



13 October 2017

The Hon Lauren Moss MLA  
Minister for Corporate and Information Services  
Legislative Assembly of the Northern Territory  
Parliament House  
Darwin NT 0800  
Via email - [digital.territory@nt.gov.au](mailto:digital.territory@nt.gov.au)

**Australian Computer Society response and submission to 'Towards a digital strategy in the Northern Territory'**

**Attachments:**

- 1. ACS Submission to draft discussion paper on digital strategy in the Northern Territory**

Dear Minister

Thank you for the opportunity for the Australian Computer Society (ACS) to provide a submission on your government's drive to deliver a digital strategy for the Northern Territory.

ACS is pleased to provide its assistance and expertise in your draft policy on digital strategy. We have had a long and effective association with successive governments in the Northern Territory and look forward to continuing to partner with your government to deliver real and tangible results for the ICT sector and the people in the Territory.

ACS is the largest professional association in Australia that represents the ICT sector. ACS has over 22,000 members and partners with some of Australia's largest corporations, is responsible for accrediting ICT courses at Australian educational institutions and assesses the ICT skilled migrant program on behalf of the Australian government. We have consulted our membership base throughout the public consultation period and have collated our experts' feedback on the discussion paper in this submission.

ACS uses a number of methods to reach out to our members including national surveys, direct consultation and data prepared from a number of ACS industry submissions. ACS has also utilised assistance from our National Public Policy Reference Group, Technical Advisory Board, the ACS Diversity Committee and our Northern Territory Branch Executive.

We have summarised the key responses and feedback that directly relate to the six key areas covered in the discussion paper being Jobs, Children, Bush, Community, Trust, and Digital Drivers.

We believe that our submission will assist your government in its productive and progressive policy of reforming the digital landscape in the Northern Territory. There is no doubt that a



strong and forward-thinking strategy that is unique to the circumstances of the Northern Territory will further Australia's economic influence in the South East Asian region.

We look forward to the final strategy paper being released in early 2018.

If ACS can be of any further assistance in developing your digital strategy further please don't hesitate to contact our Northern Territory Branch Chair, Mr Benjamin Smith, at any time.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Anthony Wong', is written over a faint, light-colored signature line.

Mr Anthony Wong  
FACS CP  
**President – ACS**

## **Attachment 1: Submission on 'Towards a digital strategy for the Northern Territory'**

### **Introduction:**

"The Northern Territory government believes that government policy and practice must be aligned to ensure that Territorians are supported and enabled to take advantage of the opportunities, and manage the changes we experience, from the digital revolution"<sup>1</sup>

The future is looking bright for the digital economy in Australia, following impressive growth over recent years. From 2004 to 2014 GDP per capita in Australia grew by 6.6% due to digital technology or the equivalent to \$4,663 per person in 2016<sup>2</sup>. In 2016 there were over 640,846 Australians working in ICT related industries<sup>3</sup>.

The Northern Territory is well placed to leverage this growth particularly given close proximity to South East Asia, and the potential this represents for trade and investment. The 2015-16 financial year saw trade in and out of Australia in ICT services grow to \$5.7 billion<sup>4</sup>.

A strong digital economy also benefits all sectors of the community and economy. Sixty per cent of all industry executives surveyed in 2015 said they planned to engage new digital business partners within their respective industries within the following two years<sup>5</sup>.

An illustration of these benefits can be seen in Brisbane's Fortitude Valley, which offers similarities to the Darwin CBD and waterfront district. Located in the historic T.C Beirne Building, this growing digital ecosystem, in partnership with the CSIRO and Data61<sup>6</sup>, uses collaboration as the core to drive success and creating an environment with a mix of new business and educational opportunities.

The education sector in Australia is predicted to experience a boom in the digital space as domestic undergraduate enrolments rose from 19,000 at the start of the decade to over 25,700 in 2015<sup>7</sup>. This level of growth presents significant opportunities for the Northern Territory education sector but will require strategic government investment to achieve its potential. Since 2015, the National Innovation and Science Agenda has invested \$51 million supporting the implementation of a technology curriculum in schools, with coding introduced in many schools across Australian states and territories<sup>8</sup>.

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<sup>1</sup> Discussion paper towards a digital strategy for the Northern Territory – Minister's foreword page 3

<sup>2</sup> ACS digital pulse report 2017 page 12

<sup>3</sup> Australian Bureau of Statistics customised report 2017 – ACS digital pulse report 2017 page 2

<sup>4</sup> ACS digital pulse report 2017 page 16

<sup>5</sup> Accenture business survey 2015

<sup>6</sup> ACS digital pulse report 2017 page 43

<sup>7</sup> ACS digital pulse report 2017 page 34

<sup>8</sup> ACS digital pulse report 2017 page 48



The next five years will be critical for governments, at both a state and federal level, to increase investment in digital education.

The digital landscape is varied and wide reaching. The Northern Territory’s government digital strategy discussion paper is crucial to ensuring that the opportunities presented by ICT are not lost and that Australians have access to these technological opportunities. The risk of not doing so could eventuate in the Northern Territory and Australia falling behind other developed nations.

ACS’ 2017 Digital Pulse report includes 13 policy priorities to fuel Australia’s digital workforce boom.

Ten of these policy priorities are directly relevant to the consultation on ‘Towards a digital strategy in the Northern Territory’ and are summarised in the following table aligned to the six key areas in the discussion paper:

NT Consultation Paper	Australia’s Digital Pulse policy priorities
<p><b>Jobs</b></p>	<p><b>Build digital communities to facilitate collaboration and innovation.</b> Facilitating a supportive environment will encourage growth, particularly in the early stages of developing digital ecosystems. Initiatives could be targeted at building digital communities in particular sectors.</p> <p><b>Respond to technology-related workforce disruption.</b> Planning and investing in necessary technology, innovation and education policies will ensure the Northern Territory can fully realise the benefits from new jobs and industries that emerge as the digital economy grows.</p>
<p><b>Children</b></p>	<p><b>Continue to support digital skills development in education.</b> Encouraging continued policy support for introducing coding in school classrooms, multidisciplinary degrees and relevant training programs will help to build a pipeline of workers with valuable ICT skills.</p>
<p><b>Bush</b></p>	<p><b>Provide adequate access to digital infrastructure for regional businesses.</b> Policy can assist in addressing gaps in National Broadband Network (NBN) service provision to ensure that the infrastructure needs of businesses in regional Australia are met.</p> <p><b>Create a 5G data policy.</b> Collaboration with industry and research agencies will help to optimise the effectiveness of 5G mobile technology deployment in a way that creates new opportunities and addresses known challenges.</p>



<p><b>Community</b></p>	<p><b>Support digital transformation in government.</b> Efforts must continue towards the digital transformation of government transactions and services, and learning from recent challenges associated with this digitisation process.</p> <p><b>Support small businesses, start-ups and innovation in government procurement.</b> Improving procurement practices will help to reduce costs, provide new ICT supply opportunities for small businesses and start-ups, and leverage innovative solutions while strengthening the local tech industry.</p>
<p><b>Trust</b></p>	<p><b>Strengthen the Northern Territory’s cyber security capabilities.</b> It’s important for the government to collaborate with industry and academia to address cyber security threats; better detect and respond to vulnerabilities and attacks; and build cyber skills and capabilities.</p> <p><b>Accelerate efforts towards open data.</b> Work must continue towards making more government data publicly available, and considering how best to analyse data to improve our national welfare.</p>
<p><b>Digital Drivers</b></p>	<p><b>Use skilled migration appropriately to support skill needs and build local talent.</b> We must maintain an open approach to skilled migration while ensuring it addresses genuine skills shortages and avoids exploitation of migrant workers.</p>

## ACS responses to six key areas in 'Towards a digital strategy in the Northern Territory':

### 1. Jobs

"Digital advances represent a real opportunity to reduce disadvantage, remove the impact of 'tyranny of distance', access global markets, and improve education and health outcomes"<sup>9</sup>.

No truer statement could be applied when discussing the net benefit of digital advances to job creation. Without the access to digital infrastructure, regions like the Northern Territory would experience increasing difficulty in remaining competitive with other states.

Innovations in information and communications technology (ICT) have driven stronger productivity improvements in the late twentieth century more than any other sector<sup>10</sup> It is possible that similar productivity improvements and faster economic growth can also be realised in the decade ahead if Australia successfully transitions to a digital economy by ensuring its opportunities for ICT innovations are not lost offshore.

Swinburne University's *Australian Digital Inclusion Index (2016)* found that regional Australians are relatively disadvantaged in terms of access to, affordability of and ability to use digital services. As digital technologies are increasingly embedded in economic activities across all industries, growth in regional Australia could be constrained if businesses in these areas do not have adequate telecommunications infrastructure and capabilities<sup>11</sup>.

The access services provided by the NBN, and the technical and commercial architecture that underpins them, target residential subscribers and those entities that are adequately served by such services, e.g. Small Office/Home Offices (SOHO). These services facilitate the demand-side of the digital economy. The supply-side of the digital economy comes from innovative small to medium enterprises (SMEs) and large corporations, as well as public-sector institutions such as schools, institutes, universities, government agencies and health care facilities. Given the multi-billion-dollar investment in the NBN, it should have at least as great an impact in the supply side as the demand side to realise its full potential.

As the NBN rolls out, greater emphasis must be placed on defining services appropriate for, and prioritising the early connection of, SMEs and other public-good institutions. This should be at least equal in priority to connecting residential premises. The current commercial structure of NBN services is as much an impediment to addressing this recommendation as any technical argument about how the service is provided<sup>12</sup>.

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<sup>9</sup> Discussion paper towards a digital strategy for the Northern Territory page 8

<sup>10</sup> See, for example, the 2012 report from the International Telecommunications Union: [https://www.itu.int/ITU-D/treg/broadband/ITU-BB-Reports\\_Impact-of-Broadband-on-the-Economy.pdf](https://www.itu.int/ITU-D/treg/broadband/ITU-BB-Reports_Impact-of-Broadband-on-the-Economy.pdf) which gives a good overview of the economic impact of ICT and Broadband.

<sup>11</sup> ACS digital pulse report 2017 page 55

<sup>12</sup> This impediment arises from the very high Connectivity Virtual Circuit (CVC) charge, the virtual charge imposed by NBN to service providers to deliver traffic from the NBN network into the service provider's network, which can be prohibitive for connections such as schools or businesses which need high speeds with little contention at reasonable cost.



It is imperative that territory and federal governments work together to ensure adequate digital infrastructure is delivered to businesses to allow for jobs growth.

There are over two million trading businesses in Australia, with only 4% employing twenty or more staff. As a result, there is great diversity in skills required for specific occupations depending on the size of the business.

Education is likely to be a critical factor shaping workforce outcomes in the future, and our future educational system will need to do more to encourage innovative, entrepreneurial and flexible mindsets.

ACS recommends that NBN connects into every school, with services consistent with the educational needs of today’s students, which can greatly exceed those of a single residence. ACS believes this would likely represent symmetrical services to every school consistent with recommendations provided by State Educational Technology Directors Association (SETDA)<sup>13</sup>.

**Recommendation 1: Move to address K-12 Broadband Infrastructure Needs (SETDA, p2)**

Broadband Access for Teaching, Learning and School Operations	2014-15 School Year Target	2017-18 School Year Target
An external Internet connection to the Internet Service Provider (ISP)	At least 100 Mbps per 1,000 students/staff	At least 1 Gbps per 1,000 students/staff
Internal wide area network (WAN) connections from the district to each school and among schools within the district	At least 1 Gbps per 1,000 students/staff	At least 10 Gbps per 1,000 students/staff

Employers also need to play a larger part in delivering education in the future, as stronger connections between education providers and employers are important to ensure that educational offerings stay relevant.

Disciplinary and professional boundaries are increasingly being blurred as expertise in one field is often proving more powerful when mixed with expertise from another. Australians are likely to face increasing competition, as the number of people with tertiary education is rapidly growing globally. In 2012 one in three adults in OECD countries had a tertiary degree<sup>14</sup>.

By 2030, China and India are expected to provide nearly half of the tertiary educated people aged 25-34 and over 60% of the STEM qualified workforce for G20 countries<sup>15</sup>. The number of

<sup>13</sup> The Broadband Imperative: Recommendations to Address K-12 Education Needs, [http://www.setda.org/wp-content/uploads/2013/09/SETDA\\_BroadbandImperative\\_May20Final.pdf](http://www.setda.org/wp-content/uploads/2013/09/SETDA_BroadbandImperative_May20Final.pdf)

<sup>14</sup> OECD (2014), “Indicator A1: To what level have adults studied?”, in Education at a Glance 2014: OECD Indicators page 31

<sup>15</sup> OECD, “How is the global talent pool changing (2013, 2030)?” Education Indicators in Focus, No. 31. Paris: OECD Publishing, 2015



jobs available for highly-skilled labour is projected to more than double in 2019 compared with 1991.

As reported in the ACS 2017 Digital Pulse report, launched by Minister Moss in Darwin earlier this year, the Northern Territory is projected to have the highest rate of growth in Australia at 2.9% each year, for the next six years. This means that by 2022, the Northern Territory will need to fill an additional 861 ICT positions.

While industry support of the education sector (detailed later in this report) will go some way in providing local students with these opportunities, the Northern Territory market will also require highly skilled and experienced ICT projects to support major government projects, which are either projected to commence during that period or have already commenced.

As growth is also anticipated in other Australian jurisdictions, a highly competitive market in those regions means that many ICT workers are currently unable to find the right job which suits their specific skillsets. While an enterprise in Darwin may struggle to find a suitably qualified Desktop Support Analyst, a similar company in Adelaide would be looking to select two candidates from a field of 200 applicants.

Given the opportunities which exist in the Northern Territory across all spectrums of the ICT landscape, the Northern Territory Government would benefit significantly by promoting the Territory as a Careers Capital for ICT across Australia, and looking to lure individuals from elsewhere who are seeking satisfactory work. While the Northern Territory is currently promoted as a desired holiday destination, more could be done to promote the Northern Territory as a place to kick-start a career and in an environment which offers a significantly enhanced lifestyle compared to other Australian major cities.

Adopting such an approach would have four clear benefits being:

1. The capacity and capability of the local industry
2. Economic growth of the Northern Territory
3. Reversing the existing population decline
4. Providing further opportunities to export ICT product from the Northern Territory, both nationally and internationally.

## 2. Children

“By 2030, one in two Australians will need skills in programming, software development and building technology to remain competitive”<sup>16</sup>. While it may be a cliché the saying ‘our children are our future’ has no truer meaning when it comes to ICT and digital education.

It is estimated that 75% of the fastest growing occupations require STEM skills and knowledge<sup>17</sup>. STEM skills need to be taught in schools beginning at primary age. Some schools

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<sup>16</sup> Discussion paper towards a digital strategy for the Northern Territory page 10

<sup>17</sup> Australian Industry Group research report - ‘Lifting our Science, Technology, Engineering & Maths (STEM) Skills’ page 1



are investing in STEM infrastructure, for example Wenona Girls School in North Sydney opened a purpose-built STEM facility in 2016<sup>18</sup>. This investment has been celebrated in Sydney, as Wenona is a girls-only school and in NSW, the percentage of girls not studying any maths in year 12 increased from 9.5% in 2001 to 21.8% in 2011. Only 13.8% of girls studied one maths and one science subject for their final year in 2011. The gender disparity, between boys and girls, in maths and science participation is now greater than it was in the 1980s<sup>19</sup>. However most educational institutions are not able to build facilities like those at Wenona. This is where federal and state/territory governments need to work together to increase investment and interest in STEM subjects for children.

An investment in STEM at an early age will pay dividends in later life. An *Ai Group* survey indicates industry experiences difficulty in recruiting employees with STEM skills especially technicians and trade workers (41% of employers surveyed), professionals (27% of employers surveyed) and managers (26% of employers surveyed) across many industry areas<sup>20</sup>. It is clear then from these figures that any investment in STEM will lead to children being in the best position to excel in whatever job they choose later in life.

Government and industry need to act now. For the last twenty years reported data relating to STEM subjects has made for sobering reading. The number of students undertaking advanced mathematics in secondary schools fell by 27% between 1995 and 2007<sup>21</sup>.

It is clear from the data that the best investment any government can make is in its children. Education is the key to success and it begins at an early age. The right investment in STEM can lead to our children being world leaders in maths and science and applying these skills to whatever career path they choose.

ACS would be pleased to work with the Northern Territory government on advocating STEM in schools. ACS runs a program called '*Big Day In*' where we visit primary schools and educate young school children on the fun and benefits you can have learning about technology.

### 3. Bush

"Telecommunications plays a vital role in servicing and connecting people in rural and remote communities. The tyranny of distance can finally be reduced through connecting to the rest of the world online, and this requires investment in infrastructure"<sup>22</sup>.

The Northern Territory's unique circumstances, compared with other Australian states or the ACT, impact the delivery of its ICT technology. Forty per cent of the population lives outside

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<sup>18</sup> Wenona North Sydney - <https://www.wenona.nsw.edu.au/curious/stem-learning>

<sup>19</sup> *Study finds more girls opting out of maths and science*, The Conversation, 14 February 2013

<sup>20</sup> Australian Industry Group research report - 'Lifting our Science, Technology, Engineering & Maths (STEM) Skills' page 4

<sup>21</sup> <http://www.theaustralian.com.au/news/nation/mathematics-students-in-serious-decline> 10 March 2010

<sup>22</sup> Discussion paper towards a digital strategy for the Northern Territory page 12

the Darwin area<sup>23</sup> and the Northern Territory experiences extreme climate conditions compared to the rest of Australia<sup>24</sup>.

For bush communities to be connected and have access to essential services delivered by the internet and/or mobile technology, there needs to be adequate digital infrastructure for regional business<sup>25</sup>. What this means is an integrated policy that utilises smart digital technology already available to government and industry now, further equitable access to digital technology will allow for regional and remote communities better opportunities to increased employment and government provided services.

### ***Case study - Telehealth and Aged Care in Remote Regions***

The Health Sector, including provision of aged care services, overtook the Retail Sector in 2011 as the largest employer in Australia and yet it continues to struggle with growing challenges in health service delivery.<sup>26</sup> Despite the estimated spend of \$150 billion in 2014-15, the sector faces long term challenges including the changing case mix driven by Australia's ageing population, and substantial increases in levels of chronic disease.

At the same time, many rural and regional areas in Australia are under-served, with limited access to appropriate care resulting in higher hospitalisation rates and poorer health outcomes for people living outside major urban centres.

Quality of life is just as important for older Australians as it is for the rest of the population. Older Australians generally want to remain as independent as practical, in control of how and where they live; to stay connected and relevant to their families and communities; and to be able to exercise some measure of choice over their care and daily life.

For the majority, increasing frailty and care needs means that their final years will be spent living in a residential aged care facility. These facilities provide a community living environment with varying levels of care, from independent living units, through low care, to high care and dementia-specific needs.

Moving into residential aged care is usually a reluctant decision for the individual and their family, associated with a loss of control, connectedness and choice; often made as a last resort when families feel unable to provide adequate care for their elders at home. For people living in remote communities, the disruptions of moving to a dedicated aged care facility may be enhanced by the need to move substantial distances leading to physical isolation from the rest of the community and limited family.

Compounding the challenge, the sector faces widespread staff shortages as our ageing health workforce heads for retirement (an estimated shortfall by as many as 20,000 nurses by 2025)<sup>27</sup>. In remote Australia, there are 589 nurses and 58 GPs per 100,000 residents compared

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<sup>23</sup> Australian Bureau of Statistics – Regional Population Growth, Australia 2014-15

<sup>24</sup> Australian Government Bureau of Meteorology -

[http://www.bom.gov.au/climate/averages/tables/ca\\_nt\\_names.shtml](http://www.bom.gov.au/climate/averages/tables/ca_nt_names.shtml)

<sup>25</sup> ACS digital pulse report 2017 page 3

<sup>26</sup> Based on 2006 and 2011 Census data.

<sup>27</sup> "Health Expenditure Australia, 2010-11", Australian Institute of Health and Welfare



with 978 nurses and 196 GPs in major cities per 100,000 residents<sup>28</sup>. For people living in remote communities, the disruptions of moving to a dedicated aged care facility may be enhanced by the need to move substantial distances leading to physical isolation from the rest of the community and limited family.

In early 2013, the Federal Department of Health and Aging and the Department of Broadband, Communications and the Digital Economy, announced a fund for NBN Enabled Telehealth Pilots Program. The Program funded pilot projects to develop and deliver Telehealth services to NBN-enabled homes with a focus on aged, palliative or cancer care services, including advance care planning services. While not yet complete, projects within the program are expected to investigate and demonstrate opportunities for the extension of Telehealth services in the future and the business case for doing so by developing and trialling services which demonstrate how:

- Telehealth services can be delivered to the home in new and innovative ways, enabled by high speed broadband;
- Health services can become more accessible, in regional, rural, remote and outer metropolitan areas;
- Health related transport needs can be reduced;
- Consumers can collaborate and communicate with their carers and health service providers to improve quality of care and health outcomes;
- Unnecessary hospitalisations may be reduced;
- Telehealth services are scalable and able to provide an increased volume of care without a corresponding increased cost;
- Location dependent or regional health workforce skills shortages may be mitigated;
- Use of the infrastructure may increase healthcare access and reduce social isolation;
- Communication during health emergencies could be improved; and
- Organisational change management required to embed telehealth service delivery as a routine or normal alternative to existing services.

However, health is just one service impacted by digital services, and further, it is not a 'one size fits all' approach. There needs to be considered planning to assess what is the best technology for the purpose depending on the climate and topography for the relevant bush community. This is going to be a mix of satellite, 4G and eventually 5G mobile and land based NBN technologies. Governments need to work together to determine a best practice approach to digital infrastructure for their communities, otherwise the services that remote bush communities need via the internet will continue to see these bush communities fall further behind the rest of the country.

To enable solid job growth for the Northern Territory is the need to implement a government lead 5G telecommunications policy. A 5G policy is even more important in regional Northern Territory as it could be considered a genuine and viable alternative to landline base NBN technology.

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<sup>28</sup> "Health Expenditure Australia, 2010-11", Australian Institute of Health and Welfare



An effective rollout of 5G, backed by government policy, will ensure that there is significant economic and innovation gains that 5G enabled technologies can bring, government can work with private industry and research agencies to consider potential opportunities and challenges as it develops a 5G policy and strategy<sup>29</sup>.

The use of combined new technologies and effective private public partnerships will ensure that growth for jobs in the ICT sector has a bright future.

#### 4. Community

“Location will no longer be a barrier for employers, workers or customers. Digital technology now allows people to connect and transact from different parts of the world at any time”<sup>30</sup>. With this thought in mind the idea of ‘community’ has changed. Community is now not just the local area in which people reside. Community can be the business, government department or social network thousands of kilometres away thanks to modern digital technology.

To keep pace with new technology, governments must support digital transformation within their departments; a key interaction between the government and citizens involves customer service transactions<sup>31</sup>. The benefits to communities of digitising service transactions can have enormous productivity benefits for government. Increasing the share of the estimated 811 million transactions conducted at the federal and state government levels from 60% to 80% over a 10-year period would lead to government productivity benefits worth \$17.9 billion<sup>32</sup> these savings can be passed on to communities in the form of better infrastructure and services.

The Northern Territory has a small population spread over a vast land area. In order for the Territory government to move to digital transformation it needs to easily access data from its communities to assist in determining where its resources are best utilised on any given day.

The use of smartphone data is one way the government can achieve this. Smartphones are carried by 12.5 million Australian adults<sup>33</sup> and given the Northern Territory Government’s large purchasing power, it may be possible to work collaboratively with telecommunications providers to gain access to aggregate mobile telephone location data periodically, that would provide a snapshot of the population in a given area each day. It would be useful for service provision, infrastructure planning, traffic management and would support smart service design. This is one way that the government can move further to a digital transformation that will assist communities.

Support for small business, start-ups and smart government procurement can also assist in supporting communities. Improving procurement practices would reduce costs and provide

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<sup>29</sup> ACS digital pulse report 2017 page 56

<sup>30</sup> Discussion paper towards a digital strategy for the Northern Territory page 14

<sup>31</sup> ACS digital pulse report 2017 page 54

<sup>32</sup> Deloitte Access Economics research – ACS digital pulse report 2017 page 54

<sup>33</sup> IAB Mobile Ratings Report 2015 ‘Mobile Story Report’ September 2015 page 3



new supply opportunities, particularly in supporting small businesses in Australia to compete and innovate in the longer term<sup>34</sup>.

In the context of digital technology procurement, it is also important for governments to set consistent and simple standards for ICT procurement, to ensure the functionality of systems and to enable services to communities to be priced appropriately.

Communities can be the beneficiary of smart digital policy by government. Governments who digitise their services can pass on the many benefits this brings to its citizens.

## 5. Trust

“Government can promote greater transparency by providing users with access to information held about them. Enabling more information to be accessed and digital transactions to be tracked will improve visibility and build trust”<sup>35</sup>.

According to Monash University we have created 90% of the world’s data in the last two years alone, and are on track to produce 35 zettabytes of data per year by 2020. Australia is behind the US and EU in delivering on data policy to maximise the value of government data while protecting the privacy of individual data.

For consumers and businesses, the Northern Territory government needs to increasingly gain confidence in digitally enabled systems, and so increasingly rely on such systems, data must be protected from misuse. The protection of data should not be limited to when it is at rest (when stored on a disk or memory) or in transit (transmitted in a network). Cryptographic approaches have been used to protect data where the data is encrypted both in motion and at rest so that they are never revealed to anyone other than data owners themselves. However, searching and processing encrypted data can be extremely inefficient and costly when it requires transfer to a trusted server for decryption and processing.

In 2014 the United States published a report ‘Big Data: Seizing Opportunities, Preserving Values’ that included a raft of recommendations covering privacy, discrimination, education, security and law enforcement while the EU is now the world’s first jurisdiction to provide protection for databases<sup>36</sup>. The EU has been an early mover, launching an Open Data Strategy that is predicted to deliver an annual €40 billion boost to Europe’s economy.

A report from Lateral Economics (based on work by McKinsey) calculated, in 2014, that opening data had the potential to increase the GDP of the G20 economies by US\$13 trillion with the figure for Australia being \$16 billion<sup>37</sup>.

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<sup>34</sup> ACS digital pulse report 2017 page 57

<sup>35</sup> Discussion paper towards a digital strategy for the Northern Territory page 16

<sup>36</sup> United States Executive Office of the President, ‘Big Data: Seizing Opportunities, Preserving Values’ May 2014

<sup>37</sup> Lateral Economics, ‘Open for Business: How open data can help achieve the G20 growth target’ 23 June 2014 page 31.



Innovation is now energised by the explosion of data from a myriad sources. Data mining, especially with granular citizen data, will unlock and discover new forms of value, connect previously unseen linkages and provide insights to stimulate growth and innovation in the digital economy.

Cybersecurity and the risks to business and individuals cannot be understated. It is the responsibility of government to ensure trust in its communities when using digital technology.

“When you talk about confidence and trust, if people don’t have confidence and trust to trade, to buy, to sell or to undertake commerce within an e-digital world – an e-commerce world – then obviously that’s one of the quickest ways that we have to ensure that society starts to regress rather than to progress”<sup>38</sup>.

Trust in cyber and data security can be achieved by considering and supporting the following:

- *ACS commends the Northern Territory government on their Open Data Policy*<sup>39</sup>

Markets are very good at determining where value-add services afford economic potential. More governments need to make a commitment to an open data first policy and ACS endorses the Northern Territory government for their approach.

An open data policy works when implementing specific and measurable protections around withholding data that is sensitive to individual citizens. By enabling technology entrepreneurs and social innovators to collaborate around open data on agency operating costs, all governments will enable a new generation of social enterprise and disruptive service delivery models to emerge.

- *Public Awareness*

There is an expectation from citizens and the community that their data will be used for improving government services and ensuring government funding is better targeted delivering what is expected and needed, based on the data that is collected by government.

An awareness campaign educating citizens is encouraged in order that citizens would be more likely to share their datasets. It would also require responsible government agencies to educate their staff and continuing education so that public confidence in data sharing can be established and maintained.

Our future is digital, hyper-connected and critically dependent on technology, making privacy and strong cyber security capability crucial to navigating the associated risks and opportunities ahead. The transition of most modern economies to a digital economy is opening up new and exciting opportunities for innovation and global competitiveness. It is driving change across key sectors such as healthcare, energy and government and facilitating greater levels of social and economic prosperity.

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<sup>38</sup> The Hon Philip Dalidakis, Victorian Minister for Small Business, Innovation and Trade

<sup>39</sup> Discussion paper towards a digital strategy for the NT

These new opportunities are also driving a greater dependence on technology – which is constantly evolving, increasing in complexity and continuously exposed to a sophisticated landscape of privacy challenges and cyber threats. These challenges are compounded when you consider the blurring lines between people, organisations, processes, services and technologies that require seamless interaction and trust across the digital ecosystem. As a result, the progress of all jurisdiction is directly tied to our ability to minimise risk exposure without limiting progress.

Trust can be obtained by government if it works in a collaborative manner with its citizens in an open and transparent way. Trust between government and its citizens is a partnership that if achieved can lead to significant economic and social benefits.

## 6. Digital Drivers

Digital drivers or ‘technological developments’ can have diverse impacts on Australia’s labour force and community. It is widely recognised that technology can improve workers’ productivity, and that digitally led innovation can drive industry growth and therefore increase employment opportunities.

However, this positive narrative on technological progress is sometimes punctuated by fears about the potential job-destroying effects of technology<sup>40</sup>.

Further to this point is the concern about foreign migration competing against local talent. It is crucial that we have a suitable and open approach to skilled migration that supports local development and personnel.

The President of the Australian Council of Trade Unions, Ms Ged Kearney, suggests improvements to skilled migration policy that also benefits local workers in ICT related sectors.

The ACTU suggest there are three ways<sup>41</sup> we can address skilled migration that looks after the migrant worker and benefits our local economy and supports local workers these being:

- *Address migrant worker exploitation*

Temporary migrant workers can be particularly vulnerable to exploitation by unscrupulous employers, which undermines broader public confidence in the migration system. More safeguards and regulations could be implemented to protect the rights and interests of overseas workers living in Australia on temporary visas. The 2016 Senate Inquiry report *A National Disgrace: The Exploitation of Temporary Work Visa Holders* highlighted the extent of the exploitation in Australia’s labour market and called for these issues to be urgently addressed.

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<sup>40</sup> ACS digital pulse report 2017 page 54

<sup>41</sup> Australian Council of Trade Unions – Ms Ged Kearney, President ACTU



- *Suitably target occupations on the skilled migration list*

Although labour mobility can have economic benefits for all parties involved, the migration program needs to be targeted towards skills that are in high demand among Australian employers and where there are genuine shortages in the Australian labour market. Occupation listings should be monitored and updated regularly to ensure they accurately reflect changing local workforce conditions.

- *Ensure that companies continue to employ and train Australian graduates*

Although skilled migration is useful for addressing significant local skills shortages in the short term, it is critical that over the long-term companies continue to train and develop Australian graduates, who represent the economy's next generation of skilled workers. This could be tied to migration policy. For example, employers using a relatively high share of temporary migrant workers could be required to have a training plan detailing how they will also build the skills of local workers. The skilled migration program should contribute to Australia's economy by helping to address genuine skill and labour market needs that cannot be met by training and employing Australian citizens and permanent residents<sup>42</sup>.

A sensible and cooperative approach by government, unions and industry will ensure that all digital drivers (technology) work hand in glove with an appropriate skilled migration policy that meets the needs of business who desire skilled labour right now and therefore need the support of overseas workers, while at the same time encouraging business to train and up-skill local talent the result being that less reliance is required on overseas migration.

- *Establish an Industry Education Hub*

The industry in the Northern Territory is well placed to be able to provide students in tertiary educations with 'real world' experience in a business setting. The benefits of allowing industry to provide such opportunities to students would:

- Remove the cultural divide between academic studies and employment
- Retain Territorian and overseas students, who have studied in the Territory, to work in the Territory.
- Provide industry with the ability to educate students on locally driven skillset requirements.

While it should be expected that industry would volunteer such an initiative, to formalise a program for access by all ICT providers (small and large) a structured Northern Territory government agenda, with the possibility for grants to fund businesses to absorb overhead costs, would ensure overall success.

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<sup>42</sup> Australian Council of Trade Unions – Ms Ged Kearney, President ACTU