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Overview

The average Australian worker experienced 2 hours of automation in their working week between 2000-2015, and on current trends will experience another 2 hours between 2015-2030. Automation has most strongly affected routine and repetitive physical and intellectual tasks, and Australian work is now composed of proportionately more tasks involving interpersonal communication, creativity, decision-making and synthesising information¹.

Most Australians have experienced automation as change in the way they do their jobs, not as a change in the job they do, however, because automation affects some tasks more than others, and because some jobs are composed of more of those automatable tasks, workers in those jobs are disproportionately affected.

Research on automation in Australia shows that Australia is lagging global peers in the productivity-enhancing investment needed to create the jobs of the future. This is important because there are three pillars to Future of Work policy that will affect outcomes for Australian workers and the Australian economy as a whole:

- Attracting investment to create jobs resilient against automation
- Reskilling workers for jobs composed of different tasks
- Support for workers who are displaced and unable to find new work

Policymakers will need to consider these objectives in light of the need to cater to the requirements of specific groups of workers. Australians yet to enter the workforce will need to be prepared for work involving more interpersonal and creative tasks; workers in the early-middle stage of their careers, particularly those whose jobs have traditionally involved more routine or repetitive work, will need avenues to gain new skills; and workers near the end of their careers whose jobs are comprised of a high proportion of automatable tasks will need policies that support them if they are unable to find new work.

Fundamentally, outcomes for all of these workers hinge on Australia's ability to attract investment, modernise the economy and create the jobs of the future.

This submission provides information on the impact of automation on the Australian workforce, suggests a framework for examining Future of Work policy, and provides information on Google's initiatives in Australia. We thank the Committee for the opportunity to contribute to this important policy area, and look forward to future discussions.

¹ *The Automation Advantage*, Alphabet, 2017

History of the Future of Work

That the nature of work is changing is undeniable. Change has been a constant in workers' lives since long before those workers were human. The first evidence of tool use amongst hominins occurred 700,000 years before the evolution of *Homo Sapiens*², and in the intervening 3.3 million years language (itself a tool) has allowed us to spread ideas about other tools and how to use them, allowing humans to change their world. As history arced towards the present, we progressively invested in layers of physical, institutional and knowledge infrastructure, with each layer providing new generations with the ability to innovate and leap forward to the next. We stand on the shoulders not of individual giants, but on the collective physical and intellectual labour of countless generations of workers.

This species-wide journey towards safer, more comfortable, fulfilling and rewarding lives, which in modern times we often talk of in terms of our 'standard of living', has never ceased, but the specific effects each new invention has on our lives, and at a macro scale on the economy, is different. During the mid 20th century investment in agricultural technology allowed humanity to avoid a Malthusian catastrophe, but the changes driven by mechanisation of farms affected a great many workers and communities, and hastened shifts in the distribution of jobs across the economy from rural to urban centres.

The manufacturing sector has been a nexus of ideas and the economy since its inception, and changes in process and technology have regularly disrupted the lives of workers, which has created no shortage of angst in the minds of those with responsibility for governing. In the 16th century the English inventor William Lee of Calverton was refused patents for his 'stocking frame' invention by both Queen Elizabeth I and King James I due to fears about the effects such an invention would have on workers in hand-knitting industries³. Of course, it proved impossible to hold back progress, and history shows us that past waves of technological disruption have ultimately led to increased prosperity, productivity and employment.

More recently, from the 1980s, deployment of industrial robots and rigorous process optimisation began to transform our manufacturing industries, again displacing traditional modes of work and creating jobs that require different skill sets than those existing factory workers had developed.

Automation has also altered the calculus behind decisions on where to invest capital and how to structure local and global supply chains. Where previously the cost of labour was a critical imperative for offshoring in manufacturing, as it has also been for labour intensive call centre tasks in the service sector in recent years, 21st century advanced manufacturing will be led by countries with countries with regulatory certainty, adaptable workforces with problem solving and interpersonal skills, reliable and cost effective energy, and efficient cyber-physical logistics networks.

² 3.3-million-year-old stone tools from Lomekwi 3, West Turkana, Kenya, *Nature*, 521, pages 310–315 (21 May 2015)

³ *William Lee Invents the Stocking Frame Knitting Machine (1589)*, historyofinformation.com

Automation and the Australian Workforce

Over the past five years we have seen a plethora of reports released globally touting analyses of jobs that could be lost as a result of the latest wave of technological change, stemming from a 2013 paper by Frey and Osborne⁴ that predicted 47% of U.S. jobs were at risk from automation.

These reports have been of variable quality, and since Frey and Osborne's initial paper the community working on these issues has learned a great deal about how to responsibly investigate this subject. It is worth noting that Osborne's most recent (2017) analysis finds that around one-fifth of workers are in occupations that will likely shrink, with the authors highlighting that the figure is much lower than recent studies of automation have suggested⁵.

Motivated by the importance of these issues in long term planning for business leaders and policymakers, and the lack of clarity and Australia-specificity of the existing body of research, Google Australia in 2016 commissioned the economics consultancy AlphaBeta to provide an empirical view of the current state of automation in Australia and its effect on the workforce, drawing on Australian economic statistics.

What we found reflects 'Amara's Law', the adage coined by Stanford's Dr Roy Amara, that states people have a tendency to overestimate the short term impacts of technological change while underestimating its long term effects. Our research showed that 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 2030⁶.

Many of the 80% of Australian workers in service-industry related roles⁷ may have to think hard to identify where the productivity gains through automation appeared in their jobs from 2000-2015 - more efficient software for collaboration and service delivery, or communications infrastructure that make coordinating with colleagues in multiple locations more efficient, for example - but at the macro level 2 hours per working week across the economy is hugely significant, and the hours are not distributed evenly, meaning some workers have experienced far more significant change than others.

Differentiating between the workers performing jobs whose task mix is more likely to result in job consolidation and those who are likely to employ the time on a different mix of tasks within their existing role, is essential to policy formation and program delivery.

⁴ The Future of Employment: How susceptible are jobs to computerisation?, University of Oxford, 2013

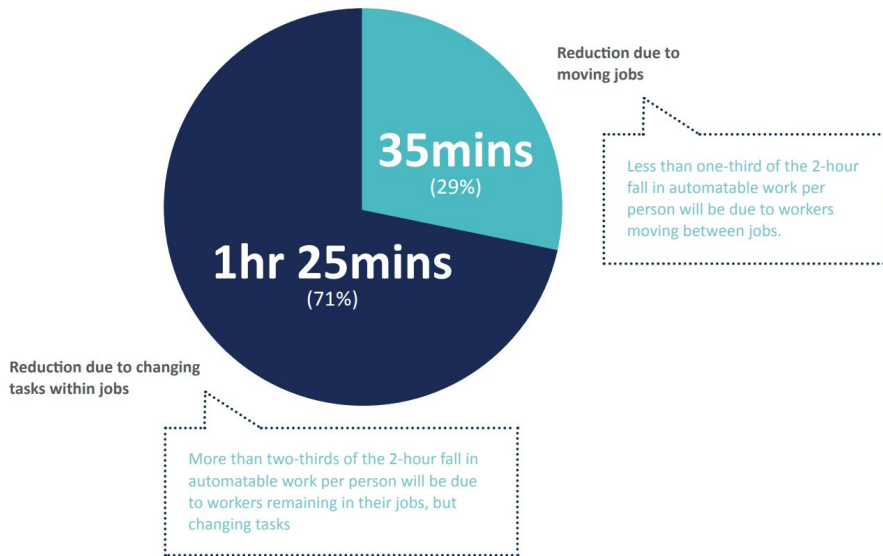
⁵ *The Future of Skills: Employment in 2030*, Pearson, Nesta, and the University of Oxford, 2017

⁶ *The Automation Advantage*, Alphabet, 2017

⁷ *Australian Industry Report 2016*, Department of Industry, Innovation and Science, 2016

Over two-thirds of the shift away from automatable tasks will be driven by people changing the way they work, not changing jobs

Impact of automation on Australian work
Expected fall in average weekly work time spent on automatable tasks from 2015-2030



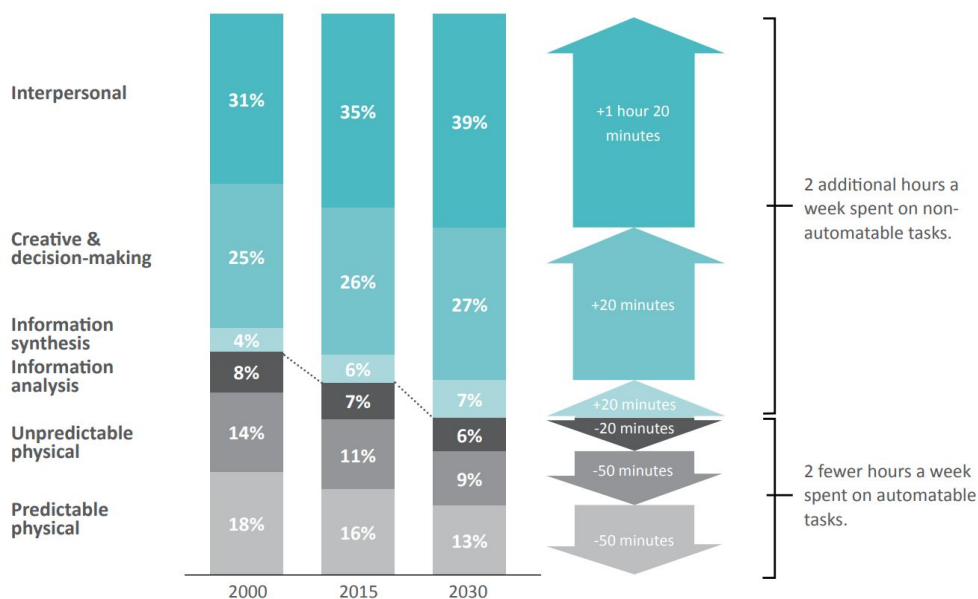
SOURCE: O*NET, ABS, AlphaBeta analysis

Research shows that routine and predictable tasks, both physical and intellectual, have been automated at higher rates between 2000 and 2015 and we expect are more likely to be automated in the years to 2030. Tasks that have proved more resilient to automation are those that involve interpersonal interaction, decision-making, creativity, and synthesis of information from multiple sources and a degree of qualitative judgement.

Automation is changing the way we work, reducing the amount of time a worker will spend on routine tasks by up to 2 hours a week

Change in types of tasks performed by Australian workers
Average share of time spent on work activity

2015-2030 change in average work week



SOURCE: O*NET, AlphaBeta analysis

Despite Australia experiencing significant automation across its workforce from 2000-2015, unemployment in Australia remains low⁸. 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 Australian workers in the years from 2015-2030 are able to spend the extra 2 hours of weekly work time that machines are expected to shoulder 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 timeframe⁹, and different groups of workers affected by technological change have different policy needs.

Highly skilled 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 well remunerated tasks from people to machines, work injuries are set to fall and work satisfaction levels to rise.

- 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.**

⁸ 6202.0 - *Labour Force, Australia, Dec 2017*, Australian Bureau of Statistics, 2017

⁹ *The Automation Advantage*, Alphabet, 2017

A Policy Framework for the Future of Work

No nation in the world has developed a coordinated, whole of government approach to addressing economic and community concerns about workforce displacement caused by technological development. The fact executive and bureaucratic influence on factors important to Future of Work policy are distributed across economic, social and education policy portfolios has to date inhibited coordination. We welcome efforts by the committee on the Future of Work and Workers to deepen political understanding on this policy area.

The three pillars of the Future of Work

Although factors influencing the long term success of Australia as an economy and community are myriad, Future of Work policy can be defined as efforts to ensure that there are jobs available for Australian workers, effective avenues for reskilling to support workers transitioning between jobs, and support mechanisms available to workers who are unable to find new jobs. With this in mind, Future of Work policy can be divided into three areas, each of which is important for the functioning of the system as a whole.

- **Job creation**

Future of Work policymakers must ensure Australia's legal and regulatory frameworks, and investments in physical and digital infrastructure, encourage both domestic and international businesses to invest and create jobs in Australia.

Much of the Future of Work debate to date has focused on the challenge of reskilling workers, but the first priority for policymakers intending to create positive outcomes for Australian workers must be ensuring Australia creates jobs for workers to enter.

- **Reskilling**

Future of Work policymakers must work to ensure Australia provides skilling opportunities in a form that is suitable for workers in the middle of their careers, who often have existing financial and community commitments.

All tiers of the formal education sector have a role to play in ensuring Australian workers entering the workforce for the first time remain among the most capable and competitive in the world, and businesses will continue to play an active role in training their workers, but there exists a requirement for skilling experienced displaced or under-threat workers who need to acquire skills to reenter the workforce. The requirements of these workers, who may be time poor and self-supporting in part time or freelance work, or located in a regional area away from Australia's major education providers, are underserved by Australia's current education system.

- **Social support**

Future of Work policymakers must ensure policy and programs created by government give Australian workers confidence that they will be supported if they are displaced from work by economic reform or technology investment.

Unless workers trust that they will be protected as the government enacts policies that encourage investment, economic modernisation and job creation, these policies may struggle to gain popular support. Experience with previous waves of disruption caused by economic policy reform and productivity-enhancing investment have shown that some displaced workers, often older workers and those unable to relocate to areas of new job creation, will find it difficult to reenter the workforce. Workers need to be confident they will be supported if they experience job loss due to policies that affect them negatively despite benefiting the wider workforce.

These factors can be self reinforcing in either negative or positive directions. Countries that create a competitive environment for new investment will foster economic growth, allowing them to dedicate resources to reskilling and social programs. Those programs will in turn increase worker confidence that the government is managing the economy effectively for all Australians, increasing social and political cohesion and creating a foundation of support for further growth-focused economic reform. This virtuous cycle would give Australia the opportunity to maintain and cement its place as an influential regional power in the digital age.

If Australia cannot attract jobs and investment, even an effective reskilling program will be of limited value. There will be a higher number of workers unable to transition to new work, creating increased pressure on social programs, and a government facing a more constrained budgetary situation with less financial ability to meet the needs of displaced workers. The social and political instability generated in this scenario would damage Australia's ability to undertake necessary economic reform and attract investment, leading to a vicious cycle.

Job Creation

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 2020¹⁰. 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.

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 2030¹¹.

¹⁰ *Digital Globalisation: The New Era of Global Flows*, McKinsey Global Institute, 2016

¹¹ *The Automation Advantage*, Alphabet, 2017

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 innovating¹².

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.

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 investment¹³.

Google's economic contribution

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 \$15.1 billion dollars worth of economic activity annually for the approximately 840,000 Australian businesses who connect with consumers through Google¹⁴.

During 2015 in Australia alone Google's products supported \$14.8 billion dollars of consumer benefits, 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 economy¹⁵.

For Australia, Google's investments in telecommunication infrastructure will allow businesses in to engage in real time (including via video) with consumers in the indo-pacific region and around the world. Google's neural machine translation services enabled by deep learning will dramatically reduce language barriers, allowing Australian organisations and consumers

¹² *Connected Small Business 2016*, Deloitte Access Economics, 2016

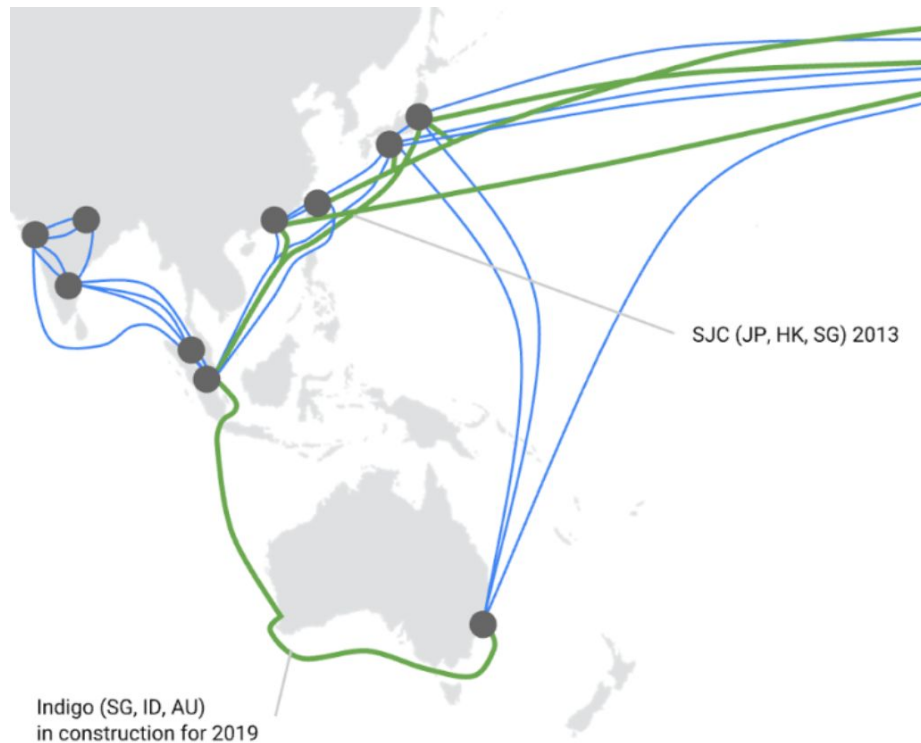
¹³ *ibid*

¹⁴ *Google Economic Impact: Australia 2015*, Alphabet, 2016

¹⁵ *ibid*

to communicate with customers, partners, friends and family more easily across the indo-pacific.

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.



Google's regional cable infrastructure

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 \$200K¹⁶. SMBs within Australia are the main suppliers of goods and services to 55% of Australian businesses¹⁷.

¹⁶ 8165.0 - Counts of Australian Businesses, including Entries and Exits, Jun 2012 to Jun 2016, Australian Bureau of Statistics, 2017

¹⁷ 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 employed¹⁸.

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 activity¹⁹. 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 employee²⁰. 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 services²¹.

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.

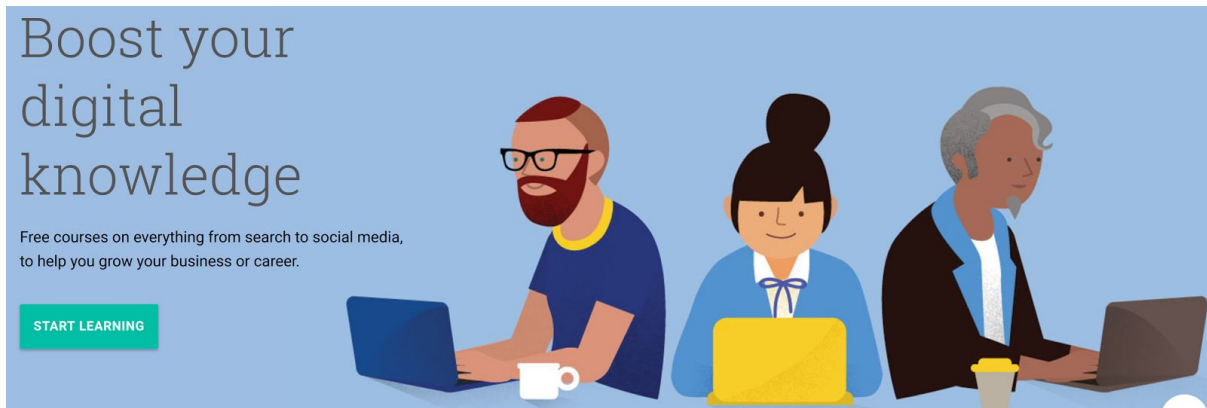
However, awareness and digital skills remain a barrier for the majority of SMBs. Many SMBs cite the inadequate skills of staff (19%) or a lack of knowledge (18%) of how to use business tools as key barriers to greater digital engagement. Equally of concern, nearly one quarter of businesses (24%) either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

¹⁸ 8129.0 - *Business Use of Information Technology, 2015-16*, Australian Bureau of Statistics, 2017

¹⁹ [Local Business. Global Ambition](#), Oxford Economics, 2017

²⁰ [Connected Small Businesses 2017](#), Deloitte Access Economics, 2017

²¹ [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.

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 10x more likely (25.9%)²² to be generating export revenue than traditional businesses (2.5%)²³.

Google for Entrepreneurs

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, sponsors the [Crossroads startup policy 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.

²² [Startup Muster 2017 Annual Report](#), Startup Muster, 2017

²³ [ABS 5368.0.55.006 - Characteristics of Australian Exporters, 2015-16](#), Australian Bureau of Statistics, 2017

Reskilling

Workforce Development

The productive capability of 12.3 million employed Australians²⁴ 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.

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.

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.

Future workforce development

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.

²⁴ 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.

Social Support

Australia has a wide range of social support programs, and Future of Work policymakers should aim to examine whether these programs would be effective in supporting workers find it difficult to reenter the workforce, and where gaps are identified implement specific, targeted solutions to ensure workers can be confident that they will be supported.

Industry also has a role to play, and Google is working in Australia on a diverse range of nonprofit and community initiatives, from digital inclusion work alongside Telstra, Australia Post and others that aims to give Australians with lower levels of digital skill the capability to engage in the digital economy, through to work with local nonprofits on a wide variety of issues, including support for Australians who are experiencing homelessness and programs that help Australian children to stay safe online.

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 Izzy²⁵, 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 platform²⁶, 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.

Other work with local nonprofits

We also partnered with Infoxchange on the Digi House project²⁷, 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 Rokit and Generation Next who use digital tools to help kids experiencing bullying, social exclusion or other issues affecting their mental health.

²⁵ <https://www.infoxchange.org/au/community-programs/homeless-help>

²⁶ <https://www.infoxchange.org/au/news/2016/10/ask-izzy-open-data-platform-uncover-homeless-need>

²⁷ <https://www.infoxchange.org/au/community-programs/digital-literacy-social-housing>

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 platypus²⁸, 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.

Google's Street View trekker in Barrington Tops National Park

ENDS

²⁸ [Welcome to platypusSPOT](#)