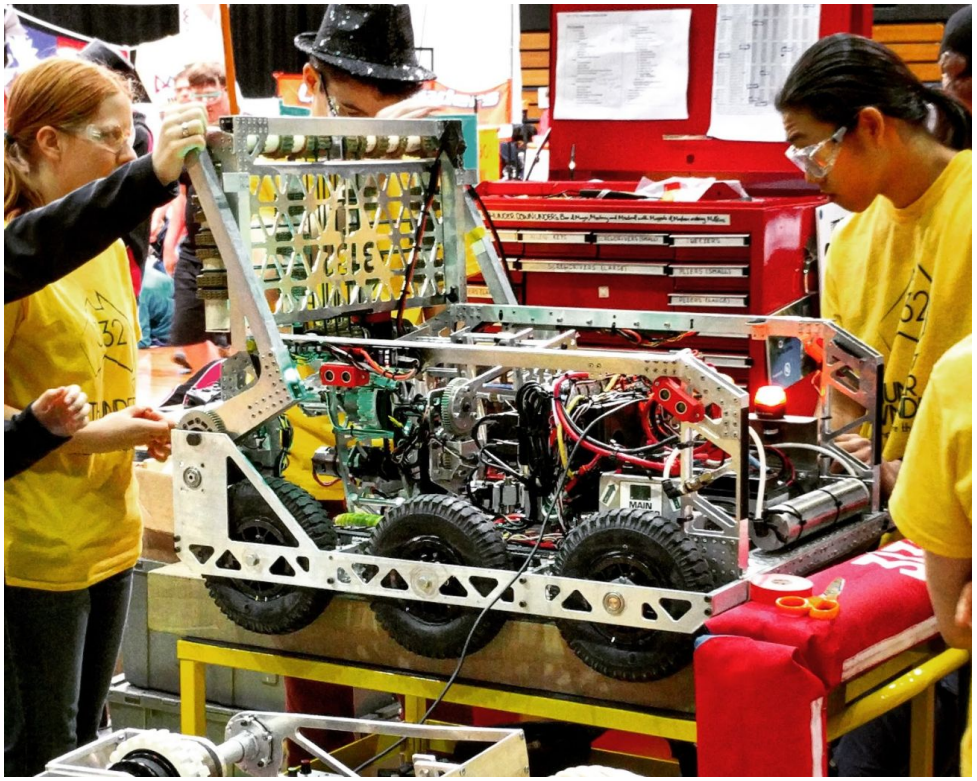
The first responsibility of Australian industry in supporting Australia's economic transformation is to invest in training and global talent acquisition that will develop the skills - from leadership and digital awareness to innovation capability and hard technical skill sets - that will develop and enhance Australia's regional competitive advantage.

Industry also has a role to play in supporting skills development from the beginning of an Australian's first experiences in education through to the time they enter the workforce. For example, Since 2011, over 10,000 teachers in Australia have completed Google's Computer Science for High School (CS4HS) program. The professional development training for teachers helps educators build the skill needed to teach children foundational computing concepts and build confidence in logical thinking.

An additional 13,000 Australian teachers have enrolled to participate in the Computer Science Education Research (CSER) Digital Technologies Massive Open Online Course (MOOC), a program funded by Google and being implemented by the University of Adelaide, which helps educators learn about teaching digital technologies in their classrooms.

[16] *6248.0.55.002 - Employment and Earnings, Public Sector, Australia, 2016-17,* Australian Bureau of Statistics, 2017
[17] *6202.0 - Labour Force, Australia, Oct 2017*, Australian Bureau of Statistics, 2017

Over 3,300 students in Australia have also participated in FIRST Robotics program, an initiative sponsored by Google, with funding focused on groups underrepresented in science and technology, to develop skills in science, technology, engineering & mathematics, design, innovation, teamwork, communication, and leadership - that are critical for the future of work.



*A robot built by Australian students for the 2015 FIRST Robotics competition*

Google Australia's engineering outreach team works closely with universities to ensure Australian computer science courses produce candidates with the skills needed to work at Google, provides internship opportunities for more than 70 students from Australian universities every year, and recruits top engineers and digital technology specialists from across Google globally to mentor and train locally recruited staff.

Helping small and medium businesses

Large companies have access to resources to create digital strategies, as well as other factors influencing digital success like staff reskilling and long term recruitment planning, technical and infrastructure spending, and digital marketing. This is not always the case for small and medium businesses (SMBs), which nevertheless are huge economic contributors.

As of June 2016 only 2.5% of actively trading Australian businesses had 20 or more employees, and 59.3% of actively trading businesses had annual turnover of less than $200K[18]. SMBs within Australia are the main suppliers of goods and services to 55% of Australian businesses[19].

[18] *8165.0 - Counts of Australian Businesses, including Entries and Exits, Jun 2012 to Jun 2016*, Australian Bureau of Statistics, 2017
[19] *8167.0 - Selected Characteristics of Australian Business, 2015-16*, Australian Bureau of Statistics, 2017

Just under a third of Australian businesses use cloud computing services, and the use of these services increases with each successive employment size range, from 25% for businesses with 0-4 persons employed to 60% for businesses with 200 or more persons employed[20].

Oxford Economics recently quantified the likelihood of export incidence for digitally engaged SMBs, noting the web, social media, online search, mobile apps, cloud computing, and other digital technologies are facilitating cross-border trade and data flows, generating trillions of dollars in economic activity[21]. Oxford found a strong growth dividend for the Australian economy if more small businesses were to embrace digital tools and technology, potentially driving the creation of up to 10,500 jobs and addition of $3.3 billion to Australia's export sales.

At Google, we're working to help SMBs to make the most of the opportunity presented by technological change by offering tools they can use to grow their business. Examples include AdWords, Google My Business, Google Translate, Global Business Map, and Google Analytics. We have also opened access to Google Cloud Platform – the same infrastructure that Google uses for its own services – so SMB owners can focus on their core business rather than building and maintaining complex digital infrastructure. Additionally, new businesses can gain access to email, apps, calendar and other word-class digital organization and communication tools at little to no cost through G Suite by Google Cloud.

Data from the 2017 iteration of the Deloitte-Google series of national SMB surveys shows those businesses with an advanced level of digital engagement are 50% more likely to be growing revenue and earning 60% more revenue per employee[22]. From previous research, we know that this cohort is also more than 8 times more likely to be creating jobs, creating an average of 12 additional jobs in the previous year, 7 times more likely to be exporting, and more than 14 times more likely to be innovating by offering new products or services[23].

This same annual research shows the take-up of digital tools accelerating over time. In 2017, the share of SMBs with basic digital engagement fell to 13%, an improvement of 10% on the previous year, as businesses have moved up the engagement ladder.

However, awareness and digital skills remain a barrier for the majority of SMBs. Many SMBs cite the inadequate skills of staff (19%) or a lack of knowledge (18%) of how to use business tools as key barriers to greater digital engagement. Equally of concern, nearly one quarter of businesses (24%) either have no plans to, or don't know how they will make plans, to address skills gaps.

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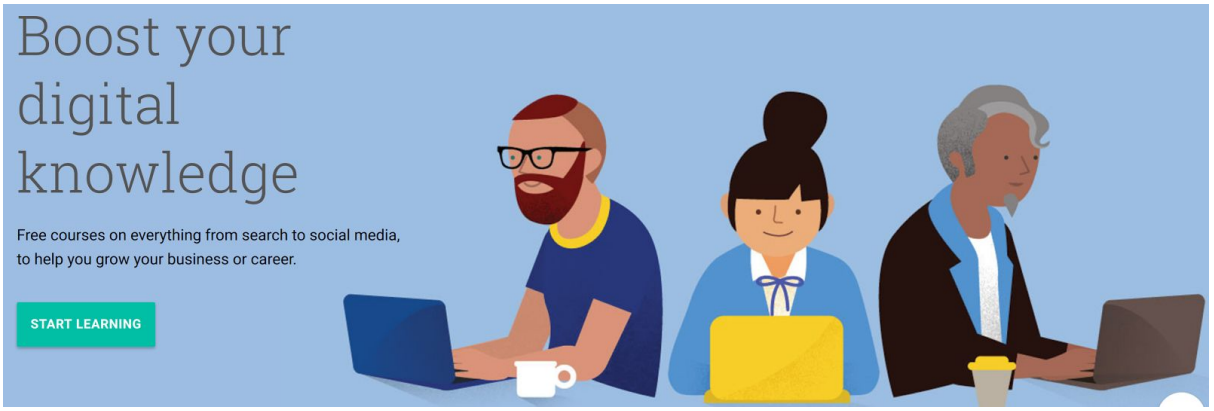
[20] *8129.0 - Business Use of Information Technology, 2015-16*, Australian Bureau of Statistics, 2017
[21] *Local Business, Global Ambition*, Oxford Economics, 2017
[22] *Connected Small Businesses 2017*, Deloitte Access Economics, 2017
[23] *Connected Small Businesses 2016*, Deloitte Access Economics, 2016




In an effort to resolve the SMB digital skills gap we have launched the Digital Garage, a free online training platform that helps small business make the most of the web. The platform includes almost 90 training modules covering topics from search to social media designed to help Australian SMBs grow online. Google also works with the Australian Chamber of Commerce and Industry, Council of Small Business of Australia, and other industry bodies, to take this training to towns and cities around Australia, a project which has already resulted in training for thousands of SMBs.

Consumer education and empowerment

Australians interact with commercial entities every day, in managing their finances, sending messages and emails, coordinating events, interacting with entertainment content, travelling, researching, and learning. The very nature of these day-to-day interactions, as well as the information companies provide to consumers seeking information about their products and services, provide opportunities to broaden public technology skills, increase understanding of how technology operates, and inform members of the public how the information they provide to companies is used.

Companies benefit from providing a safe and secure environment for the people who use digital products. This is fundamental to building and maintaining users' trust. Failing to understand and protect the interests of people using your products and services simply results in those users seeking an alternative. This will only become more true as Australians conduct more and more of their interactions with businesses through the web, where information on competitive offerings is easily available and an alternative is just a click away.

*Online Safety*

Google's products are designed with safety and security as core principles. We provides educational resources such as the Google Safety Centre[24] and the YouTube Safety Centre[25] to offer advice on how to use Google products in a smart, safe and responsible way. We encourage our users to tell us about illegal content or abuse they encounter on the web through our Help Centres and provide contextual flagging and reporting tools alongside user generated content to assist in bringing this content to our attention.

[24] Google Safety Centre
[25] YouTube Safety Centre

Responding to the needs of people who don't want to have adult content included in their search results, including parents concerned about children using their computer, Google has developed a customisable SafeSearch filter[26], which uses advanced technology to block pornographic and explicit content from search results. We also provide Restricted Mode for YouTube which removes adult content from YouTube search results. We have reporting and sharing tools alongside every video on YouTube which allow users to flag content for review, and we provide YouTube creators granular controls for enabling or disabling sharing and commenting permissions.

As a company whose products support some of the fundamental functions on the consumer internet, we have made efforts to support digital citizenship education in Australia through non-profit organisations including ReachOut, The Alannah and Madeline Foundation, Kids Helpline, Project Rockit and Bravehearts. This includes our support for The Alannah and Madeline Foundation's eSmart Schools Program and the eSmart Digital Licence. Google awarded the Foundation with a $1.2 million grant in 2015 to ensure that every year 6 student could obtain a Digital Licence for free.


*Privacy*

One of the core concerns internet users have is how their data is being used. On products like Search and Maps, people's queries can be deeply personal, and Google's business would not work without users trusting that their data will not be provided to third parties or otherwise misused.

Companies must prioritise users' privacy when building business models, assessing use cases for data-driven innovation, and when building digital platforms, all the while ensuring any data collected is safe and secure so as to avoid the harms that can flow from data breaches or unlawful access. Google invests significant resources, including in internal education, to make sure we are making the right engineering decisions (using 'privacy by design' principles) and providing our users with tools to control how their data is being used.

Organisations in the public and private sectors must recognise that privacy means different things to different people, in different situations, and from different cultures. There is no "one size fits all" answer to privacy. This is why Google has prioritised building tools that empower users by putting them in control of their own privacy. Some examples include:

[26] A guide to blocking explicit results on Google using SafeSearch

***My Account.*** My Account allows users to access a full suite of privacy and security settings in one place. Each week, over 16 million people visit their account settings page and make 3.3 million changes. Of note, these changes are equally split between users turning settings (like location history) on, and turning them off.

***Search and Location History.*** Keeping a record of what you search for can improve the quality of results and advertising experience. However, if a person wants to search without their queries being stored, they can turn off Search History. Likewise, knowing a person's location helps us give directions without a user having to type in their start point, and helps us provide provide smart notifications like when the next train is due to arrive or when to leave for the airport to make a flight on time. But users have the option to turn this off if they prefer the information not be collected.

*Data Portability*

Consumers benefit when there are low barriers to transitioning between comparable services offered by different companies. In the digital context, this means data portability matters. Australians should be able to choose services on the basis that they are the best services available, not because a company is restricting their ability to access their own data. To support user choice Google has developed Google Takeout[27], a tool that lets people export (and remove) data stored by Google in relation to services like email, calendar data and photos, and import it to another service.

Building Confidence in Technology

If Australia's economic transformation is to be successful Australians need to be confident that the technology deployed by governments and businesses is reliable and secure. Consumer education and empowerment are important in creating a healthy digital environment that works to the benefit of the public, but those practices must be underpinned by physical and software systems that are capable of protecting users' data, from their private conversations to their financial details and identity. The systems important in users' everyday lives must also be reliably available as and when users need them.

*Cybersecurity and Encryption*

Australian consumers enjoy world class cybersecurity as a result of decades of private sector investment in secure software and infrastructure. Biometric on-device security, multi-factor authentication, personal data encrypted on-device and on server, at rest and in transit, and secured off-device within networks managed by the world's top digital security professionals - these factors underpin public confidence and the consumer internet, which is now deeply enmeshed in the public and private sector economy.

Google's business relies on a secure internet that the public can trust. We continue to prioritise security from the engineering design level, and lead technology community

[27] Google Account Help - Download Your Data

efforts to improve internet security more broadly, including through:

- **HTTPS by default:** Google is moving towards using HTTPS by default across as many Google services as possible. In 2016 we introduced an HTTPS Report Card[28] within the Google Transparency Report[29], which aims to track encryption efforts both at Google and more broadly across the web.
- **SSL as a standard:** Session-wide SSL encryption is the default when any Australian is signed into Gmail, Google Search, Google Docs and many other services. This protection stops others from snooping on a member of the public's activity while they are on an open network, like when they use their laptop at an airport lounge or coffee shop.
- **2-Step Verification**: Our 2-step verification system provides a stronger layer of sign-in security; even if an Australian's password gets stolen, it's not enough to access their account. We offer this protection, for free, to any account holder.
- **Safe Browsing:** About 1 billion people receive protection against phishing and malware every day because of the warnings we show users about unsafe websites through our Safe Browsing effort.
- **Google Account suspicious activity notification:** Every time a member of the Australian public logs into Google, we run a risk analysis to determine if there's something unusual going on with their account. If it looks like there's suspicious behavior, we notify them over email, SMS, and via a clear warning at the top of their Gmail page. They can then review their account activity to check it out.
- **State sponsored attack warnings:** Similarly, if Google believes that a member of the Australian public has been targeted by a State sponsored cyberattack, we notify them and provide instructions for securing their account.
- **MyAccount:** Provides a one stop shop to review security and privacy settings for Google account holders and anonymous browsers.
- **Incognito Mode:** When using Google Chrome's Incognito Mode, pages a user opens and files they download aren't recorded in Chrome's browsing or download history.
- **Vulnerability Rewards Program:** Google works with security researchers and provides rewards to those who identify vulnerabilities within Google's services. In 2016, we awarded US$3 million to this academic community.

In the old world, organisations attempted to provide secure digital systems by creating islands of security - owned networks ringed by firewalls. This has proved to be a brittle approach, where one crack in the shell can result in the mass loss of user data or compromise of critical systems and controls. To prevent such losses, the new security paradigm for resilient and secure systems is security in depth. In this context, strong encryption has become a critical tool, in fact, it is an essential foundation for cyber security more broadly and an important driver of consumer trust in the Internet[30].

[28] Google Transparency Report - HTTPS encryption on the web
[29] Google Transparency Report - Home Page
[30] *How strong encryption supports the development of a safe and secure Internet: an Asia-Pacific perspective*, Analysis Mason, 2016

Google has three primary areas of focus: Encryption in transit, including extra defense layers such as perfect forward secrecy; encryption at rest by default; and end-to-end encryption, in which only the end user holds the keys to decrypt content. Google is not able to scan or parse end-to-end encrypted content that is transmitted or stored on Google's network. This means value-added features like calendar integration, spam filtering and machine learning assistance are not available to the user when data is encrypted in this way.

*Reliability*

Australians will not trust digital systems that are slow, unreliable or inaccessible when they need them most. The uptake of cloud technology across the businesses community will allow Australian organisations of all scales to deploy reliable digital systems, both for internal productivity and interaction for the provision of government or consumer services.

*Inside a Google datacentre*

Google's infrastructure supports 8 applications with more than 1 billion users around the world. It supports more than 100 billion Google searches each month and more than 400 hours of YouTube video uploads each minute. It delivers Gmail and other services to billions of users with 99.978% availability and no scheduled downtime. This is possible because Google's application and network architecture is designed for reliability.

Google's computing platform assumes ongoing hardware failure, and it uses robust software failover to withstand disruption. All Google systems are redundant by design, and each subsystem is not dependent on any particular physical or logical server for ongoing operation. Data is replicated multiple times across Google's clustered active servers so that, in the case of machine failure, data will still be accessible through another system. We also replicate data to secondary data centers to ensure protection from data center failures.

Google Australia is currently deploying commercial cloud technology that makes the performance, scale, and reliability of Google's technology available to businesses, schools, and government institutions across Australia.

Cooperation with Law Enforcement

At Google Australia we cooperate with law enforcement and other government organisations like the Office of the eSafety Commissioner, as well as with industry, community organisations and our users to manage safety, security and privacy online. For example, Google is an active participant in the Government's Online Cyber Safety Working Group, and has a legal team devoted to interactions with law enforcement 24 hours a day, 7 days a week. We respond to thousands of law enforcement requests for assistance each year.

# Inclusive Benefit

It is not enough for governments and businesses to deploy new technologies to increase productivity and long term improvements to Australian standards of living. Public support and economic benefits will come from inclusive development that supports people whose roles are changing, groups with lower levels of digital literacy and STEM sector engagement, and the nonprofit sector.

The Future of Work

Changes in technology have always affected demand for skills across the economy and thus the shape and distribution of jobs. Australia has experienced in the past periods of productivity improvement in agriculture and manufacturing, which each resulted in substantial change in the prospects for workers in those industries, and current investments in digital productivity technology are also likely to to drive workforce change. In fact, from 2000 to 2015 the average Australian worker experienced 2 hours of automation across their working week, as routine and repetitive tasks have been automated, and based on current trends will see another 2 hours automated through to 2030[31].

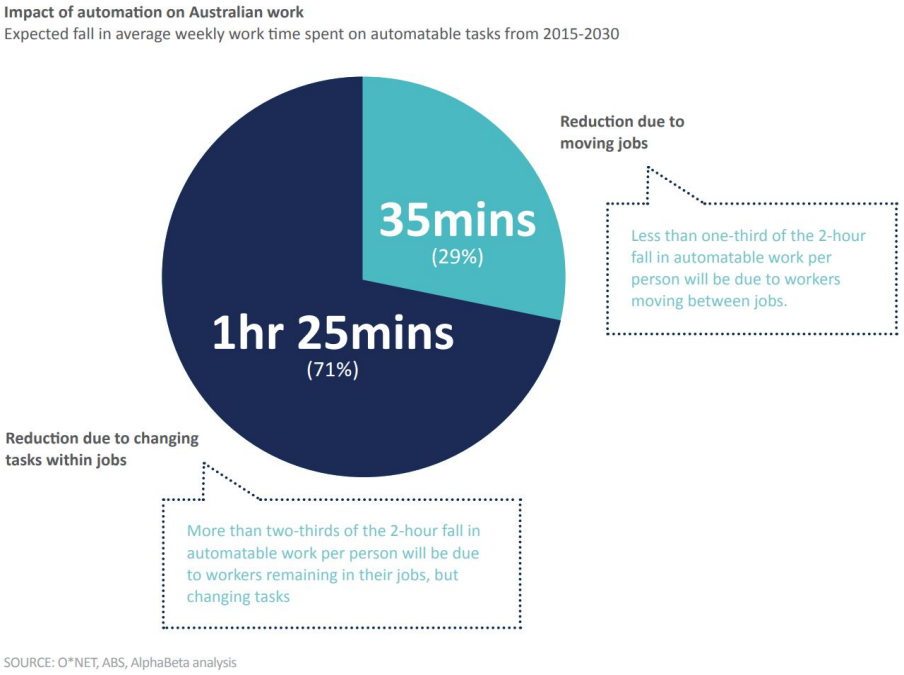
*"Technological advances over the past two hundred years have been the major driving force behind improved standards of living across the globe. Notwithstanding that, there have been recurring fears that technological advances would eliminate so many jobs that insufficient meaningful jobs would be left for people to do. That fear has turned out to be unfounded, at least thus far... But we shouldn't be complacent."*

**Dr David Gruen, Deputy Secretary, Economic and G20 Sherpa, Department of Prime Minister and Cabinet, 2017[32]**

This automation affects some tasks, and therefore some jobs and workers, more than others. However, despite experiencing significant automation across the workforce,

[31] *The Automation Advantage*, Alphabeta, 2017
[32] *Dr David Gruen's speech to the 2017 Economic and Social Outlook Conference*, Department of Prime Minister and Cabinet, 2017

unemployment in Australia remains low. Technology has freed labour capacity and changed the environment in which we live, and new services have appeared to absorb the wealth created by productivity increases, creating new jobs.




If every Australian was able to spend the extra 2 hours of weekly work time that machines are expected to shoulder over the next 15 years on higher-value activities (rather than simply reduce their work time by 2 hours per week), it could boost Australia's economy by up to $1.2 trillion in value over that timeframe, and different groups of workers affected by technological change have different policy needs.

Workers at low-risk of losing their livelihood due to automation are expected to need only minimal government support, and the benefits from automation will likely outweigh its threat. The benefits of accelerating automation and letting these workers naturally shift to higher value work would be substantial for this group, worth $400 billion by 2030.

Workers who perform a large share of automatable tasks may need support to find new employment. An estimated 3.5 million Australian workers at high-risk of being displaced by automation between 2015 and 2030, and policies providing training and assistance to keep these people in the workforce could yield economic gains worth up to $400 billion.

The costs for society will be highest if Australia fails to adequately prepare its future workers for automation. An additional 6.2 million people are projected to join the Australian workforce by 2030, and education policies ensuring these workers are equipped with the right skills could lead to economic gains of $600 billion dollars.

Although the productivity benefits of technology will do the most to raise Australia's economic performance and standard of living over time, we will also see other benefits as a result of the changing nature of work. As automation continues to shift dangerous, tedious

and less valuable tasks from people to machines, work injuries are set to fall and work satisfaction levels to rise as workers focus on more creative and interpersonal activities.

- The total number of **workdays lost to injuries sustained from physical work in the Australian economy could fall by 11%** to 1.7 million in 2030.
- Workers currently engaged in more automatable tasks have lower job satisfaction. If current automation trends persist, it is estimated that **62% of low-skilled workers will be happier in their jobs by 2030 compared with today**.
- Australian wage data shows that the least automatable tasks are typically the best paid. **An hour of non-automatable work pays 20% higher wages than an hour of automatable work**.

Google Australia's research in this policy area is ongoing, and we look forward to working with government, industry and nonprofits to better understand the Australian workforce. In the meantime we will continue investing strongly in the STEM education, workforce development, and digital skills programs outlined in this document, as well as investigating other ways that technology can be used to assist in delivering positive outcomes.

Digital inclusion

It's important that all Australians are in a position to benefit from technology. However, barriers to the use of basic digital services remain for some Australians, including lack of access to and familiarity with technology, language barriers due to low English proficiency or understanding of digital terminology, and inability to access affordable internet connections. These issues primarily affect older Australians, new migrants, and Australians experiencing poverty or homelessness.

Google Australia is working with industry and the nonprofit community to address issues of digital inclusion in Australia, including as a founding member of the Australian Digital Inclusion Alliance (ADIA); a coalition of more than 200 organisations from across government, community, business and academic sectors working together to accelerate action on digital inclusion.

Google works with Infoxchange to create opportunities for disadvantaged Australians who might not otherwise be realising the full benefits of technology, including through Ask Izzy, which provides Australians who are experiencing homelessness with information on services, and through DigiHouse, which provides digital skills training to people in community housing and has now attracted support from state governments and community housing providers. This program helps build digital literacy in disadvantaged communities, including for elderly Australians and new migrants for whom english is not their primary language.

We also support the Regional Online Heroes program, which recognises and celebrates outstanding regional businesses that are thriving in their local community and embracing digital technology to grow. Some of our past finalists include a tea business in Cairns, a rose-petal farm in Swan Hill, a visual artist in Lismore, an agricultural software company in

Toowoomba, and a health services provider in Northam, highlighting the depth and breadth of talent across regional Australia.

Google has also initiated a number of training and community outreach programmes, harnessing the time, energy and know-how of Google Australia's people to deliver projects like Age Engage, which helps older Australians improve their internet skills, and Google for Nonprofits, which helps build the digital capability of Australian nonprofits.

Australia's nonprofit community

At Google Australia we see ourselves as having a strong role to play helping local nonprofits innovate and adapt to new digital technologies. Our general approach is to collaborate with nonprofits on projects that are scalable and use digital technology in innovative ways to achieve a social impact. We believe targeting our funding in this way and supporting the nonprofits who receive it (for example with technical support and mentoring from volunteer Googlers), helps to build technical and innovation capability within the local nonprofit ecosystem.

However, our partnerships with the Clontarf and Stars Foundations demonstrate we do make exceptions to this approach, such as when we see a cause like Indigenous development that is important to support in Australia, and assess that organisations working directly with small numbers of individuals are having the most impact.

*The Google Impact Challenge*

Google Australia has provided $8.5m to Australian nonprofits through Google.org's *Google Impact Challenge* (GIC), $3.5m in 2014 and $5m in 2016, and we will provide a further $5m as part of our 2018 Google Impact Challenge. Due to a number of factors including the quality of local nonprofits and ideas, and strong support from Google Australia's local staff, Australia in 2016 became the first country outside the United States to take part in the GIC for a second time, and the 2018 Impact Challenge will represent another world-first milestone for Google and Australia.

2014 GIC winners have brought sustainable sanitation and energy to Cambodian communities (Engineers without Borders), deployed solar lighting systems to off-grid villages in East Timor (Alternative Technology Association), developed a low-cost system to detect the onset of blindness caused by diabetes (Fred Hollows), and developed an app that lets Australians who are homeless find resources like food, clothing and shelter (Infoxchange).

2016 winners are working on projects that include using autonomous underwater vehicles to protect the Great Barrier Reef (Great Barrier Reef Foundation), connecting people in need with pro-bono legal services (Justice Connect), helping Australians change their relationship with alcohol (Hello Sunday Morning), bringing app-based eyesight checks to remote communities (Centre for Eye Research Australia), and encouraging literacy in indigenous languages (The Australian Literacy and Numeracy Foundation).


*Ask Izzy usage across Australia*

The GIC has been important for Google Australia to identify local partners to work with in our ongoing nonprofit initiatives. In the 2014 GIC we funded Infoxchange to create Ask Izzy[33], which helps people who are homeless locate resources like food and shelter. This project has now gathered support from some of Australia's largest companies, and Australians have made hundreds of thousands of searches for homelessness resources. In 2016 we announced a further $500,000 for Infoxchange to develop the Ask Izzy open data platform[34], which will provide the information for service providers and policymakers to tailor service provision to specific communities and locations. With support from Google engineers Ask Izzy will soon be able to identify trends in the need for housing, food, health and counselling support, and ultimately allow homelessness service providers tailor the makeup of support services by location.

*Australia's startup community*

Google was founded less than 20 years ago, and maintains ties around the world to the startup community. The startup community in Australia is an engine for growth and new job creation, and startups in Australia are are 10x more likely (25.9%)[35] to be generating export revenue than traditional businesses (2.5%)[36].

In Australia Google's 'Google for Entrepreneurs' project helps fund Fishburners, the largest network of nonprofit coworking spaces in Australia. Google Australia helped found and continues to support StartupAUS, an organisation that represents the interests of startups in Canberra and state capitals around Australia[37], sponsors the Crossroads startup policy

[33] https://www.infoxchange.org/au/community-programs/homeless-help
[34] https://www.infoxchange.org/au/news/2016/10/ask-izzy-open-data-platform-uncover-homeless-need
[35] *Startup Muster 2017 Annual Report*, Startup Muster, 2017
[36] *ABS 5368.0.55.006 - Characteristics of Australian Exporters, 2015-16*, Australian Bureau of Statistics, 2017
[37]

review, and has funded efforts to map the startup ecosystem through the Startup Muster project. Google Australia's local engineers have gone on to work in some of the most exciting startups in Australia.

*Other work with local nonprofits*

We also partnered with Infoxchange on the Digi House project[38], providing $500,000 to help build digital literacy in disadvantaged communities, including for elderly Australians and new migrants for whom english is not their primary language. Through this project Infoxchange provides digital skills training to people in community housing, and it has attracted support from state governments and community housing providers.

Google recognises that Indigenous development remains a key challenge in Australia, and we work to support indigenous communities through our relationships with Clontarf and Stars Foundation, through whom we fund programs that encourage vulnerable kids to attend school, and host visits for indigenous students at our Sydney offices where they take part in coding or robotics workshops. We have also supported initiatives like our 2014 GIC funding for the Australian Indigenous Mentoring Experience (AIME), and 2016 GIC funding for indigenous language preservation through the The Australian Literacy and Numeracy Foundation.

Encouraging diversity in science and technology education is likewise important to Google. We have supported FIRST Australia with over $1,000,000 to bring computer science and robotics to students who are not yet well represented in science and technology careers, including women, students from rural and regional Australia, and students from economically disadvantaged areas. Google has not only funded the provision of equipment, we have focused our program with FIRST on building teacher capacity and developing the entrepreneurial skill teams need to create a sustainable funding model over time, providing the 'start-up capital' to create an inclusive FIRST competition in Australia.

In recognition that technology can create social challenges, we partner with nonprofits working on technology issues we know are of concern to the community, like the safety of children online. As well as our $1,500,000 support for the Alannah and Madeline Foundation eSmart digital licence. we also support organisation like Project Rockit and Generation Next who use digital tools to help kids experiencing bullying, social exclusion or other issues affecting their mental health.

We also believe technology can help with pressing environmental concerns. On top of our support for Google Impact Challenge winners like the Great Barrier Reef Foundation, we have funded the development of an app to help with conservation of the platypus[39], and bring Google's 3D camera technology to Australia's great walks and sites of environmental importance, documenting them for the education and awareness of current and future Australians.

[38] https://www.infoxchange.org/au/community-programs/digital-literacy-social-housing
[39] Welcome to platypusSPOT

*Google's Street View trekker in Barrington Tops National Park*

# Recommendations for Economic Growth

**A) Reform Australia's copyright system to protect digital services, innovators and creators**[40]

- *Update the safe harbour provisions in the Copyright Act so they apply to all providers of online services including internet platforms, libraries and educational institutions as well as Internet Service Providers (ISPs)*
- *Integrate a flexible Fair Use style exception into the Copyright Act to facilitate the innovative use of digital technologies*

Much of the technology that underpins the development of Australia's economy depends on the transfer of information over networks and the use of information, in which copyright may subsist. This means digital technology and information networks are deeply affected by copyright law. We have established that the use and development of digital technology will be fundamental to Australia's economic future. In this context, copyright law reform will be a key consideration in optimising Australia's economic policy.

***Safe harbours***

Australia has a simple 'safe harbour' system that gives rights holders an efficient way to seek removal of infringing content and rewards online service providers for their assistance by granting legal protections under the scheme. Australia is required by the Australia United States Free Trade Agreement (AUSFTA) to include all online service providers in the scheme. This is the position in the US and other countries where safe harbours have been

[40] A complete analysis of Australian Copyright law and its effect on the digital economy can be found in Google Australia's submission to the Productivity Commission Intellectual Property Arrangements Issues Paper

introduced such as Singapore, South Korea, the UK and other EU countries. However, Australia has only given safe harbour protection to commercial ISPs (namely carriage service providers).

Excluding other online service providers from the safe harbour scheme makes Australia a high risk legal environment for hosting content when compared to countries that have safe harbour schemes with broad application. It also creates an uneven playing field for local innovations, placing them at serious commercial disadvantage when compared to commercial ISPs and global competitors.

The purpose of the Safe Harbour Scheme is to set out a code of behaviour that, if followed, protects those types of entities to whom it is available, and who meet its requirements, against remedies otherwise available for copyright infringement. The protection that it affords means that an eligible service provider need not worry about the law of authorisation and its conceivable varying reach as developed in the cases: if the Safe Harbour Scheme's conditions are met, the service provider can rest easy. This is entirely appropriate in the online environment where millions, and even billions, of users may be using the platforms provided by businesses.

Business certainty about the legal framework promotes investment and commercial activity; that is certainly true of the online environment – indeed, it might be said to be particularly important given the inherent challenges of starting online businesses that need to be globally competitive, without adding legal uncertainty into the mix.

Reforming Australia's safe harbours laws was recommended by the Productivity Commission in its final report into Australia's IP arrangements.[41] This reform should occur as a priority.

***Flexible fair use exception***

Australia's current copyright exceptions are 'static' - confined to specific purposes and technologies, and not capable of adapting to changes in technology and the way consumers and business are using technology. Australia's laws do not protect technology services (that are not ISPs) against liability for user behaviour, not are citizens protected for fair use of copyrighted materials.

The nature of Australia's static approach to copyright exemptions acts a strong disincentive against digital research and development in Australia, and penalises infrastructure and activities Australians take for granted, including:

- basic internet functions such as website indexing and caching to that are required to provide Australians with access to a search engine;
- cloud computing services that allow users to store and share content;
- creative and transformative works, such as musical mashups;

[41] Productivity Commission, Intellectual Property Arrangements, No. 78, 23 September 2016 (Rec. 19.1).

- research and development that uses text and data mining of publicly available information,
- various common consumer uses of copyrighted materials (e.g. sharing a news clip on social media).

The Australian Law Reform Commission (**ALRC**) and the Productivity Commission have each undertaken detailed analysis of Australia's copyright exceptions and found those exemptions inadequate and inappropriate for the digital environment[42].

Many of the world's leading digital economies, including Israel, the United States, South Korea and Singapore (Fair Use Countries), have also instituted flexible Fair Use exemptions to protect innovation and encourage technology investment. The ALRC recommended that Australia should adopt a flexible Fair Use copyright exception that adequately reflects the dynamic nature of innovation in the digital economy[43]. And the Productivity Commission recommended the acceptance and implement of the ALRC's final recommendations regarding a fair use exception in Australia[44].

Not having fair use, or a flexible exception, locks Australian companies out of markets because it does not prevent overseas companies from developing and selling goods and services that depend on fair use exceptions for their development in jurisdictions where fair use does not exist. It just stops local companies in those countries from themselves developing those good and services locally. So while there have been more than 6 billion translations in Australia using Google Translate over the past 3+ years, with English and Mandarin being the top two translated languages, because of Australia's copyright laws it's not something that an Australian company could have created, or for that matter that Google could have created in Australia.

In the digital age, Australian businesses and the Australian economy, more generally, will be at a substantial disadvantage to their overseas counterparts in Fair Use Countries if it maintains its closed fair dealing exceptions.

**B) Ensure regulations governing use of cloud services in the public and private sectors recognise global security standards, and that government exhibits national best practice in the use of digital technology**

- *Ensure Australian regulations governing cloud services are aligned with international best practice to reduce barriers to cloud services provision*

There is a strong desire from organisations at all levels of the economy to adopt cloud services for the purposes of effectively managing their digital operations, accessing new technology, improving security, and achieving cost efficiencies. However, uncertainty driven

[42] *Copyright and the Digital Economy*, Australian Law Reform Commission, 2013; Productivity Commission, Intellectual Property Arrangements, No. 78, 23 September 2016
[43] ibid
[44] Productivity Commission, Intellectual Property Arrangements, No. 78, 23 September 2016 (Rec. 6.1).

by a slow reassessment of regulatory risk moving from on-premises servers to commoditised computing in the cloud is continuing to hamper adoption.

This uncertainty is proving an issue in sectors as diverse as financial services, healthcare and government, and depriving public and private sector organisation from the full range of commercially available choices, with an adverse impact on worker and organisational productivity and cybersecurity as well as technology costs.

In the context of the constant and rapid evolution of cybersecurity threats, the cloud security model's ability to adapt rapidly to protect organisations across the economy is an important tool in managing Australia's national risk. The government should consider ways to harmonise the standards of all relevant regulatory bodies with those defined by internationally recognised security standards organisations. This would put international best practice cybersecurity in reach of more Australian organisations.

**C) Fix skilled migration policy to ensure Australians have access to skills they will need for the jobs of the future**

- *Improve Australians' access to international knowledge transfer by adding technology and digital roles to the MLTSSL reform in the short term, and reform the immigration system in the medium term to recognise proprietary knowledge and increase certainty to encourage Australian jobs creation*

Approximately 550 Australians work for Google in other nations around the world. This global mobility is good for both Google and Australia. When Google brings a new worker to Australia, whether they be Australian or foreign born, they bring knowledge and skills that are necessary for us to develop the skills of locally-recruited Australian workers and maintain a globally competitive Australian workforce.

Our Australian workforce has grown from a handful of people in a Sydney apartment in 2002 to more than 1,300 people in 2017, including one of Australia's largest computer science workforces. The majority of Google's workforce in Australia is Australian, however, the skills they require to adapt in a period of rapid technological change often come from overseas. Likewise, the digital technology skills Google employees bring from overseas or develop in Australia are transferred to workers in the Australian businesses Google employees partner with when developing technology solutions in areas as diverse as cloud computing and digital advertising.

As a result of the government's changes to Australia's skilled migration visa system in 2017, Google Australia has had to revise its Australian recruitment plans. Business-critical skills have been excluded from the longer term visa categories that are necessary to attract workers with the knowledge and experience required to train younger Australian employees. Examples include Product Managers, who need high level software engineering, project management and people leadership skills; user experience (UX) specialists, whose sub-disciplines are covered by a number of Australian and New Zealand Standard Classification of Occupations (ANZSCO) codes; and technical solutions and systems administrators proficient in Google's proprietary products and systems.

Broadly speaking, Australia's current business visa system is uncompetitive compared to global peers in two key ways:

- It does not recognise the value of proprietary knowledge
- It does not provide long-term certainty necessary to attract people from overseas with the skills necessary to grow and train a globally competitive Australian workforce

Proprietary knowledge is the among the most critical skill categories for workers within complex modern businesses. This is not recognised in the structure of Australia's current skilled migration system, which also pidgeon-holes emerging roles in rapidly changing businesses into existing ANZSCO skill categories.

Globally, many workers with the skills Australia needs to facilitate its economic transformation have families. Uprooting a family to move across the world is a significant decision, and although Australia offers a high standard of living, the nation's current visa scheme does not provide the stability required for senior workers with families and children if their role falls into a short term skill category. This makes it difficult to recruit workers, and means roles that are necessary for Google's business operations are harder to place in Australia compared to other centres across the region.

Immigration policy has been raised as a key policy concern by Australian and international businesses, and by the fast-growing Australian startup and venture capital communities. The jobs of the future in Australia are under threat unless continued access to highly-skilled workers can be maintained.

**D) Ensure current and future workers have access to training in the form that is reasonable for their stage of life and career**

- *Identify relevant Australian datasets and monitor the distribution of skills and changes in demand across the workforce, ensuring policy drives educational outcomes for students and displaced workers that address emerging skills gaps*

Although it is clear that particular skill categories are becoming less highly valued in Australia over time, including those related to routine and repetitive manual and intellectual labour, there is more work to be done to map data-sources and identify impacts by industry, age group and geography.

Given the importance of transitioning workers to maximising national economic opportunity, Australia's government has a role to play in building a framework for, and closely monitoring, demand for skills across the economy to ensure industry, education and social policy can be adjusted to provide effective retraining and employment outcomes for Australian workers.

**E) Keep Australians and Australian businesses protected through strong cybersecurity practices and access to encryption**

- *Ensure impacts on cybersecurity are considered whenever forming new or amending existing policy, that existing legislation does not hamper private or public sector access to cybersecure systems, and that Australian citizens and businesses continue to benefit from the protection provided by strong encryption*

Australia's business and government computing landscape, like those of other countries at a near-peer level of technological development, is fragmented. Although consumers enjoy a sophisticated level of protection on established platforms and when using encrypted devices and services, ongoing government and commercial use of bespoke in-house computing solutions and increasing use of connected (Internet of Things) devices is rapidly expanding the threat surface for cyberattacks in Australia.

Although platform-level security will eventually address many of these concerns, steering the economy towards secure systems, including by considering cybersecurity impacts driven by policy decisions across all ministerial portfolios (including access to talent in immigration), examining existing policy and regulation to remove barriers to technology adoption (such regulatory barriers to cloud services adoption in government and financial sectors), encouraging the use of encryption, and working with industry to build and agree on minimum acceptable standards for secure products and services in Australia, will be important initiatives.

**F) Ensure cross-border provision of services is protected in Australia's bilateral and multilateral trade agreements**

- *Enshrine digital open markets in Australia's multilateral and bilateral trading agreements to protect Australia's services export opportunity*

Australia is a trading nation and has long been a champion of free trade. As Australia's service economy transforms through technology investment and regional markets grow, service provision via digital channels will become an increasingly important factor in Australia's export performance. This is especially the case for Australia's small businesses, which are using the internet to gain a foothold in export markets.

To ensure this channel remains open, Australia should fight to ensure the internet remains free and open for legitimate commercial purposes, and that trade agreements ensure products and services originating from Australia are not put at a competitive disadvantage in any other country, including by the imposition of customs duties on digital products.

Given the importance of data for businesses whose services are delivered digitally, there should be no discriminatory or protectionist barriers designed to prevent the free movement of data (including 'data localisation' requirements), and agreements should allow industry to share information on threats to prevent cyber-attacks and stop the diffusion of malware.

Australia should push back against demands for discriminatory or protectionist barriers designed to prevent digital services such as cloud computing, consulting, marketing and advertising and education being offered across borders, and can work to include provisions that ensure companies delivering services via digital channels can compete on the basis of quality and price rather than on the basis of discriminatory regulation, subsidies, or favoritism.

This would include provisions that ensure trading partners do not make market access contingent on local registration, the purchase and use of local technology or joint ventures with local partners, or arbitrarily demand that less competitive national standards be forced into Australian products. Australia can also work to ensure its trading partners do not make market access contingent on forced transfers of technology.

**G) Establish standards for the use, protection and publication of government datasets**

- *Create precedent and show leadership in digital capability by establishing standards for the protection and use of government data that allow for both privacy and innovation, and that are designed with cloud computing in mind*

Many of the social norms around the protection of public data are yet to be established, and different forms of data will need more protection than others, yet there is a path to data security and access control, reasonable user awareness and empowerment, and data portability, that will allow the government and its private sector partners achieve both privacy and innovation.

Overly rigid restrictions on combining and repurposing of data, strict prohibitions on data transfers, or overly-detailed consent requirements could create challenges for the growth of data-driven innovation. Blanket prohibitions on data collection and transfer necessarily limit innovation. However, it is the misuse of data, not its collection, that should concern us most.

The government controls the widest and deepest collection of datasets in Australia, and has a strong role to play in setting Australian standards and norms through its own behaviour. Ensuring public sector data is collected, stored and used in a way that provides strong public benefit will increase private sector and community sector confidence to invest in Australia's digital economy.

**H) Establish principles for policy impact analysis using public datasets**

- *Establish world-class methodologies for policy impact analysis using public datasets*

As government becomes more sophisticated in its use of data and analytic tools, and improves data sharing between agencies and departments (including cloud-based collaboration), there is an opportunity for government to integrate this data into policy impact assessments and better understand the link between policy and outcomes for citizens, government, and the economy.

Where there is real time or regularly collected data that can be integrated into analytic frameworks, there is a significant opportunity to mitigate unforeseen negative impacts from policies and adjust policies and programs in a time sensitive way, improving outcomes for Australia.

ENDS