ISACA®

3701 Algonquin Road, Suite 1010
Rolling Meadows, Illinois 60008-3105, USA
Web Site: *www.isaca.org*

Telephone: +1.847.253.1545
Facsimile: +1.847.253.1443
E-mail: *info@isaca.org*

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Digital Economy Strategy team
Department of Industry, Innovation and Science
Via upload to the Consultation Hub

On behalf of the approximately 4,000 ISACA members within Australia, and the nearly 160,000 professionals who are part of ISACA's global community, we are grateful for the opportunity to respond to the Industry, Innovation and Science's Digital Economy Consultation Paper.

Enclosed please find our responses to the questions posed in the Consultation. ISACA would be pleased to continue to be a part of this important conversation, and to contribute to the ongoing development of the Commonwealth's efforts to shape the Digital Economy for Australia.

If you would like additional information regarding any of the elements contained in ISACA's Consultation submission, please do not hesitate to reach out to ISACA's Australia leadership at adam.wood@pwc.com. Thank you in advance for your time and consideration.

Respectfully submitted,

Jo Stewart-Rattray
ISACA International Director

Adam Wood
ISACA Canberra President

David Berkelmans
ISACA Canberra Past President

About ISACA

ISACA helps global professionals lead, adapt and assure trust in an evolving digital world by offering innovative and world-class knowledge, standards, networking, credentialing and career development. Established in 1969, ISACA is a global nonprofit association representing approximately 160,000 information and cybersecurity professionals throughout the world, including nearly 3,600 in Australia. As part of ISACA's efforts to support the global IT professional community, ISACA offers COBIT®, a business framework to govern enterprise technology, and the Cybersecurity Nexus™ (CSX), a holistic cybersecurity resource to assist organisations in developing skilled cyber workforces and enabling individuals to grow and advance their cyber careers.

ISACA's Response to the Digital Economy Consultation Paper

1) How are advances in digital technology changing the way you work, your industry, and your community?

a) Advances in digital technology have made Australia an always on, always connected, always available epicentre for commerce, finance, industry and advanced manufacturing, as well as agricultural and extractive industries. More importantly, however, advances in digital technology have aided globalisation efforts (not only within Australia) to evolve at a previously-unheard-of rate.

Perhaps the most significant change enabled by advances within digital technology has been the growth and evolution of both the jobs market and Australia's (and the global) digital economy. One of the key elements of the changing nature of the workplace has been the restructuring of current jobs through efficiencies such as automation—a technology that has added to the disappearance of many jobs as well.

It also must be noted that these workforce and economy changes are beginning to create similar shifts within education; multiple pathways are leading students into digital technology careers, and new options for professional development, across the continuum of a career, are arriving in the marketplace at an increasing pace. From IT-focused courses on websites such as Lynda.com, to 'MicroMasters' programs available through MOOCs from universities around the world, to digital 'badging' programs certifying knowledge in or mastery of discrete topics, never have so many resources been available to the working professional seeking to stay relevant in the digital economy.

For all the positive elements associated with digital technology advances, however, there are still areas of concern. ISACA's Australia community encompasses professionals working across the breadth of our nation's public and private sectors. For all the different perspectives these professionals bring when they share their insights, there are common themes that are heard throughout our community: there is a need to address governance risks; there are risks associated with the advancement of technology that need to be addressed (such as choosing the wrong technology—i.e., the Betamax vs. VHS issue); and there is a need to ensure that organisations continue to remain cyber-secure and optimally functional within a constantly-altering threat landscape. To be sure, advances in digital technology are improving those cyber security efforts—but those same advances can also provide aid to those they are securing their organisations against.

2) What is your vision for an Australia that thrives in a digital economy? Where would you like to see Australia in five, 10 and 20 years' time?

a) At the current rate of change, it is almost impossible to predict what the digital economy will look like in 20 years' time, or even within the next 10 years. However, within the next five years, it is very likely that we will see a complete—or near-complete—erosion of privacy, or at least the emphasis on it.

Each year, professionals enter the workforce who, since childhood, have been giving up bits of their privacy—an email address, a home telephone number, their age or gender—to gain access to something. As children, perhaps it was to download a game or app; as

young adults and university students, perhaps it was to gain access to information repositories, or to download a report for use in a thesis. As this cohort increases its presence within the workforce, companies will need to adjust the ways in which they engage in security and privacy.

To ensure that Australia continues to thrive in a digital economy, preparations for changes in the marketplace are already beginning, and have already gained footholds within the private sector, and within policy development within the public sector. Whilst this progress is both welcome and needed, it must continue to be robust over time. Growth within the digital economy will occur as the years and decades ahead rush towards us; what will be critical, however, is to ensure that such growth is accompanied by similar evolution within supportive areas such as public policy, international norms, and multi-lateral digital economy agreements.

Our vision is also that the leadership of organisations, both business and government are sufficiently digitally aware and engaged to participate and take advantage of the opportunities arising from the digital economy. This includes ensuring that they have a clear understanding of the business opportunities and have access to the advice and expertise to take advantage of advances in technology as they occur.

It is also envisaged that the requirements for data sharing and trust to enable smart cities are understood and planned for when we build new private and public infrastructure both in large cities and remote regions and we take advantage of digital technology to improve services to our citizenry while reducing costs.

The short answer to where one would wish to see Australia in one or two decades' time is quite brief: prosperous and secure. Steps have already been taken in that direction, including the recent development of our International Cybersecurity Strategy, but the journey towards prosperity and security for Australia must be a continual one.

There is a definite need for Australia to engage more on the international stage—and perhaps one of the best reasons is that we have already encountered initial success. Our efforts with Singapore, Israel, Malaysia, and other nations, both within the ASEAN region and throughout the world, must be viewed through the lens of continuous improvement. Even participation in the development of international standards can play a role in such efforts, for it exposes the excellence of what Australia has to offer to a broader audience.

3) What is the role of government in achieving that vision?

a) Government's role in achieving a vision of a thriving, prosperous and secure Australia within the global economy is multifold. The individual and his or her personally identifying information must be protected through forward-focused regulatory and statutory safeguards. Likewise, as jobs and growth in the digital economy alter Australia's employment landscape, government can assist in ensuring that the appropriate educational and training resources are available to all, so that none are at a disadvantage within the digital economy.

Australia's connectivity infrastructure must also be considered as well, for this underpins all economic and educational efforts. Our nation is both vast and diverse. From the streets

of Canberra to the dugouts of Coober Pedy, all individuals and organisations should benefit as equally as possible from Australia's growth within the global digital economy.

The Australian Government has already focused on facilitating growth in key areas, creating growth centres across various industries, including cyber security, medical technologies, the extractive industries, and advanced manufacturing. These early efforts have already begun to bear fruit; it is highly recommended that such efforts not only continue, but are expanded upon. This is particularly true in the case of start-ups; the Australian Government has made this cohort an area of focus for some time now, and it is estimated that nearly 1.5 million jobs have been created by start-ups within the past decade.[1]

It would also be of benefit to explore the work done by nations such as Israel, Singapore, the Netherlands, and Finland in facilitating growth within the digital economy[2]. Each of these nations have taken a multifaceted approach to the digital economy; they have all strengthened their educational pipelines to create a stronger digital workforce, they have all been willing to explore technological advances as early adopters, and they have all diligently worked to foster as supportive a regulatory environment as possible to not only foster jobs and growth within the digital economy, but make that growth as sustainable as possible.

4) What are the key disruptive technologies or business models that you are seeing? What do you predict is on the horizon in five, 10, 20 years' time?

a) Right now, the conversation is dominated by distributed ledger technologies, data analytics, artificial intelligence, and machine learning. However, for all we are hearing, it is difficult to discern just how likely these technologies are to 'disrupt' business models or the lives of individuals. Though the potential for disruption is certainly there (across all sectors of our currently digital economy), whether these technologies will dramatically reshape lives or business pursuits within the next five, 10 or 20 years' time remains unclear.

Whilst these technologies may or may not reach full maturity within the next two decades, it is more likely that Australia—and the world—will be more significantly impacted by the convergence of these technologies with other, existing technologies and undertakings.

One example of this might be the ongoing mapping efforts of the human brain being separately undertaken by the United States, European Union, and China. Once such mapping efforts are successful, the coupling of the insights gleaned through those efforts with technologies like data analytics and artificial intelligence could open whole new fields within areas such as neurology, psychiatry, and medicine itself.

However, any such disruptive technologies or convergences will bring with them ethical, practical, and legal questions. What protections will be in place for the data we collect from mapping the brain of an individual? Will we need all the data that we collect and, if not, what becomes of 'leftover' data? These are just a brief sampling of what is certain to be a very long, very involved—and very important—discussion.

[1] National Innovation and Science Agenda website (https://www.innovation.gov.au/audience/startups-and-entrepreneurs)
[2] World Economic Forum; *2016 Global Information Technology Report*

5) What communication services, and underlying data, platforms and protocols, does Australia need to maximise the opportunities of the digital economy?

a) This is not a simple question to answer, because so much depends upon what the future holds for both Australia and technology. Maximising opportunities within the digital economy is a worthwhile endeavour, but what happens when Australia finds itself within a global economy driven by cognitive technologies? Will the platforms and communications services of a digital economy retain value, or will those infrastructure investments trend towards obsolescence?

Last year, the City of Adelaide embarked upon its' ambitious "Ten Gigabit Adelaide" project, an effort to create a network of unparalleled digital data transfer speeds to that city. The project's reliance upon the cloud and fibre optics is quite forward-focused, and is likely to 'future-proof' Adelaide's internet and communications services for many years to come—but not forever. When terabit-per-second data transfers are the norm, will Adelaide's infrastructure be able to adapt to this new future?

It is important that we remember the Government's Digital Transformation Agenda when discussing the co-evolutions of technology and government. The Agenda is focused upon user needs, and defines users as agencies, service providers, individuals, and businesses;[3] most importantly, however, the Agenda treats this evolution as a continuum, not a 'once and done' activity. As all cities become 'smart' cities, and e- and m-government services become the norm, the technological transformation of government must keep pace with the needs of its' user communities.

The infrastructure investments we make today and in the near future must be able to have the flexibility to evolve, whilst maintaining the security necessary to protect the data of individuals and businesses. Which brings up perhaps the most sensitive topic of all: cost.

It is not only what communications services Australia will need, but rather at what price point will those services be available. Fast, reliable communications networks are paramount for the success of Australia's business community, but pricing those networks out of reach for small and medium enterprises, as well as individual innovators, is counterproductive. Regardless of whether the discussion centres around infrastructure, the digital or cognitive economies, or platforms and communications services, providing those elements within reach of Australia's companies and entrepreneurs will play a key role in sustainable employment and economic growth for our nation.

6) What opportunities do we have to accelerate the development of technologies that will underpin Australia's digital economy?

a) Australia's National Broadband Network, when fully deployed, presents an exceptional opportunity to serve as an accelerator for the development of digital economy technologies. Likewise, the Industry Growth Centres Initiative has already shown itself to be an exceptional opportunity to drive growth and job creation in the digital economy.

Our nation should also build upon our existing international efforts as well, within the scope of our International Cyber Security Strategy. Our existing ties with Israel, particularly

[3] Digital Transformation Agency website (https://www.dta.gov.au/what-we-do/transformation-agenda/#vision)

in areas like research and development, could yield opportunities to accelerate technology transfer and development within Australia.

The recent MoU signed by Prime Minister Turnbull with Israel that focuses on defence includes a number of cyber security areas of cooperation. The intersections of defence and cyber security between our two nations present many possible opportunities to accelerate the development of technologies that support our digital economy. These opportunities, coupled with Australia's existing free trade agreements with nations like Japan, China, Korea, and Singapore, could potential play a key role in the growth and evolution of Australia's digital economy, as could several agreements currently under negotiation. One of those agreements under negotiation is with Hong Kong, and their efforts in the growing fintech and insurtech worlds could be of great benefit to Australia's banking and insurance communities in particular.

The development of international standards and cyber norms are also two other avenues worth exploring that could potentially aid Australia's economic development efforts within the digital world; these are efforts that neighbouring nations such as China and Singapore are already engaged in, as well as Australia, and perhaps a concerted effort could lead to the synergistic development of additional opportunities for all our nation, within a shorter period of time.

7) What opportunities do we have in standards development and regulation to:

--enable digital entrepreneurship, innovation and trade?

--mitigate the risks associated with digital disruption?

a) The development and promotion of standards and regulation is crucial to Australia's role as a player in the digital economy, both domestically and internationally, and our nation should continue to play a major role in the development of standards and regulation in these areas.

To better enable digital entrepreneurship and innovation within Australia, standards can be used to promote trust through compliance, providing a baseline of service and reliability that customers and business can rely upon. Internationally standards provide a specification of agreed levels of service, understood both by the customer or provider. On the international front, opportunities in standards development and regulation could include the use of blockchain to enable the source of exports to be validated, thereby supporting and enhancing Australia's trade position as a leading commodity exporter. Likewise, as an exporter of IT related services, Australia's trade posture can also be enhanced by compliance with and experience in best practices in areas such as Big Data, the Internet of Things, Cyber and Information Security, IT service management, and the quality of software development efforts.

Our nation is an internationally recognised leader in the setting of technology standards, with active engagement in many international standards development bodies. In addition, there are numerous examples of Australian Standards in areas such as risk management and governance becoming international standards. These include AS/NZS 4360:2004, which formed the basis for ISO 31000, and AS 8015/AS 8016, which formed the basis for ISO/IEC 38500 and ISO/IEC 38506 (the latter of which is currently under development).

Such efforts should continue and be supported through Standards Australia. The funding model for international participation does not always allow for sufficient expert participation to argue Australia's case in international standards development efforts, and there is an argument for the model to be reviewed if we are to have more effective participation.

To best enable digital entrepreneurship and innovation, to aid Australia's trade efforts, and to mitigate the risks and impacts associated with digital disruption, it is not sufficient to merely issue standards. Providing support to all of these critically important activities must be ongoing, and must include more organisations taking up these standards and—when appropriate—ensuring that they are certified or accredited against applicable standards. One caution, however. The cost of training and certification may be a barrier for smaller exporting organisations. This will need to be addressed, and will require creative solutions that enhance, rather than impede, Australia's efforts within the global digital economy.

8) What digital standards do we need to enable Australian businesses to participate in global supply chains and maximise the opportunities of the digital economy?

a) As was noted in our response to question #7, Australia is an internationally recognised leader in the setting of technology standards, with active engagement in many international standards development bodies. International Standards in areas such as governance of IT, risk management, cyber security, data management and service management are of especial importance as Australia seeks to enable businesses to maximise the opportunities offered by the global digital economy.

Australia's role within the digital economy is best enabled if there is an understanding of best practices use and delivery of IT-related services within Australian business and government. This is not only a matter of standards and regulations, but also a matter of delivering the appropriate guidance to the appropriate audiences. This includes small and medium businesses that are increasingly reliant on technology for providing services and a means of interfacing with customers. These businesses have already encountered the challenges presented by service failures and attacks. Likewise, customers and members of the general public also must have an understanding of the actions they should take to protect their own interests when using technology.

Consideration should also be given to standards in support of smart cities, which will be dependent on longer term planning to ensure interoperability and data exchange standards across cities. One option in this regard is the use of BSI guidance on Smart Cities, such as BSI PAS 183, which is being considered as an international standard.

Australia has been in the forefront of endorsing standards to promote the governance practices required to ensure that organisations achieve the benefits in investment from technology change. More action is required to develop and promote some of these concepts. Consideration should be given to standards that address issues such as IT enabled business transformation, or IT supply from a customer point of view.

9) What opportunities do we have to build trust and community confidence through resilience to cyber threats, online safety and privacy?

a) With respect, this question may not be casting a wide enough net. Yes, resilience in the face of cyber threats, online safety and privacy are vitally important to building trust and

community confidence within the digital economy; they are not everything, however.

Building trust and confidence includes an examination of not only *what* is done, but ***how*** it is done. Around the world, we find that cyber security is under-resourced, and Australia is no exception. Boards and Executives are paying attention to cyber threats and organisational vulnerabilities, but corporate investment in cyber security infrastructure does not always match up to the level of concern. Finding experienced professionals with top-quality credentials is a challenge. Many organisations in Australia still lack a Chief Information Security Officer.

Corrections in all of these areas would also support the building of trust and community confidence, because it would provide foundational support at the most basic of levels: the creation and developmental stages of new products, services and solutions. Fostering confidence in the trustworthiness of systems, services, and other offerings in the digital economy requires approaches that are flexible, comprehensive and, above all, holistic; of these three qualities, it is the last one which is the most important, for it drives community confidence in what has been or is being created or produced.

This is not meant, in any way, to minimise the importance of cyber threats, and the consequent importance of strong cyber security. Resilience to cyber threats is now—and will remain for the foreseeable future—a primary driver in the creation of job opportunities within IT- and ICT-related fields of interest. That same quest for resilience will also drive opportunities within areas such as research and development and technology transfer. For several years now, we have heard variations of the quote "data is the new oil"; that may be true for data, but it is doubly true for cyber security.

10) What roles should government, business and individuals play in protecting the community in a digital economy?

a) Government, business and individuals should engage in efforts to raise awareness of what constitutes at-risk online behaviours, ideally through initiatives that span all three of those groups, and address the varied digital 'profiles' of the various generations currently working or purchasing within the modern digital economy.

For government and businesses, attention can and should be given to efforts on the international stage, particularly in areas such as research and development and standards development within the security realm. Both of these areas could provide a wealth of opportunities for Australia to enhance community protection in the digital economy. Similarly, government and business are also two of the driving forces behind workforce and skills development, efforts that not only enrich and enhance professionals, but aid in making those professionals better resources as protectors of their respective communities within the digital economy.

Awareness relies upon education, and government, business and individuals—particularly educators—can play a role. Some initial efforts to build awareness and to protect the community have already encountered success; it is critical that the momentum gained from those initial strides forward be continued.

11) What integrity and privacy measures do we need to ensure consumers can protect their data?

a) Australia has already taken a number of noteworthy steps towards ensuring the data of consumers is protected. One of the most significant recent strides forward was Parliament's passage, earlier this year, of Australia's first data breach notification law, which applies to companies exceeding $2.3 million in annual revenue, as well as overseas entities holding information on behalf of a covered entity.[4]

Whilst this new measure is helpful in many regards, it does not address small- and medium-sized businesses whose revenues do not meet the statutory threshold. If meeting the standards of this legislation might be onerous for smaller companies, perhaps something similar to the 'cyber security health checks' that have been established for the ASX 100 could be implemented, to better ensure that consumer data is well-protected. It is critical that we remember that $380 billion of Australia's economy—and nearly all of Australia's businesses—are small- or medium-sized businesses.[5] Small- and medium-sized businesses are not merely the engines that drive our national economy—it is the entire vehicle which moves that economy forward.

For consumers themselves, it is paramount that the privacy principles written in legislation or regulations properly protect our citizenry and their personally identifiable information—and that those principles are enforced. In this regard, it might be of benefit for Australia to explore the possibility of repurposing some of the tenets espoused in other legislative efforts around the world.

In particular, it may be of benefit to examine some of the provisions within the European Union's General Data Protection Regulation (GDPR), especially those surrounding data protection portability for individuals. The GDPR's approach to protection portability ensures that the protections afforded under the GDPR travel with the individual, regardless of where their travel takes them; such protections could be very beneficial to the Australian consumer.

12) What are barriers for business, particularly small business, in adopting cyber security and privacy practices?

a) For small businesses, one of the key impediments to the adoption of robust cyber security and privacy practices is often cost. Whilst many advances (i.e., -as-a-service offerings; third-party cloud storage providers, etc.) have driven the cost of improving cyber security and privacy protections down to varying degrees, there still are those for whom such protections remain cost prohibitive.

Programs and initiatives that focus on increasing awareness about and knowledge within cyber security and sound privacy practices—such as those offered by through the United States' National Initiative for Cybersecurity Education (NICE)—could be of benefit to consider. NICE's three-pronged focus on education, training and workforce development enables not only businesses to improve their security and privacy capabilities, but aids in

[4] L.M. Thomas and E.J. Shinabarger (of the law firm Winston & Strawn LLP); *Australia Passes Data Breach Notification Law*; Lexology, 22 February 2017
[5] 2017-2018 Budget content materials online (http://budget.gov.au/2017-18/content/glossies/jobs-growth/html/jobs-growth-00.htm)

ensuring that those businesses are able to hire employees already skilled in cyber security and privacy protection best practices.

13) What integrity measures do the Australian Government and the private sector need to take to ensure business-consumer transactions are secure?

a) Australia's private sector businesses must be aware of their responsibilities with regard to the securing of business-consumer transactions. At the minimum, appropriate encryption and authentication should be in place and, overall, businesses must ensure that their security postures are appropriate for the environment in which they operate. At all times, they must follow good governance principles, and take all reasonable precautions.

However, the private sector must also be allowed to flourish within the global digital economy, and mandating integrity measures may serve to impede that growth. This is a difficult balance to strike; the consumer must be protected, and companies must be able to grow and evolve within a suitable regulatory and policy environment. Our current banking industry is highly regulated, and existing frameworks have provided much of the balance necessary for both companies to grow and consumers to be protected. In this environment, business-consumer transactions have been both growing and increasingly secure; this is a trend that strongly bears continuance as Australia's role in the global digital economy continues to grow.

14) What is holding Australian businesses back in terms of benefiting from digital technologies?

a) The World Bank recently released Doing Business 2018 (DB 2018), a global survey that explores the ease of founding and operating a business in nearly 200 nations around the world. According to DB 2018, Australia ranks 14th in the world for ease of doing business.[6] New Zealand, however, ranked first. In areas such as 'starting a business', 'getting credit', and 'enforcing contracts', Australia's efforts ranked within the top ten nations of the world. However, one critical area dragged our nation's rating down: 'trading across borders', where Australia ranked 95th. Given the increasing digitisation of trade efforts within the global economy, this is an area in which Australia cannot long afford to remain 95th; efforts must be made to shore this key area up in order to maximise our nation's opportunities in the global digital economy.

We must bear in mind, though, that these World Bank statistics focus on the entirety of Australia's economy, not merely the tech sector. Within the tech sector, it is not as easy to begin a new business. As was mentioned in our response to Question #12, implementation costs can be both a barrier to entry and an impediment to growth within the digital economy, particularly within the small business community. For new digital technologies, users might wish to see how 'early adopters' fare before they take a risk in using that technology themselves; this, too, can impede growth within the tech sector.

For any business in Australia, though, we must also consider the workforce itself. A key challenge to any business looking to grow within the digital economy is finding the appropriate, best qualified individuals; this is much more difficult to do when a business finds itself trying to do so within a shortage of skilled professionals. All too often, Australia's businesses find themselves hiring IT and cyber security professionals from overseas, or making use of offshored personnel to meet their needs.

[6] World Bank (for all statistics in this paragraph); *Doing Business 2018*

Last , but certainly not least, there is infrastructure to consider. Australia's digital technology infrastructure must keep pace with the digital economy, or our nation risks falling behind. This is not an easy challenge, nor will it be one that can be addressed once and never again; ensuring the infrastructure needed to support a digital—and one day, cognitive—economy will be one of the great challenges, for all nations, in the 21st century.

15) What would help Australian businesses to embrace digital technologies?

a) Addressing the concerns raised in the response to question 14 would be of great benefit, but these are not the sole concerns that deserve focus. To aid Australian businesses in embracing digital technologies, there also needs to also be an emphasis on education, training and workforce development. Innovation grants or other incentive programs might also be of benefit, as would examining the best practices of other nations in similar situations to glean elements that could work within our nation's business sector.

16) What efforts are you or your organisation making to respond to digital transformation? Why?

a) For the ISACA community in Australia, this is a difficult question to provide a single answer to; our membership spans the breadth of Australia's public and private sectors. Because of this, we cannot speak to this question in terms of what a single organisation is doing. Our community can, however, speak to the landscape of organisations in Australia, and what that landscape's overall efforts to respond to digital transformation look like.

As might be expected, the efforts to respond to digital transformation—as our members can attest—are varied, and cover all parts of the spectrum. Some within our community have told us their organisations are doing well, and their efforts to respond to digital transformation are proceeding apace. Some members have informed us that their organisations have already undergone a transition to digital, and any initial difficulties or transition issues have been surmounted. Still other members have related that their organisations have not yet responded to digital transformation. Regardless of the state of their respective organisations' digital transformations, however, the members of our ISACA community all shared the same sentiment: there is no 'staying put'; digital transformation is no longer a question of 'if'—it is a question of 'when'.

17) **What opportunities do we have to use digital technologies to improve linkages into export markets and global supply chains?**

a) Perhaps the best answer to this question lies within work Australia has already performed, specifically our existing free trade agreements, and Australia's International Cyber Engagement Strategy, which debuted earlier this year. A generous portion of the Strategy focuses on creating "an enabling environment for digital trade"[7], and proposes that such an environment be shaped through, amongst other approaches, the use of digital technologies.

Opportunities for the use of digital technologies to improve linkages to the global digital economy could include, but are by no means limited to: paperless trading; electronic (and possibly distributed ledger technology) authentication; and the borderless transfers of information via electronic means.[8] In each of these areas, possibilities exist for swift and

[7] 2017 Australia International Cyber Engagement Strategy
[8] *ibid*

secure linkages between export markets, and more robust and—in the case of distributed ledger technologies—"hyper-secure" international supply chains.

18) What opportunities do small and medium-sized businesses have to embrace digital innovation to drive customer value, improve their services and unlock their potential?

a) In responses to earlier questions that touched on barriers to small- and medium-sized businesses and digital technologies, such things as education, training and awareness were touched on, as were lowering the cost thresholds for acquiring robust cyber security and privacy protections (making use of cloud-based storage and '-as-a-service' offerings from reputable vendors being two possibilities for doing so).

Whilst grants and incentive programs can be of benefit, particularly in areas such as government procurement, it ultimately comes down to the business itself, and its' appetite for exploring its' own potential. Embracing digital innovations may involve some initial risk; that risk, however, can be evaluated and perhaps mitigated by insisting that proper security and privacy protections are in place. The digital economy changes in character and scope each year; there will always be a place for innovative Australian businesses willing to explore what could be.

19) What are the key new growth industries that Australia should be tapping into? In what technologies and sectors should Australian businesses take the lead, and where should we be a 'fast follower' of international trends?

a) Earlier this year, research company Gartner released a forecast,[9] through 2021, of Enterprise IT Spending by nation—an indicator of where they believe growth will be, and in what industries. Between 2017 and 2021, Australia's banking and securities market is expected to see IT spending increase by an average annual rate of nearly 3.7%; our wholesale trade market anticipates an average annual growth of nearly 5.6% for that same period; our insurance market will likely see IT spending increase by an average annual rate of slightly more than 3% for that period as well.

However, these are not 'new' growth industries for Australia; we are already exploring possibilities within areas like FinTech. FinTech is a growth industry for which the Australian Securities and Investments Commission established a regulatory 'sandbox' last year, and the Federal Government released draft regulations and legislation to enhance that 'sandbox' as recently as October 2017.[10] We are at the forefront in this regard; though Singapore and Hong Kong have created similar constructs, less than a dozen nations around the world have created such tools to foster growth within the finance, banking or insurance communities.[11]

Australia—like the rest of the world—is awash in emerging technologies and possibilities. We are at a point in our digital economy's history where the recommendations of today might be rendered obsolete by the advances of the next few years—or even the next half-year. Deciding whether or not Australia should be an 'early adopter' or 'fast follower' of a new technology or technology trend is an exercise best informed by direct collaboration between the business, governmental and academic resources doing research and development work in emerging technologies. Entities such as CSIRO's Data 61 (and CSIRO

[9] Gartner; *Forecast: Enterprise IT Spending by Vertical Industry Market, Worldwide, 2015-2021*; April 2017
[10] M. Chasser and F. Charlesworth (law firm of K&L Gates); *Australian Government Releases Proposal for New and Improved Sandbox*; 1 November 2017
[11] BBVA; *What Countries Are Leading in FinTech Regulation?*; 4 September 2017

itself) and the D61+ Network can play significant roles in this regard.

There is also the possibility of creating sub-industries in Australia within existing industries. Two industries that have embraced technology, and placed themselves at the forefront of technology adoption within Australia's business community are agriculture and mining. In addition, both of these industries are among the largest of all industries in Australia, and are two of the primary drivers of Australia's current prosperity and GDP growth.[12]

20) What opportunities do we have to equip Australians with the skills they need for the digital economy, today's jobs, and jobs of the future?

a) As was mentioned earlier, Australia faces a skills shortage, particular in cyber security. In order for our nation to remain viable in the digital world moving forward, addressing this shortfall of talent must be a priority, and that includes discussions regarding skilled migration, which has proven to be an exceptional resource already for valued IT, ICT, and cyber security professionals. In addition, educational institutions need to address the needs of learners and business more broadly, particularly in relation to the changing nature of jobs and work.

Graduates must be able to contribute to the digital economy, and flexible course content must be made available to them in order to accomplish that goal. At present, it can take up to five years for a course to become accredited at the tertiary level—by which time, the course itself may have decreased in relevance or, worse, become irrelevant. The half-life of skills continues to decrease as well. Universities and accrediting organisations must recognise these facts and adjust their efforts accordingly.

21) What opportunities do we have to bridge the 'digital divide' and make the most of the benefits that digital technologies present for social inclusion?

a) In a response to an earlier question, it was noted that Australia's connectivity infrastructure must be considered as a critical component of bridging any 'digital divides', and making the most of digital technologies in as socially inclusive a manner as possible. This infrastructure is critical, for nearly all economic and educational efforts and opportunities in the digital economy will be derived from it. All individuals and organisations should benefit as equally as possible from Australia's growth within the global digital economy, regardless of geography, socioeconomic status, or any other factor.

Digital transformation is also about making it easier for the public to engage with government services. As we seek to bridge 'digital divides', we must also consider the ability of technology to include the less fortunate in our community by making it easier for them to obtain services and assistance and, in so doing, better themselves and their communities.

22) **What opportunities do we have to ensure digital technology has a positive impact on the cultural practices and social relationships of Australians?**

a) We—government, businesses in the private and public sectors, and individuals—do not have opportunities to ensure digital technology has a positive impact on culture and society in Australia. We have ***responsibilities***.

[12] G. Jericho; *Peak Farm: good weather, high prices and free trade a boon for agriculture*; 6 March 2017; *The Guardian*

In responses to earlier questions regarding safeguards for people, governments and businesses, it was mentioned that education and awareness are among the two best tools to make use of in creating a prosperous and secure Australia. Though that is correct, that is only part of the positive impact that education and awareness can have on a populace. The real benefits of having informed users of digital technologies comes when citizens can identify the wheat from the chaff. As consumers, it means being able to recognise online identification acquisition scams when they arise, or malware in suspicious emails, or avoiding any one of a multitude of ill-advised online behaviours.

It is also incumbent upon us to learn from examples of how the negative impact of digital technologies can create divisions in social relationships, as well as cultural practices. If we desire an object lesson, we need not look any further than the United States, as we watch it writhe through debates over the impact of bots and similar tools to maximise the spread of inflammatory and false information across various media and platforms. We have seen how this manipulation of the information 'bubble' that the digital economy can create for individuals can have echoes that are heard throughout a populace. We have seen how false media outlets can lead to the delegitimisation of true ones.

This is an avoidable future for Australia. We have seen the deleterious effects of a lax approach to education and awareness with respect to the internet, the digital economy, and its platforms. We know where this can lead. Whilst we have begun to lead Australia in the opposite direction, we must continue to do so; this is an activity which can never cease, lest we risk descent into the chaotic maelstrom the United States' citizenry currently finds itself in.