Australian Government

BCG Submission to the National Digital Economy Strategy

15 December 2017

BCG

The Boston Consulting Group

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Digital Economy Strategy Team
Department of Industry, Innovation and Science
10 Binara Street
Canberra ACT 2600

Submission in response to Digital Economy Consultation Paper

Thank you for the opportunity to respond as part of the Digital Economy strategy consultation. We are delighted to share our perspective on the path forward for digital innovation in Australia.

The world economy is changing rapidly with the introduction of new technologies and disruptive pressure on all industries. Governments around the world are grappling with how to build a foundation for successful, modern and adaptive economies. The stakes are high, and the benefits significant for nations that can lead in digital economic development.

Australia's journey towards a more digital future is already well underway: from connecting eight million homes and businesses to the National Broadband Network by 2020, to developing a national trusted digital identity framework, to moving more government services online. We are encouraged by this commitment to ongoing ventures, and see an opportunity to now set new goals.

A more digital future holds many opportunities for Australia – increasing our competitive position, accelerating productivity, and delivering wealth to all Australians. The shift to the new digital economy has the potential to create new jobs and economic growth, but achieving this will be challenging and requires a digital economy strategy that is ambitious, that moves beyond traditional approaches, and that takes bold steps forward.

We believe there are four main areas for action that the strategy should consider in order to enable and support a robust digital economy, build competitive strength, productivity and innovation in business, and empower all Australians:

- **ACTIVIST ROLE FOR GOVERNMENT** by reducing complexity, adopting more agile-inspired organisation models and making greater use of data and analytics
- **STIMULATE DIGITAL INNOVATION** across governments, businesses and communities through additional investment, partnerships and regulatory concessions
- **PREPARE FOR THE FUTURE OF WORK**, given the prospect of automation by robotics and other technological advancements, by monitoring change, supporting and equipping organisations
- **ENSURE PARTICIPATION BY ALL AUSTRALIANS** in the digital economy by reforming the educational curriculum and promoting lifelong learning

In this submission, we have included specific, practical ideas under each of these main areas, informed by our own experience and by public sector initiatives around the world. We hope that our submission stimulates further thinking, and represents the start of an ongoing conversation.

If you have any questions or wish to discuss any aspects of the digital economy strategy as it evolves, please do not hesitate to contact us. We look forward to hearing from you and continuing the conversation on this very important topic.

Yours sincerely,

Miguel Carrasco
Senior Partner and Managing Director

+61 409 774 454

carrasco.miguel@bcg.com

Table of Contents

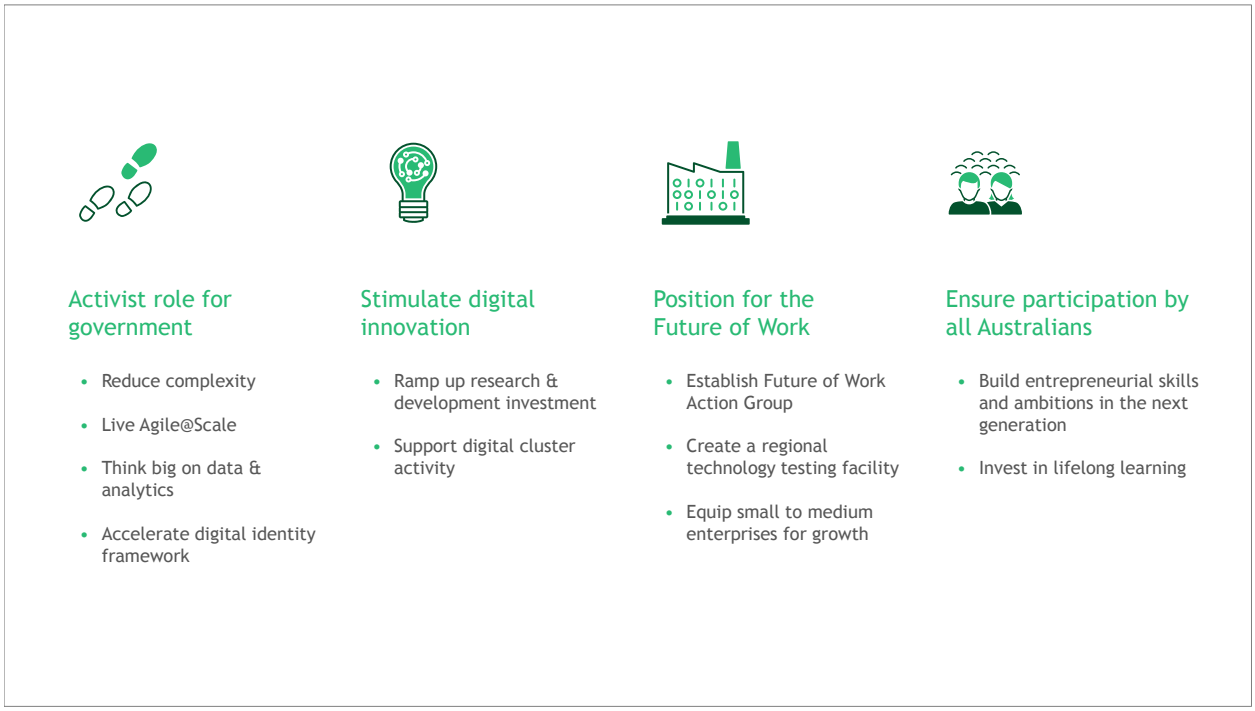
1. Executive Summary

The Australian Government has made meaningful progress over the past decade in setting the foundations for Australia's digital journey. The Government has established the Digital Transformation Agency, invested billions of dollars in rolling out the National Broadband Network and other infrastructure, and continues to transition many of its services and payments online.

We are now at a critical juncture. On the one hand, the future of Australia's digital economy presents immense opportunity. There is significant potential for the creation of additional new jobs through the growth of the digital economy, and for improvements in productivity, global competitiveness and quality of life. At the same time, achieving these goals will require new, bold steps – creating a clear pathway for Australia to claim at least its fair share of digital development in the coming years, and to compete with well-advanced global economies.

The actions and ideas outlined in our submission have been informed by our research and client work, as well as by best practices we have observed around the world. Exhibit 1, below, summarises the four main action areas that we recommend the Australian Government contemplate in devising its digital economy strategy. Each of these is considered in greater detail throughout the rest of the submission.

EXHIBIT 1 | Proposed areas for action in Australia's Digital Economy Strategy



2. An activist role for government

With few exceptions, the countries that have emerged as global leaders in the digital economy have been led by governments that have taken a strong activist role in digital economic development. Specifically, we believe the Australian Government can reduce the complexity of its own operations; adopt Agile principles for organisation design to drive a new way of working in policy and service delivery; radically increase its use of advanced data and analytics; and lead the establishment of the national trusted digital identity framework.

2.1 Reduce complexity

Simplicity in public services is important for establishing a strong digital economy. A more open and global market entails a pace of change in policy design and implementation that cannot be met with traditional processes, and many governments around the world have therefore embarked on "digital by default" efforts. BCG's most recent digital government satisfaction survey showed that 75 percent of Australian respondents believe online government services have improved over the past 2 years. Overall satisfaction is high at 73 percent, not far behind the world leader Estonia at 82 percent and well ahead of Denmark, South Korea and Singapore.

However, few governments have been able to fully realise the benefits of their own digital disruption to date. Businesses and citizens continue to express dissatisfaction with the ease of interacting with government agencies. Last year, 46 percent of Australian respondents to our survey had experienced a problem while using digital government services, and most of the problems were preventable user experience issues. This flows into sub-optimal staff engagement, with only 59 percent of global public servants expressing pride to work for their organisations (vs. 89 percent in the private sector)[1].

BCG's experience in Smart Simplicity[1] shows that it is not enough to change the 'front-end' and try to mask the complexity of policy or back-end infrastructure. The digital payments and services offered by government will not achieve the desired process or cost efficiencies without a commensurate simplification of policy and processes. The cumulative effect of successive governments adding new programs and changes over time has resulted in a complex landscape with inconsistent definitions and business rules. This generates confusion for citizens, business and staff, and results in errors which undermine the integrity and fairness of the system as a whole. A policy simplification programme should be established to systematically review existing legislation and policies, to reduce unnecessary complexity using a proven rigorous and analytical methodology, and make it easier for government, businesses and individuals to work together in a digital economy.

Recommendation 1: Establish a Simplification taskforce to harmonise inconsistent, outdated policies, rules and regulations.

[1] https://www.bcgperspectives.com/content/articles/smart-and-simple-way-to-empower-the-public-sector/

2.2 Live Agile@Scale

To keep pace with the speed, ambiguity and competitive pressures of a digital economy, private and public sector organisations worldwide are embracing more nimble, experimental and outcome-focused delivery models. Agile ways of working bring together multi-disciplinary teams—breaking down traditional functional siloes and increasing transparency—and introduce a continuous 'iterate and test' mindset to the development of products, reducing the chances of 'big bang' failures. Research indicates that Agile ways of working reduce the failure risk of large projects by almost 50 percent compared to traditional waterfall methodologies.

We believe the Australian Government can benefit significantly from adopting an Agile@Scale approach that goes beyond projects to encompass enterprise organisation design, policy design and service delivery. Agile enables a better understanding of what works for users through iteration and testing, and delivers products and outcomes more quickly and effectively – making it well-suited to government-led digital product builds and transformations. For example, in our work with ING Netherlands, we implemented Agile broadly across banking and technology operations to increase speed-to-market and customer centricity in the face of disruption in financial services. Similarly, at The World Bank, we worked to embed Agile ways of working that have improved employee engagement and that are increasing the value of development outcomes.

Recommendation 2: Pilot new ways of working using Agile-inspired approaches. The pilot should develop a framework for the subsequent adoption and roll-out across government.

2.3 Think big on data & analytics

Data and analytics are presently underutilised by government agencies in Australia, and will be critical to keeping pace with the digital economy.

At a minimum, it is critical to establish clear data-sharing frameworks to allow cross-departmental use and matching of data sets. This sharing of data will provide a more holistic understanding of public needs and costs to serve – for example, enabling predictive analytics to inform transportation or social service investments, or enabling a lifetime cost approach to welfare spending.

There is also a strong case for developing greater capabilities within government to analyse and interpret the increasingly complex, diverse data sets in the public sector. In the United States' capital, The Lab @ DC was established in mid-2017 to embed a network of data scientists within government[2]. The Lab works with selected public projects to assess potential outcomes using data analytics and controlled testing approaches before deployment. It also partners with experts across agency, university and community groups to foster a more scientific community of practice.

Recommendation 3: Establish a whole-of-government Data & Analytics Authority, and the role of national Chief Data Officer, to drive data-based decision-making.

[2] https://www.centreforpublicimpact.org/appliance-science-data-dc/

Beyond this, the Australian Government should also be open to the emerging potential of Artificial Intelligence (AI) and machine learning technologies in the public sector. AI has been trialled successfully in other governments to perceive, segment, predict and recommend outcomes. For example, the US Chief Intelligence Agency (CIA) presently uses AI to predict future social unrest; and in China, a smart-traffic system is being used by government to ease public road congestion. There is significant potential in this space over the next 5 – 10 years, and we encourage the Australian Government to explore these avenues in ensuring that the benefits of a digital economy reach all Australians.

Recommendation 4: Appoint a Minister responsible for Artificial Intelligence and develop policies to support the growth and adoption of AI technologies.

2.4 Accelerate the digital identity framework

The national trusted digital identity framework is a crucial piece of nation-building infrastructure that we believe is foundational to Australia's digital economic development. Protecting the privacy and safety of Australian citizens in the digital age is a key challenge today, and will become increasingly pressing as the digital economy expands.

The Australian Government has already made important progress on this front with the Digital Transformation Agency (DTA)'s *GovPass* and Trusted Digital Identity Framework program. As part of the digital economy strategy, we encourage continued development of the program in collaboration with the government and private sectors, such as the current partnership with Australia Post, and accelerated implementation. The launch of similar digital ID programs in Denmark, New Zealand and Singapore has brought significant benefits, and all such programs have required investment in both supporting infrastructure and legislative change to enable successful deployment and uptake.

Recommendation 5: Establish an open public-private partnership to oversee and drive the development and adoption of the national identity framework. The governing body should include representation from the private sector, states and territories, local government, citizens and privacy groups.

3. Stimulate Digital Innovation

Fostering a successful digital economy requires more than ICT systems and infrastructure. Entrepreneurship and business innovation must flourish in order to capitalise on infrastructure investment and fuel the digital economy. To this end, the Australian Government must take steps to create more fertile ground for the development of cutting-edge products, services and applications. We believe that the Australian Government can stimulate future innovation in the private sector by investing more heavily in research and development, particularly in the nation's current areas of competitive strength; and supporting growth in digital clusters through direct government participation and the removal of unnecessary regulatory constraints for new ventures.

3.1 Ramp up research and development investment

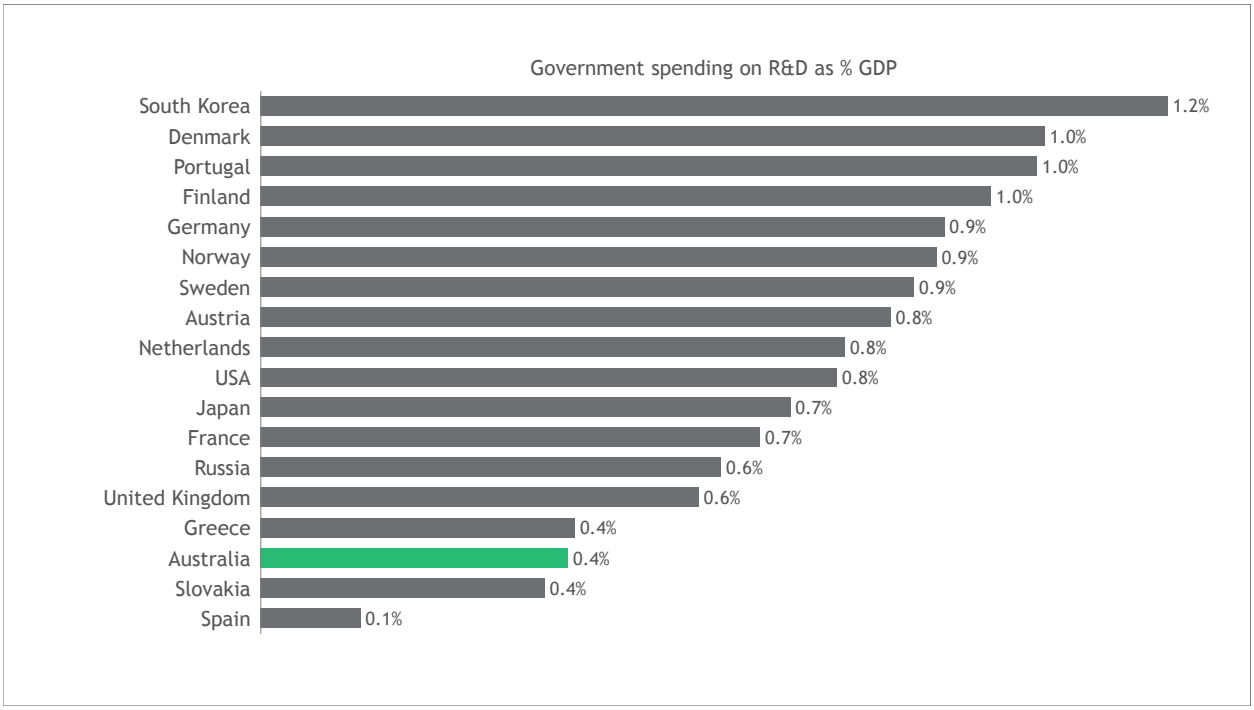
National research and development (R&D) is critical to the development of new products, technologies and services – which is in turn crucial to accelerating the digital economy. In

the private sector, the R&D intensity of an organisation has been noted for its correlation with market competitiveness[3].

Similarly, governments of countries that are today recognised as leaders in technology and innovation, such as South Korea and Germany[4], are those that spend the most on national R&D efforts. When compared with other OECD countries, the government spending on R&D in Australia is well below that of other countries (Exhibit 2). Accelerating Australian innovation will require a meaningful change to the status quo – increasing government's investment in targeted research and start-up efforts, building on current tax concessions and supplementing initiatives currently underway through the National Innovation and Science agenda.

Targeted investments should be focused primarily in areas where Australia already has or could develop a competitive advantage – industries where we have world-class and globally competitive companies such as resources and financial services – as these areas offer more opportunities to test and develop new technologies, and the chance for maximal impact on overall economic growth. Just as the government in South Korea has supported and partnered with large local IT companies, such as Samsung and LG, to leverage the country's historical innovation and consumer appetite for technology, so too can the Australian Government stoke the fires of innovation in our core industrial sectors.

EXHIBIT 2 | Government spending on R&D in OECD countries (2015)



Source: OECD, https://theconversation.com/infographic-how-much-does-australia-spend-on-science-and-research-61094

Recommendation 6: Increase investment in research and development to more closely reflect the levels seen in leading global economies.

[3] "Research and Development key to promoting digital economy", Ibrahim Kholilul Rohman, The Jakarta Post (Nov 2017)

[4] 2016 Bloomberg Innovation Index

3.2 Support digital clusters

Additional investment in R&D is necessary but insufficient to foster innovation and fuel profitable digital growth in Australia. The operating environment for innovators and entrepreneurs must also be conducive to incubating competitive, value-adding ideas with local and global application.

Clusters have been recognised in the past as a model that attracts creative and profitable business activity, as well as international recognition – as in the case of California's Silicon Valley for technology start-ups. The UK's Tech Nation project found that 77% of digital companies within clusters derive a benefit from their access to a network of entrepreneurs and experts, and the project has attributed growth in the UK digital economy to the rise of technology clusters[5].

Australia has a number of emerging digital clusters today, including the Fintech cluster in New South Wales and the Medtech cluster in Victoria. We encourage the Australian Government to actively participate in and support the development of these clusters as part of the Digital Economy agenda. This may involve early and active engagement with prospective cluster communities to understand their needs and challenges, and taking steps to minimise regulatory, financial and policy constraints faced in the early stages of cluster development – for example, by building on ASIC's Innovation Hub and regulation sandbox framework as seen in a Fintech context. The government could also support key clusters, either directly or through strategic partnerships, as the UK Government did with Tech City UK – thereby helping digital technology companies grow and create a feedback loop on industry development to shape public policy.

Recommendation 7: Expand the existing digital clusters and including the use of regulatory 'sandboxes' to support innovative new business models.

4. Positioning for the Future of Work

As Australia's digital economy grows, the rise of automation and resulting shifts in the jobs landscape will undoubtedly change the nature of work in our society. The challenge for the Australian Government will be to harness the productivity and efficiency gains offered by automation and other digital advances, while providing a meaningful and economically secure life for all Australians. In this regard, we believe the Australian Government can empower the public and private sectors to prepare for the workplace of tomorrow by establishing an Action Group tasked with driving the future of work agenda for Australia; by exploring the construction of a technology testing facility to sustain growth in industrial sectors; and by working in partnership to equip local small-to-medium enterprises for digital growth.

4.1 Future of Work Council

There is both excitement and unease as the world looks towards a more digital future. The rise of robotics, automation and AI is already destroying existing jobs and creating entirely new ones – this change will only accelerate and become more profound with time.

[5] http://www.techcityuk.com/blog/2015/02/tech-clusters-powering-the-uk-digital-economy/

We believe governments have a responsibility to play a leadership role with respect to these changes: to conduct deep analysis into the net job impacts of digital change, to explore how different policies and technologies could influence digital development, and to help government agencies, corporations and citizens prepare for the changes ahead. In Denmark, for example, the government has established a Disruption Council in response to widespread concerns regarding the ambiguous impacts of the digital economy. The Council is made up of representative members across various parts of the economy including trade unions, business executives, youths, entrepreneurs and ministers, and meets to debate what the future digital landscape may hold.

We believe there is value in establishing a similar entity in Australia to actively review new business models, emerging technology, future skills, and international partnerships, and to provide intellectual leadership in the midst of growing uncertainty. This Future of Work Council would be a channel for monitoring implementation of Australia's digital economy strategy and keeping abreast of national and global digital advancements. This group should be empowered under an open policy making model with the Australian Government to drive the future of work agenda forward, to help the government understand the impact of new policy settings and to act together with government on addressing potential market disrupters.

Recommendation 8: Establish a Future of Work Council to lead the ongoing collaboration between public and private sector in preparing the Australian workforce and community for the future digital economy.

4.2 Create a regional technology testing facility

Advances in digital technology have significant potential to drive increased productivity and efficiency. The use of advanced technologies will be increasingly important in Australia, as they offer an opportunity to offset rising domestic energy and labour costs. If Australia is a follower, rather than a leader, in the application of new technologies, it risks loss of core industries and associated local jobs. Further, as customer preference for customisation increases, we expect traditional mass scale models of production will not be suitable for servicing all the demands of global markets. Australia has the opportunity to capitalise on growth in emerging niche markets, provided it stays at the forefront of technological innovation.

In other countries, we have observed increased public and private sector investment in developing local testing and/or innovation centres focused on exploring the potential of new technologies. BCG, in partnership with the Singapore Economic Development Board (EBD), have recently established the Asian Innovation Centre for Operations (ICO) and Industry 4.0 Accelerator Program. The goal of these interlinked programs is to enable Singapore to reposition itself as a regional manufacturing hub with strong digital capabilities. The ICO includes a model factory and mobile labs to provide learning immersion, experimentation and training in BCG's Industry 4.0 topics. It is expected that manufacturing companies in the Asia Pacific region can utilise the model factory to develop, test and adopt more innovative technologies, deepening the ecosystem of digital capabilities. The Asian ICO joins a network of 5 other BCG ICOs located in US and Europe, developed in partnership with government, academia and business sectors. Our existing ICO facility in Paris has been used to help educate and train companies and their employees in model factory-of-the-future settings.

We encourage the Australian Government to consider a similar undertaking, with a view to developing a cutting-edge ICO or similar facility for the prototyping and testing of new technologies. We envisage the facility focusing initially on industries that are currently core to the Australian economy – including energy, resources and agriculture – and potentially diversifying over the coming years as the economic mix changes.

Recommendation 9: Establish an Australian Innovation Centre for Operations to support local innovation and growth in high priority industries.

4.3 Equip small-to-medium enterprises for growth

Domestic small-to-medium sized enterprises are most at risk at being left behind as the economy becomes increasingly digital – they are less likely to have the scale, the resources or the exposure to fully capitalise on the benefits of global digital development, particularly if they operate in more traditional industries.

In Europe, the European Union are currently funding efforts by SMeART, a knowledge alliance of education institutions and businesses from the region. SMeART is focused on up-skilling small and medium sized enterprises to better meet future challenges of smart engineering. As part of BCG's Industry 4.0 work with the Singaporean Government, we have also partnered on the development of a program offering end-to-end support for companies to transform their core businesses and operations, create new revenue models and ventures, and build new organizational capabilities and skills.

The Australian Government has an opportunity and incentive to support small-to-medium enterprises and their employees in their efforts to adjust to new ways of operating and competing. This will help to preserve job opportunities, maximise competitiveness and offer a greater breadth of services and products to consumers.

Recommendation 10: Develop an SME Digital Transformation program in collaboration with intermediaries that regularly engage with SMEs such as accountants, tax advisers, financial institutions, and state governments, to promote awareness and adoption of technologies by small-medium businesses.

5. Ensure participation by all Australians

Australia's digital economy has the potential to generate significant productivity improvements, and to drive meaningful GDP growth. However, it is not a foregone conclusion that these benefits will accrue to all Australians, and the government will need to take proactive steps to ensure that this happens. Specifically, we believe that the Australian Government can help ensure communities and individuals are not left behind by reforming the Australian education curriculum to supplement national skills in Science, Technology, Engineering and Mathematics (STEM) with functional skills such as teamwork, collaboration, leadership, problem solving, creativity and entrepreneurship; and to support the development of lifelong learning models.

5.1 Education beyond STEM

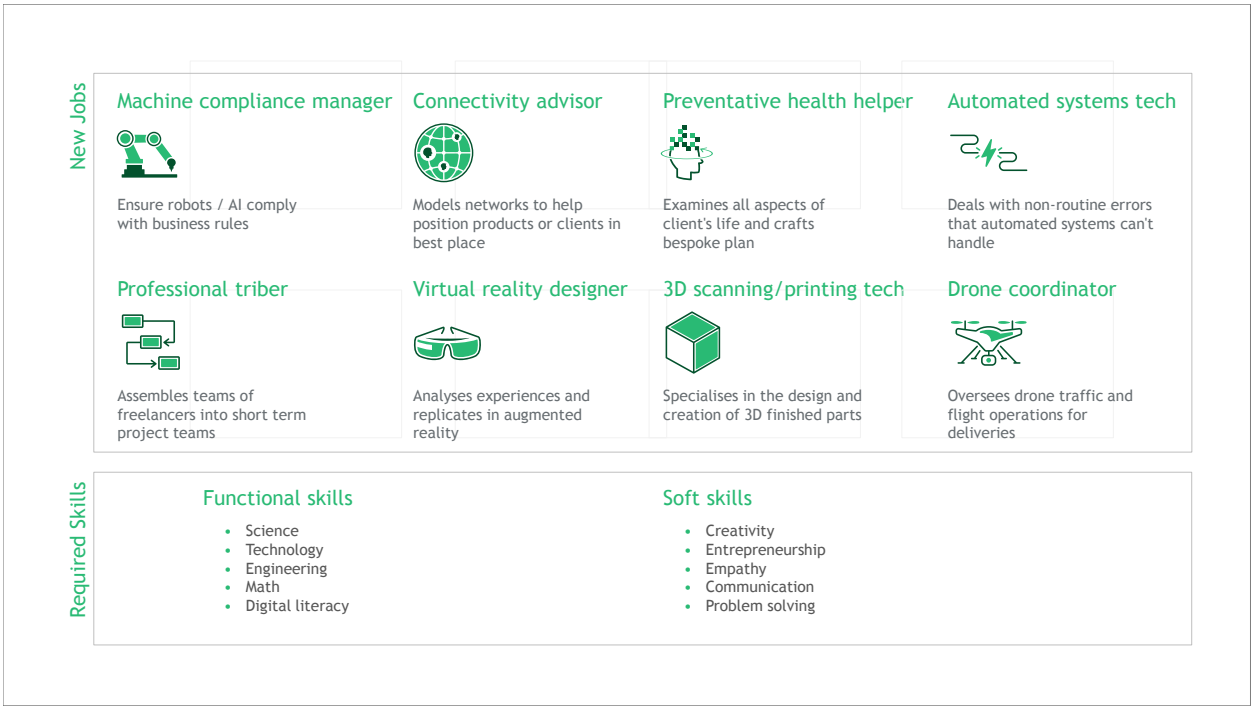
The Australian Government is already investing to improve national digital literacy by promoting STEM learning opportunities and career paths. However, embedding STEM

literacy and other functional skills will not be sufficient to position young Australians to live and work in a more digital economy.

BCG's *Future of Work* analysis indicates that the job families and fields of tomorrow, arising from new and disruptive technologies, will require a combination of functional and soft skills (Exhibit 3). A wide range of functional skills such as creativity, entrepreneurship, problem-solving, communication skills and empathy will be critical for individuals to flourish and be resilient in the new digital economy. Traditional beliefs that these skills cannot be taught, learned, or assessed are false. Maker Education and other similar movements show that soft skills can (and should) be taught by using more experiential learning techniques in schools[6]. As educators are increasingly recognising their role in supporting the development of these skills for jobs of the future, the Australian Government should review the national education curriculum for adequacy in this area.

There is also a need to review the national education curriculum with the ambition to foster a more entrepreneurial mindset in the next generation. Beyond STEM professionals, there is a pivotal role for entrepreneurs and innovators – individuals that will think big and lead future business models – in growing a digital economy.

EXHIBIT 3 | New job families and fields as a result of disruptive technology and skill required



Source: BCG Industry 4.0 Report, CSIRO The Future of Work

Australians historically aspire and value working for large organisations, typically founded elsewhere. To ensure Australia has a pipeline of future business and innovation to support its digital economy, it is important to encourage the next generation to build their own

[6] http://www.smh.com.au/nsw/maker-education-gathers-steam-at-sydney-schools-20170220-gugvj4.html

businesses and risk exploring non-traditional career pathways. In addition to ensuring topics related to entrepreneurship are taught in schools, the Australian Government should acknowledge and celebrate past success in the country's start up and innovation history to nurture a more encouraging sentiment towards dreaming big.

Recommendation 11: Update the national curriculum and teacher training to focus more on functional skills and experiential learning approaches.

5.2 Invest in lifelong learning

The era when most Australians could expect to undertake training in a single discipline, and stay in a single career for most of their working life, is already gone. Research[7] suggests that graduates today, over their lifetime, will have around 5 different careers and 17 different jobs.

For Australians to keep pace with this dynamic environment in the future, there will need to be learning and skills development beyond traditional education. Educators have a role in offering more flexible, lifelong learning pathways, and employers have a role to play in up-skilling their employees. The government has a pivotal role in shaping a more symbiotic education / work system, and supporting those at risk of displacement, to ensure workforce resilience.

The Singapore Government has taken proactive steps to promote lifelong learning through the setup of SkillsFuture Singapore and committing SGD20 million to research in the areas over 2016-2020. One of the initiatives underway is the establishment of individual learning accounts, such as SkillsFuture Credit which offers direct subsidies to all Singapore citizens over the age of 25 to study courses on a pre-approved list.

A similar commitment and approach to lifelong learning should be part of Australia's digital economy strategy. Doing so will encourage participation by groups that would otherwise miss out, or are not incentivised to participate in necessary future education. Government should work in partnership with educators and employers to develop education courses that are relevant and alternative pathways for more mature workers that will help to retain their deep knowledge and experience.

Recommendation 12: Transform the higher-education funding model to support lifelong learning.

[7] Job Mobility in Australia, McCrindle Research

About The Boston Consulting Group

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