



© Commonwealth of Australia 2009

This report is protected by copyright. Apart from any use as permitted under the *Copyright Act 1968*, and those explicitly granted below, all other rights are reserved.

Except for the Commonwealth Coat of Arms and except where otherwise noted, this work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivativeWorks 2.5 Australia licence (the Licence).



A copy of the Commons Deed (human-readable summary) of this license is provided on the back cover page. To view a copy of the full licence, visit <http://creativecommons.org/licenses/by-nc-nd/2.5/au/> or send a letter to Creative Commons, 171 Second Street, Suite 300, San Francisco, California 94105, USA.

Except where otherwise noted, any reference to, reuse or distribution of all or part of this report must include the following attribution:

Australia's Digital Economy: Future Directions © Commonwealth of Australia, 2009. [www.dbcde.gov.au/digital\\_economy/final\\_report](http://www.dbcde.gov.au/digital_economy/final_report)

You must provide the following link in any further reuse or distribution of this work to make clear to others that the Licence (including this copyright notice) applies to this work: <http://creativecommons.org/licenses/by-nc-nd/2.5/au/>.

Any of the above conditions can be waived if you get our permission. Requests for permission (or other inquiries about the Licence) should be addressed to:

Assistant Secretary  
Digital Economy Branch  
Department of Broadband, Communications and the Digital Economy  
GPO 2154  
CANBERRA ACT 2601  
[DEFutureDirections@dbcde.gov.au](mailto:DEFutureDirections@dbcde.gov.au)

# Minister's Foreword



The digital economy is essential to Australia's productivity, global competitive standing and improved social wellbeing.

Already, the digital economy offers exciting opportunities for all Australians. It allows us to stay in touch with family and friends easily no matter where they live by sending emails, sharing online photos or, increasingly, starting up a web-cam.

Many Australians are rapidly adopting technology and taking up the new opportunities to connect, collaborate and transact more effectively. Many businesses are incorporating the digital tools necessary to make their business more productive and efficient, and reach new audiences.

The digital economy can also drive Australia's national productivity, create jobs and support new business opportunities.

Increasingly, we are witnessing how 'smart technology' can help us change our behaviours and manage our infrastructure in ways that can benefit our environment. It can make our use of scarce natural resources like water more efficient and reduce our energy demands.

The digital economy is about the activities that networked technology makes possible. It is the demonstration of how the whole is greater than the sum of its parts.

This final report—*Australia's Digital Economy: Future Directions*—outlines the areas of focus for government, industry and the community to maximise the benefits of the digital economy for all Australians.

Internet and broadband are increasingly commonplace in our day to day lives and the Rudd Government is moving rapidly to improve accessibility and service with the National Broadband Network. However, the digital economy will not necessarily happen organically in all parts of our economy and society. Already, international data indicates that Australian households and business may be lagging in fully utilising the digital economy. And it remains important that we ensure that all groups within our community enjoy the same opportunities to engage online.

This paper explains how government, industry and the community can work together to improve Australia's international standing. It provides the rationale for government taking strategic and enabling action now to ensure all parts of Australia benefit fully from the digital economy. It outlines those issues on which we must direct our attention today and in the near future to ensure that we are able to fully engage in the 21st century.

The Australian Government announced its commitment to build the National Broadband Network because it recognises the importance of world-class, high-speed broadband for Australia's future economic growth and social wellbeing. We recognised the need for Government action to position Australia as a global digital leader.

The Government has also announced several other key initiatives that will drive Australia's digital future including the Digital Education Revolution, the Digital Regions Initiative and the National Energy Efficiency Initiative. This paper connects the dots between these initiatives and explains why they are important for Australia's future economic growth and social wellbeing.

This paper includes powerful case studies of Australians who have engaged successfully with the digital economy and reaped its rewards.

The case studies provide an insight into the diverse range of industries that can benefit from the digital economy – health, education, water, transport and banking. They show how new business models can develop such as last-minute accommodation booking services and how emerging forms of news gathering can arise such as citizen journalism.

The case studies show how digital products that appeal to multi-national corporations and digital content that appeals to global audiences can be developed right here in Australia. As Lars Rasmussen, co-founder of Google Maps, a tool that was developed here in Australia and the focus of one case study, says:

*“The Web means that it doesn't matter where you are...you can live here in Australia and build products for the world thanks to the internet.”*

I invite us all to feel inspired by the case studies and excited by the possibilities the digital economy offers us all. Government, industry and our community must now work together to harness these opportunities. I welcome your participation as a partner in this rewarding challenge.



Stephen Conroy  
Minister for Broadband, Communications and the Digital Economy

# Contents

<b>Executive Summary</b>	<b>iv</b>
<b>Australia's Digital Economy</b>	<b>1</b>
The importance of the digital economy	1
The digital economy: defined	2
What does success look like?	3
The need for strategic action	4
The role for Government	6
<b>Elements of a Successful Digital Economy</b>	<b>7</b>
Government: lays the foundations for Australia's digital infrastructure	7
Government: facilitates innovation	8
Government: sets conducive regulatory frameworks	12
Industry: demonstrates business digital confidence and builds digital skills	13
Industry: adopts smarter use of technology to improve our environmental sustainability	15
Industry: develops sustainable online content models	17
Community: enjoys digital confidence and media literacy	19
Community: experiences inclusive digital participation	21
Community: benefits from online engagement	22
<b>Conclusion</b>	<b>25</b>
Key Government initiatives	26
Contact information	27

# Executive Summary

---

The digital economy is the global network of economic and social activities that are enabled by platforms such as the Internet, mobile and sensor networks. The digital economy refers to the devices most of us use each day such as computers, phones and game consoles. It includes the online maps that we consult, the web searches that we do to find information and our electronic banking.

A successful digital economy is essential for Australia's economic growth and our ability to maintain our international standing. It offers new opportunities for businesses to a larger, potentially global, audience and for individuals to connect and collaborate.

This paper explains:

- why the digital economy is important for Australia
- the current state of digital economy engagement in Australia and why current metrics point to a need for strategic action
- the elements of a successful digital economy
- the role for the Government in developing Australia's digital economy.

Advancing Australia's digital economy requires action by government, industry and the community. The key areas of focus for government, industry and the community in order to maximise the benefits of the digital economy for all Australians are:

- for Government, to:
  - lay the foundations Australia's digital infrastructure
  - facilitate innovation
  - set conducive regulatory frameworks
- for industry, to:
  - demonstrate digital confidence and build digital skills
  - adopt smart technology
  - develop sustainable online content models
- for the community, to:
  - enjoy digital confidence and digital media literacy skills
  - experience inclusive digital participation
  - benefit through online engagement.

This *Australia's Digital Economy: Future Directions* paper discusses the key initiatives being undertaken by government, industry and the community in each of these key areas. It also includes case studies of Australians from a diversity of industries who have successfully engaged with the digital economy.

# Australia's Digital Economy

---

## The importance of the digital economy

The digital economy is essential to Australia's productivity, global competitiveness and improved social wellbeing.

The digital economy is highly dynamic. It will ultimately encompass the entire economy and many, if not all, facets of our society. The digital economy presents Australia with a unique opportunity to shrink the distances that have historically dominated our domestic and international relationships, opening up new markets for engagement and growth. In addition, it will continue to change how we interact and socialise. People can now connect, collaborate, and participate online in previously unanticipated ways that enrich their lives.<sup>1</sup> The impact of the digital economy will also include new and emerging uses of technology, such as remote specialist diagnosis of patients, as well as uses that we can not even begin to imagine.

The Australian Government is committed to maximising opportunities for all Australians to benefit from the digital economy. The Government has announced key initiatives to lay the foundations for a vibrant digital economy such as the National Broadband Network and the Digital Education Revolution. These commitments reflect the recognition, made by the Australian Government, that a world-class digital infrastructure is a key input for our future, similar to electricity, gas and water.

However, to fully develop our digital economy, world class digital infrastructure by itself is not sufficient. To ensure that Australia maintains its quality of life and international standing, the Australian Government, industry and the community must each take steps to achieve the maximum participation of Australian households and businesses in the digital economy. This *Australia's Digital Economy: Future Directions —Snapshot* provides an overview of the key areas of focus. A more detailed discussion of Government and industry initiatives and a more in-depth look at the case studies is provided in *Australia's Digital Economy: Future Directions —Final Report* which is available at [www.dbcde.gov.au/digital\\_economy/final\\_report](http://www.dbcde.gov.au/digital_economy/final_report)

Australia and other world economies are currently facing a challenging global financial situation. However, a crisis can also be viewed as an opportunity; an opportunity to promote long-term economic success by investing in critical infrastructure like the National Broadband Network and smart grids. One recent report estimates that the adoption of smart technology in energy, water, health and transport, and the roll-out of high-speed broadband could result in more than 70 000 jobs being added to the Australian economy and add 1.5 per cent to the level of Australia's Gross Domestic Product within a few years.<sup>2</sup>

---

<sup>1</sup>Mike Wesch, An Anthropological Introduction to YouTube, presented at the Library of Congress 23 June 2008 (available at: [www.youtube.com/watch?v=TPAO-IZ4\\_hU](http://www.youtube.com/watch?v=TPAO-IZ4_hU); last accessed 25 June 2009).

<sup>2</sup>Access Economics, The economic benefits of intelligent technologies (May 2009), p. 37.

### Case Study: Google Maps—building a product for the world in Australia

Google Maps is an online mapping service. Its useability makes it easy for anyone to find where they are going and move the map to see other nearby locations without needing to be a map expert. Its satellite and other imagery has sparked our curiosity. Mobile phones, particularly smart phones, have made it even more useful when you are on the road trying to find the best route. Millions of people around the world use Google Maps everyday and it is integrated into around 150 000 websites. The prototype for Google Maps was built in Sydney, Australia, before being bought by Google in 2004. Shortly after the acquisition, the Google Maps team set up Google's Sydney office and continued to work on the product with a team in Silicon Valley, California. As one of the Google Maps co-founders Lars Rasmussen said: 'The Web means that it doesn't matter where you are....you can live here in Australia and build products for the world thanks to the Internet.'

## The digital economy: defined

Key to realising Australia's potential benefit from the digital economy is to ensure that we have a common understanding of what we mean when we use the term 'digital economy'. The Australian Government defines the digital economy to be:

*'the global network of economic and social activities that are enabled by information and communications technologies, such as the internet, mobile and sensor networks.'*

The digital economy comprises computers, phones, game consoles and devices most of us use each day. It is the ability to start up a web browser and search for a local restaurant, to send a text message to your friend or to use a navigational device in your car. The digital economy includes paying for goods with your debit or credit card at the store or your doctor receiving your pathology results electronically.

For businesses, the digital economy can provide opportunities to more efficiently engage with suppliers and to both expand and better serve their customer base. On the Yorke Peninsula, within two years of adopting broadband, a 110-year old printing operation began specialising in higher value activities after outsourcing large scale print runs to a contractor in Perth. In addition, a local financial advisory and insurance broker began writing policies from around Australia, where previously its business was almost exclusively local.<sup>3</sup> Increasingly, the digital economy refers to lecturers posting course outlines, study materials and even lecture videos online for their students. It includes the ability to collaborate and participate through online photo or video sharing sites, and the use of sensor networks to monitor water levels or traffic flows.

The use of networked, digital technology spreads across all industry sectors. In the mining industry, sensor technology and autonomous remotely operated mining processes are being trialled to improve efficiency and lower production costs.<sup>4</sup> On our beaches, Surf Life Saving Australia recently received funding to implement a comprehensive information and communications technology (ICT) system to enhance communications and critical information sharing with emergency services.<sup>5</sup>

<sup>3</sup>System Knowledge Concepts, *Creating new markets: broadband adoption and economic benefits on the Yorke Peninsula* (June 2008) p 6.

<sup>4</sup>'Automatic Response: Rio Tinto's Mine of the Future', [mining-technology.com](http://mining-technology.com), 29 September 2008 (available at: [www.mining-technology.com/features/feature41780/](http://www.mining-technology.com/features/feature41780/); last accessed: 25 June 2009).

<sup>5</sup>The Hon. Kate Ellis MP, '\$4.4 Million Boost to Surf Life Saving Australia to Help Lives', Media Release, 12 May 2009 (available at: [www.health.gov.au/internet/budget/publishing.nsf/Content/50760A46BDE92D6DCA2575B300210347/\\$File/smedia02.pdf](http://www.health.gov.au/internet/budget/publishing.nsf/Content/50760A46BDE92D6DCA2575B300210347/$File/smedia02.pdf); last accessed: 25 June 2009).

## What does success look like?

It is an almost impossible task to describe an end point for the digital economy because technology is constantly evolving. Nevertheless, it is possible to identify some of the key elements that a successful digital economy in Australia will encompass, acknowledging that their ultimate form may vary over time.

Who	What	How
<b>Government</b>	<b>Digitally aware and enabling</b>	<ul style="list-style-type: none"> <li>• lays the foundations for the nation's digital infrastructure</li> <li>• facilitates innovation</li> <li>• sets conducive regulatory frameworks</li> </ul>
<b>Industry</b>	<b>Digitally confident, innovative and skilled</b>	<ul style="list-style-type: none"> <li>• demonstrates digital confidence and builds Australia's digital skills</li> <li>• adopts smart technology</li> <li>• develops sustainable online content models</li> </ul>
<b>Community</b>	<b>Digitally literate and empowered</b>	<ul style="list-style-type: none"> <li>• enjoys digital confidence and digital media literacy</li> <li>• experiences inclusive digital participation</li> <li>• benefits through online engagement</li> </ul>

The key elements are a Government that is digitally aware and enabling, industry that is digitally confident, innovative and skilled, and a community that is digitally empowered and literate.

### Case study: Atlassian—built via the digital economy for the digital economy

Atlassian is not a household name in the same way a computer manufacturer may be because it builds productivity tools for backend use. However, its customer base includes 30 of the world's 50 top corporations and companies such as Accenture, American Express, Deutsche Bank, HSBC, Sony Computer Entertainment, Pixar and PriceWaterhouseCoopers. Atlassian was founded in Sydney and now employs over 200 people in its Sydney headquarters and offices in San Francisco and Amsterdam. Its flagship products are JIRA, an issue tracking software, and Confluence, an enterprise wiki. These tools allow project teams to work collaboratively and effectively, often distributed across time zones. For example, Sony Computer Entertainment uses JIRA and Confluence to create collaboration sites for teams to share game assets such as audio tracks, artwork and marketing materials.

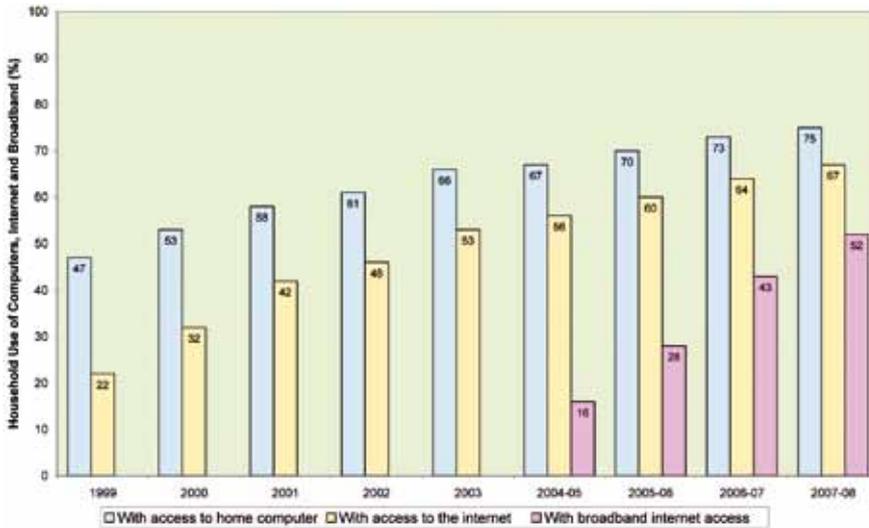
Atlassian was, in a sense, born digital and global. The company's first product sales were made to customers in London. All sales are completed online and its software downloaded from its website. For the fourth year in a row, Atlassian was named as one of the winners of the 2008 Deloitte Technology Fast 50, which ranks the fifty fastest growing technology public and private companies for Australia based on percentage revenue growth over the three years from 2006 to 2008.

## The need for strategic action

Existing data suggest that Australian households are increasingly participating in the digital economy and that internet and broadband take-up by Australian businesses is strong. However, Australia lags key international peers for households rates of internet take-up and business adoption of e-commerce.

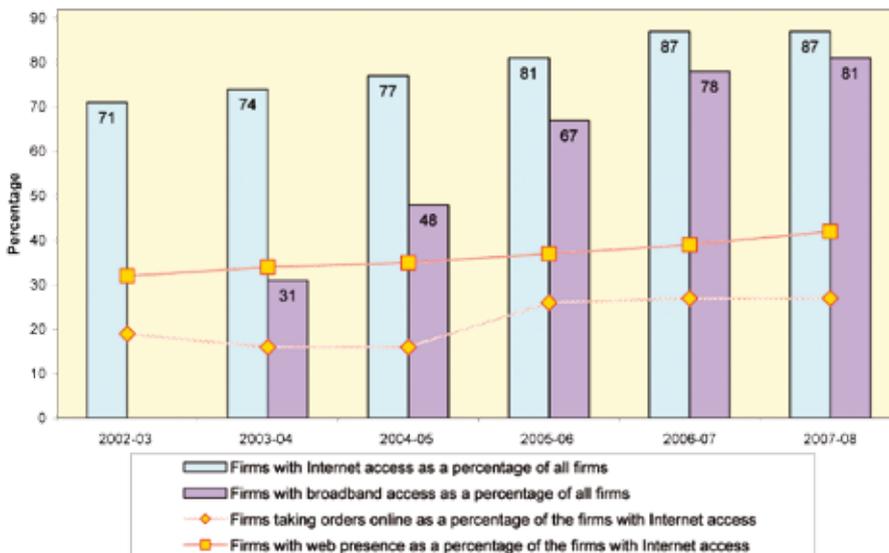
By 2008,<sup>6</sup> close to 75 per cent of Australian household had a computer and, of those, 90 per cent connected to the internet (i.e. 67 per cent of all households). Of the 67 per cent with internet (see chart 1), close to 78 per cent had broadband. This compares to 29 per cent with broadband in 2004–05, and illustrates the rapid take-up of broadband by Australians.

**CHART 1: TAKE-UP OF COMPUTERS, INTERNET AND BROADBAND<sup>7</sup>**



In 2007–08,<sup>8</sup> 87 per cent of businesses had internet access and 93.5 per cent of these (i.e. 81 per cent of all businesses) had broadband. In 2003–04, only 42 per cent of firms with internet access had broadband. However, data also suggests there is significant potential for Australian business to further engage in the digital economy, for example, in their level of contribution to (as opposed to their use of) the digital economy. Of the 87 per cent of businesses using the internet in 2007–08, only 42 per cent had a web presence, and only 27 per cent took orders online.

**CHART 2: BUSINESS USE OF INTERNET, BROADBAND AND E-COMMERCE<sup>9</sup>**



When compared with key international peers, data shows that Australia lags in several key digital economy indicators.

<sup>7</sup>Source: ABS Household Use of Information Technology (HUIT) 2007–08 (Cat. No 8146.0). Note: Broadband data are not collected in the HUIT survey prior to 2004–05.

<sup>8</sup>Based on Australian Bureau of Statistics data (see chart 2).

<sup>9</sup>Sources: ABS Summary of ICT and Innovation in Australian Business, 2005–06 released 19/11/2007, (Cat. No. 8166.0), ABS Summary of ICT and Innovation in Australian Business, 2007-08 released 25/6/2009 (Cat No. 8166.0) and Departmental estimates. Notes: (1) The columns refer to the percentage of all firms using internet or broadband technology, while the lines refer to the percentage of internet using firms that take orders online or have a web presence (2) ABS advises that the data points for 2006–07 and 2007–08 are not strictly compatible with the previous years because of minimal differences in coverage associated with the revised ANZSIC.

In 2007,<sup>10</sup> Australia's rate of household access to the internet was 64 per cent, behind with the United Kingdom (67 per cent), Canada (68 per cent based on 2006 data) and South Korea (94 per cent). Broadband take-up also trails. In 2007, the number of broadband subscriptions per 100 inhabitants in Australia was 23 per cent compared with 26 per cent in the United Kingdom, 27 per cent in Canada and 31 per cent in South Korea.<sup>11</sup>

Australian business take-up of the internet and broadband is at par or only slightly lower than our international peers. In 2006, the rate of internet adoption in Australian business was 94 per cent, at a similar level to the United Kingdom (94 per cent based on 2007 data) and only just below the rate of internet adoption in Canada (95 per cent) and South Korea (97 per cent).<sup>12</sup> Australian businesses are also strong adopters of broadband relative to their overseas counterparts. In 2006, 90 per cent of Australian businesses had broadband, significantly ahead of businesses in the United Kingdom (78 per cent) and only slightly less than Canadian businesses (92 per cent) and trailing South Korean businesses (96 per cent).<sup>13</sup>

Despite the recognition of the internet as a key input, however, Australian businesses lagged key international peers on the effective use of the digital economy as a business output. Only 55 per cent of Australian businesses in 2006 had their own website compared with 75 per cent in the United Kingdom (2007 data), 68 per cent in Canada, 61 per cent in France and 58 per cent in South Korea.<sup>14</sup> As a percentage of total enterprise turnover, the share of revenue derived from e-commerce was lower for Australian companies than their international counterparts. In 2005, only 10 per cent of turnover in Australian businesses came from e-commerce whereas in the United Kingdom and France e-commerce accounted for 17 per cent of turnover and in South Korea the figure was 22 per cent.<sup>15</sup>

## The role for Government

Developing Australia's digital economy requires action by government, industry and the community as a whole. The Government's role is to fill a gap left by the market, to address social inequity, to protect the community, to assist markets to work fairly and efficiently and to address market failures.

The transformation of our economy into a digital economy is appropriately, however, a market-led phenomenon. Consequently, the Australian Government's primary role in developing the digital economy is that of an enabler—enabling individuals, households and businesses to take up the opportunities the digital economy provides. In its role as enabler, for example, the Australian Government is building or facilitating the development of our digital infrastructure, facilitating innovation and setting a conducive regulatory framework. With these commitments, it then turns to industry and the community to take the lead to realise the full potential of Australia's digital economy.

<sup>10</sup>Based on Organisation for Economic Cooperation and Development data, see infra note 11.

<sup>11</sup>Organisation for Economic Cooperation and Development, *The Future of the Internet Economy: A Statistical Profile*, 17-18 June 2008, p. 8-25 (available at: [www.oecd.org/dataoecd/44/56/40827598.pdf](http://www.oecd.org/dataoecd/44/56/40827598.pdf); last accessed: 25 June 2009).

<sup>12</sup>Id.

<sup>13</sup>Id.

<sup>14</sup>Id.

<sup>15</sup>Id.

# Elements of a Successful Digital Economy

## Government: lays the foundations for Australia's digital infrastructure

A thriving digital economy requires world-class infrastructure that can adapt to support future demands. The rapidly changing nature of technology makes it difficult to predict the 'killer applications' that will dominate in five years. However, it is clear that bandwidth demands are increasing. YouTube, a video sharing site launched a mere four years ago, reportedly served over five billion video streams in April 2009<sup>16</sup> and in 2008 generated more traffic than the entire US internet backbone did in 2000.<sup>17</sup> The online auction house eBay holds more than five petabytes of data, rising from 20 terabytes five years ago.<sup>18</sup> Industry reports predict the coming age of the zettabyte because 'today's bandwidth hog is tomorrow's average user.'<sup>19</sup>

Technology can also change our infrastructure requirements in unexpected ways. The growth of handheld devices and the potential of sensors and smart meters alter our demands, as well as our habits. To use sensor networks to improve our water productivity, for example, requires reliable and effective infrastructure that connects the farms where this smart technology will be deployed.

### Case study: Water Information Networks—improving water efficiency

In many regions water allocations for irrigation need to be ordered one or more weeks in advance and with limited guarantee that orders will be fulfilled. Whilst waiting for the water to be delivered farm requirements may change. But the water that has been ordered cannot be returned to storage and is often 'lost' to production. It has been estimated that the total losses across the Goulburn–Murray Irrigation District due to system inefficiencies have typically been 900GL per annum.<sup>20</sup>

A Water Information Networks (WIN) project developed by NICTA<sup>21</sup> has developed methods for controlling and integrating canal networks with on-farm irrigation systems so that they themselves can become water reserves and make an 'on-demand' water supply available to the farmer. Crop water requirements are measured in real time and this data is used to control canal gates and pumps and deliver the right volume of water to the plant when it requires it. Using this technology dairy trials employing flood irrigation for dairy pasture production used 26 per cent less water and experienced a 27 per cent improvement in water productivity. In addition, the farms in the trial enjoyed a 38 per cent improvement in gross margins measured in dollars earned per hectare.

<sup>16</sup>Nielson, 'YouTube Leads Video Streams as Hulu Grows 490% from Last Year', 14 May 2009 (available at: [http://blog.nielson.com/nielsenwire/online\\_mobile/youtube-leads-video-streams-hulu-grows/](http://blog.nielson.com/nielsenwire/online_mobile/youtube-leads-video-streams-hulu-grows/); last accessed: 25 June 2009).

<sup>17</sup>Cisco, 'Approaching the Zettabyte Era' June 16, 2008, p. 8 ([www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white\\_paper\\_c11-481374.pdf](http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-481374.pdf))

<sup>18</sup>Ben Woodhead, 'eBay maintains a watching brief', Australian Financial Review 9 June 2009

<sup>19</sup>Supra n 14, p. 12.

<sup>20</sup>Department of Sustainability and Environment and Dept of Innovation, Industry and Regional Development, *Modernising Victoria's Food Bowl: Irrigation Modernisation*, June 2007.

<sup>21</sup>NICTA is the National ICT Australia Limited (NICTA), established through the ICT Centre of Excellence program. NICTA undertakes ICT research at the highest international standard as well as associated research training, industry development and commercialisation. See: <http://nicta.com.au/>.

To prepare for our increasing bandwidth demands and enable the applications and devices of the future, the Australian Government has made a number of key commitments to develop Australia's physical capacity to participate in the digital economy.

The Australian Government has established a new company to invest up to \$43 billion over eight years to build and operate a National Broadband Network to deliver superfast broadband.

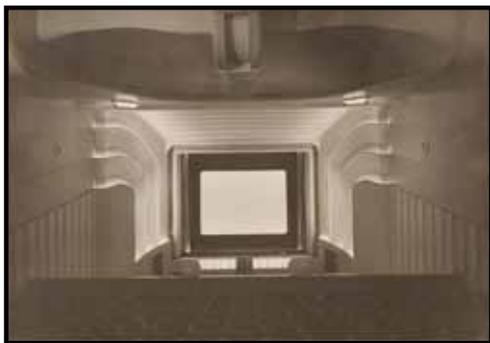
The Government has also announced key spectrum initiatives that ensure that Australia is making the most productive use of this finite resource. The switchover to digital television will potentially allow spectrum freed up from the switchover—the 'digital dividend'—to be used by industry to develop a range of new communications services including high speed wireless broadband. It will also deliver consumer benefits such as vastly improved service quality and a wider diversity of content for Australia audiences.

The Government is also consulting on the re-allocation and/or renewal of the 15 spectrum licenses for various spectrum bands<sup>22</sup> that are primarily used to provide mobile phone and mobile broadband services. The re-allocation and/or renewal process is important for consumers and the competitiveness of the communications sector as a whole and will play an important role in the future of the digital economy.

## Government: facilitates innovation

Government can facilitate innovation in the digital economy in three key respects—open access to appropriate categories of public sector information, effective implementation of technology to deliver government services and strategies to increase Australia's innovation and commercialisation capacity.

### Open access to public sector information



Victory Theatre by Sam Hood, Sydney, Mitchell Library collections, State Library of New South Wales (Flickr Commons, No known copyright restrictions)

Networked digital technologies empower individuals, private companies and researchers to use and reuse government information in novel ways that can produce economic benefits and promote social wellbeing. This allows anyone with an innovative idea to add value to existing government materials for the common good, often in initially unforeseen or unanticipated ways. It does not limit creative reuse of public materials to those organisations with the time and resources to negotiate licensing terms. As one commentator has argued “[n]o one supplier, public or private, can design all information products required to meet the needs of all users in a modern information-based economy.”<sup>23</sup> By opening access to appropriate categories of government information to all members of the public, those best placed

to innovate can do so and the market can decide which product is most useful.

The popularity of online mapping tools is one example of an application that revolutionises how public information can be viewed, studied and cross-correlated. For example, we can increase our understanding of important public policy issues, such as health. Diabetes Australia<sup>24</sup> administers the Australian Diabetes Map<sup>25</sup>, hosted on Microsoft's Virtual Earth platform. This map combines Australian population data with details about the number of Australians diagnosed with diabetes, their age, gender, location and the type of diabetes that they have.

<sup>22</sup>Specifically the 800MHz, 1.8GHz, 2.1GHz, 2.3GHz, 3.4GHz, 20GHz, 27GHz, 28GHz, 30GHz and 31GHz bands.

<sup>23</sup>Peter Weiss, *Borders in Cyberspace: Conflicting Public Sector Information Policies and their Economic Impacts*, p. 2. (available at: [www.primet.org/documents/weiss%20-%20borders%20in%20cyberspace.htm](http://www.primet.org/documents/weiss%20-%20borders%20in%20cyberspace.htm); last accessed April 22, 2009).

<sup>24</sup>Diabetes Australia is the national peak body for diabetes in Australia. The body works in partnership with diabetes health professionals, educators and researchers to minimise the impact of diabetes.

<sup>25</sup>Diabetes Australia, *National Diabetes Services Scheme*, April 2009. See [www.ndss.com.au/Australian-Diabetes-Map/Map/](http://www.ndss.com.au/Australian-Diabetes-Map/Map/)

Open access to appropriate categories of public sector information can drive digital economy and innovation benefits, subject to privacy, national security or confidentiality issues. In this context, 'open access' means access on terms and in formats that clearly permit and enable such use and reuse by any member of the public.

Various international studies<sup>26</sup> suggest that the benefit derived from corporate and individual taxes on secondary publishing and service activities stimulated by an open access policy outweighs any direct cost recovery charged for access to data.



*Hawkesbury Bridge from Tunnel, Tyrrell Photographic Collection, Powerhouse Museum (Flickr Commons, No known copyright restrictions)*

Already, there are several examples of Australian public sector organisations that have adopted an open access approach. The Powerhouse Museum, the NSW State Library and the Australian War Memorial have joined the Flickr Commons project<sup>27</sup>. This project consists of museums and libraries from around the world publishing their images under a 'no known copyright restrictions' tag to increase access to publicly-held collections and to provide a way for the general public to contribute information and knowledge.

The Powerhouse Museum has analysed its experience of participating in the Flickr Commons for the release of high-value images from the Tyrrell photographic

collection.<sup>28</sup> The open access approach led to a four-fold increase in visitation, no detrimental effect on income produced from the image sales and user-generated tagging and comments that have been re-ingested back into the Museum's website to enhance search capabilities.<sup>29</sup> The Museum concluded that *'a new business model for licensing images is essential.'*<sup>30</sup>

To advise and assist the Australian Government in making public sector information more accessible and usable, the Government has established the Government 2.0 Taskforce.<sup>31</sup>

## e-Government

The internet is now the most common way Australians last made contact with government.<sup>32</sup> In fact, more people would prefer to use the internet to contact government than actually do so via any other means. Those who used the internet to contact the government reported a higher level of satisfaction than those who used means such as postal services. The relationship between Australia's citizens and its Government is well suited to transition to the digital economy.

<sup>26</sup>Supra n 20, p. 13-15; see also, 'Power of Information Review: An independent review by Ed Mayo and Tom Steinberg' (June 2007), p. 34-35 (available at: [www.opsi.gov.uk/advice/poi/power-of-information-review.pdf](http://www.opsi.gov.uk/advice/poi/power-of-information-review.pdf); last accessed: 25 June 2009).

<sup>27</sup>See [www.flickr.com/commons](http://www.flickr.com/commons).

<sup>28</sup>See [www.flickr.com/photos/powerhouse\\_museum/](http://www.flickr.com/photos/powerhouse_museum/)

<sup>29</sup>See [www.abc.net.au/innovation/sidetracks/](http://www.abc.net.au/innovation/sidetracks/)

<sup>30</sup>Bray, P., Open Licensing and the Future for Collections. In J. Trant and D. Bearman (eds). *Museums and the Web 2009: Proceedings*. Toronto: Archives & Museum Informatics. Published March 31, 2009 (available at: [www.archimuse.com/mw2009/papers/bray/bray.html](http://www.archimuse.com/mw2009/papers/bray/bray.html); last accessed: 25 June 2009).

<sup>31</sup>See [gov2.net.au/about/](http://gov2.net.au/about/).

<sup>32</sup> Department of Finance and Deregulation, *Interacting with Government: Australians' use and satisfaction with e-government services* (2008) p. 1 & 4 (available at: [www.finance.gov.au/publications/interacting-with-government/docs/interacting-with-government-report.pdf](http://www.finance.gov.au/publications/interacting-with-government/docs/interacting-with-government-report.pdf); last accessed: 25 June 2009).

Effective and widespread use by government of technology to deliver services can also contribute to building digital confidence and digital skills throughout the community. For government it can improve efficiencies. As the Organisation for Economic Co-operation and Development (OECD) IT Outlook 2008 notes, e-government activities are a part of government strategies to boost public-sector efficiencies.<sup>33</sup>

Many examples exist of how the Australian Government can lead by example in the digital economy, such as the Department of Immigration and Citizenship's award-winning<sup>34</sup> Citizenship Wizard<sup>35</sup> and eVisa program<sup>36</sup> and the Department of Infrastructure Transport, Regional Development and Local Government's Green Vehicle Guide.<sup>37</sup>

Visa and Citizenship Wizard	Green Vehicle Guide (GVG)
<p>The Visa Wizard is an interactive, client self-service tool designed by the Department of Immigration and Citizenship (DIAC) to provide prospective travellers and migrants with tailored information about their visa options. Similarly the Citizenship Wizard provides citizenship information to clients based on their individual circumstances. Both Wizards are easily accessed via the internet 24 hours a day, seven days a week from anywhere in world by clients and staff using the department's website.</p>	<p>The GVG website provides user friendly ratings on the environmental performance of specific vehicle models. It provides tools which enable consumers to readily search, compare and sort on a range of criteria, to develop short lists tailor-made to their vehicle requirements and to print/download results. It also provides data on fuel consumption and enables consumers to estimate annual fuel costs.</p>
<p><b>Impact:</b> The Visa Wizard was launched in September 2008, the Citizenship Wizard was launched in December 2008. The Wizards were awarded the 2009 Australian e-Award for Excellence in e-Government. The wizards are satisfying immediate information needs of an increasingly internet savvy clientele. Combined, they receive an average of over 11 000 views per day.</p>	<p><b>Impact:</b> Use of the website has increased, from an average of 8500 visits per month in 2004–05 to over 22 800 per month in 2007–08. Many government agencies now use GVG ratings in vehicle fleet purchasing, and the ACT Government uses the ratings to determine new vehicle stamp duty rates to encourage the purchase of low-emission models. The website is recognised as the primary source of environmental information on new vehicles in Australia.</p>

As part of its Innovation Agenda, the Australian Government has committed to increase the use of ICT to improve policy development and service delivery.<sup>38</sup>

### Promoting a strong culture of commercialising digital innovation

It is important for Australia's digital economy that we enjoy a strong innovation and commercialisation base. The growth of the digital economy will transform existing industries and drive efficiency and productivity. It will also give rise to new industries from carbon capture to online retailing.<sup>39</sup> A capacity to both generate innovation and rapidly adapt to the innovation of others will be a key determinant of Australia's ability to exploit the opportunities of the digital economy.

<sup>33</sup>OECD's 2008 Information Technology Outlook, p. 308 (available at: [www.oecd.org/document/20/0,3343,en\\_2649\\_33757\\_41892820\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/20/0,3343,en_2649_33757_41892820_1_1_1_1,00.html); last accessed: 25 June 2009).

<sup>34</sup> For information about other e-government award winners see: [www.finance.gov.au/e-government/better-practice-and-collaboration/e-government-awards.html](http://www.finance.gov.au/e-government/better-practice-and-collaboration/e-government-awards.html).

<sup>35</sup>See [www.citizenship.gov.au/citizenshipwizard/](http://www.citizenship.gov.au/citizenshipwizard/)

<sup>36</sup>See [www.immi.gov.au/e-visa/](http://www.immi.gov.au/e-visa/)

<sup>37</sup>See [www.greenvehicleguide.gov.au/GVGPublicUI/QuickCompareWebForm.aspx?CurrentTask=51860bf9-f9b7-46c0-b824-5b44644af114](http://www.greenvehicleguide.gov.au/GVGPublicUI/QuickCompareWebForm.aspx?CurrentTask=51860bf9-f9b7-46c0-b824-5b44644af114)

<sup>38</sup>Department of Innovation, Industry, Science and Research, Powering Ideas (May 2009) pg 53 (available at: [www.innovation.gov.au/innovationreview/Documents/PoweringIdeas\\_fullreport.pdf](http://www.innovation.gov.au/innovationreview/Documents/PoweringIdeas_fullreport.pdf); last accessed: 25 June 2009).

<sup>39</sup>Id., p. 13.

The Australian Government outlined its Innovation Agenda in the *Powering Ideas* report,<sup>40</sup> which notes:

*'Too many Australian inventions and discoveries end up being commercialised overseas, where the value they create is captured by others. This costs Australia jobs and wealth, and denies us the chance to build new industries.'*<sup>41</sup>

The Innovation Agenda includes initiatives targeted to grow our innovation and commercialisation capacity. These include measures to renew and expand Australia's publicly-funded research workforce, research infrastructure and machinery for sharing research results through the Sustainable Research Excellence in Universities Initiative, the Collaborative Networks Scheme and investment guided by the Strategic Roadmap for Australian Research Infrastructure.

Initiatives such as Enterprise Connect and a new R&D Tax Credit support innovative businesses and aim to increase the proportion of businesses engaging in innovation by 25 per cent over the next decade.

The new Commonwealth Commercialisation Institute will bring research, business and finance together to help commercialise new ideas and technologies. This will assist Australian firms to get their ideas to market.

To build Australia's innovative capacity, the Government is also supporting research and training carried out by organisations such as NICTA and the CSIRO. NICTA and the CSIRO, through its ICT Centre, are producing the skilled researchers and trained graduates that industry and the broader community needs to take advantage of the innovative opportunities presented by the digital economy. In addition, they are transferring their expertise to the economy more broadly through collaborations, spin-offs, licensing and technology transfer. For example, NICTA has established four start-ups that have already generated 60 new jobs in Australia and provides Australia with world-leading digital economy solutions.

To harness the power of ICT to boost productivity and champion IT-enabled innovation for economic, social and environmental benefits, the Australian Government has formed the Information Technology Industry Innovation Council. The Council will create links with stakeholders to identify opportunities for innovation, wealth creation, IT capability and entrepreneurialism. The Council will also work closely across Government on issues of common interest to ensure we realise the benefits that will flow from Australia's new National Broadband Network.<sup>42</sup>

<sup>40</sup>See generally id.

<sup>41</sup>Id., p. 3.

<sup>42</sup>Senator the Hon Kim Carr, 'Information Technology Industry Innovation Council', Media Release, 5 May 2009 (available at: <http://minister.innovation.gov.au/Carr/Pages/INFORMATIONTECHNOLOGYINDUSTRYINNOVATIONCOUNCIL/ESTABLISHED.aspx>; last accessed 25 June 2009).

### Case study: The Bionic Eye—how technology can reduce vision impairment

Retinitis Pimentosa (RP) and Age Related Macular Degeneration (AMD) are major causes of vision impairment in Australia. Retinitis Pigmentosa is a congenital eye disease that progressively worsens with age and leads to total blindness. One out of every 3500 children are born with RP and it affects 1.5 million people worldwide.<sup>43</sup> Patients with advanced forms of AMD have difficulty recognising faces and have reduced mobility and quality of life. It is estimated that AMD alone currently costs the Australian economy \$2.6 billion and this is projected to increase to \$6.5 billion by 2025.

The development of a bionic eye by 2020 was identified in the Australia 2020 Summit as an example of an innovative health technology that could improve the lives and wellbeing of all Australians. It is being developed in partnership with NICTA, the University of Melbourne (UoM), the University of New South Wales (UNSW), the Bionic Ear Institute (BEI) and the Centre for Eye Research Australia (CERA).

Some of the core technology that enables the bionic eye to function is provided by NICTA. NICTA's technology contributes a new retinal implant that provides very dense electrical stimulation of the retina. This allows high resolution vision. NICTA's technology also involves the use of a world-leading, extremely small, ultra low power wireless communication system that can be implanted into an eye. This system facilitates the efficient transfer of information between the implanted retinal prosthesis and an external camera. It eliminates the need for wires to pass through the eye and greatly reduces potential complications, trauma to the eye and the possibility of future infection.

## Government: sets conducive regulatory frameworks

Regulatory restructures are important to provide business certainty, address market failures and protect the interests of consumers. If not carefully constructed, however, regulation can stifle innovation and investment, particularly in dynamic areas. The digitisation of commerce means that Australian companies are also increasingly competing directly with foreign businesses, even if those same businesses are based off-shore and operating under different regulatory structures. Governments must continue to review regulatory structures as technology and markets evolve. Ongoing review allows these frameworks to continue to provide an environment in which businesses can grow and consumers can act with confidence.

Two key areas of relevance to the digital economy are copyright law and Australia's communications framework.

With respect to copyright law, some industry participants have queried whether an examination of the scope of Australia's 'safe harbour scheme' would be beneficial, in particular whether its scope, consistent with international obligations under the Australia-US Free Trade Agreement, should be expanded to encompass a larger range of online services that are important to the digital economy. The purpose of the safe harbours is to ensure that entities who come within them and take reasonable measures to deter unauthorised instances of copyright infringement, have the benefit of reduced potential copyright liability. In short, that the remedies available against those online service providers are limited if they have taken steps to prevent against the infringement of copyright.

At present it is unclear whether the present scheme works effectively for some types of online service providers that have subsequently grown in popularity since the scheme's introduction. The platforms provided by newer online service providers allow social engagement, content distribution and political communications, through features frequently referred to as user-generated content and Web 2.0. This includes social networking sites such as MySpace, Bebo and Facebook (which launched in 2003–05), the online photo sharing site Flickr (which launched in November 2004), and video sharing sites like YouTube and Vimeo (which launched in 2004–05). Available data suggests that an increasing number of Australians use these sites.<sup>44</sup>

The Australian Government will consider whether the scope of the 'safe harbour scheme' should be expanded to include additional types of online service providers.

With respect to our communications legislation, the trend of convergence is challenge existing regulatory structures. With the increased offerings of both fixed line and mobile broadband services throughout the world, converged applications and services that blur the distinctions that previously existed between devices and services are growing in popularity. For example, the general purpose nature of computers allows them to be used for more than just information processing. They are increasingly used for telecommunications services via Voice-Over-Internet-Protocol applications or for entertainment via internet protocol television, streaming or downloadable media.

As outlined in the *National Broadband Network: Regulatory Reform for 21st Century Broadband Discussion Paper*,<sup>45</sup> the Government will continue to work with industry bodies to tackle many of the regulatory challenges. However, the regulatory reform process that is currently underway in connection with the National Broadband Network will likely have significant implications for regulatory structures that are relevant to a converged world. It is logical to wait until the new arrangements are further advanced before launching a full-scale review of convergence-related issues. This will enable consideration be given to the implications of the new structural arrangements resulting from the roll-out of the new network. The Australian Government therefore intends to consider whether to look again at its overall approach to regulation in a convergent environment.

## Industry: demonstrates business digital confidence and builds digital skills

Industry can contribute to Australia's digital economy by growing their online presence and e-commerce facility. Industry can also provide relevant input on its skills requirements and promote the development of digital skills to ensure high levels of professional expertise exists in Australia to support local digital economy companies and attract foreign investment.

### Digital confidence

A high level of confidence among businesses in having an online presence and conducting commercial activities via networks such as the internet is another important part of growing Australia's digital economy. Digitally confident businesses will be more efficient. A greater online presence from Australian companies will also encourage more online participation by Australian consumers attracted by better online offerings.

Crucially, if Australian businesses do not build an online capacity they risk losing their existing customer base or missing the opportunity to access new markets. New companies, including those located overseas, are competing for the Australian customer base. As the Australian Industry Group

<sup>44</sup>Australian Communications and Media Authority, *Telecommunications Today*, (Sept. 2008) p. 24 (available at: [www.acma.gov.au/webwr/ assets/main/lib310210/report\\_6\\_telecommunications\\_today.pdf](http://www.acma.gov.au/webwr/assets/main/lib310210/report_6_telecommunications_today.pdf); last accessed: 25 June 2009).

<sup>45</sup>Department of Broadband, Communications and the Digital Economy, *National Broadband Network: Regulatory Reform for 21st Century Broadband Discussion Paper*, p. 48-49 (available at: [www.dbcde.gov.au/ data/assets/pdf\\_file/0006/110013/NATIONAL\\_BROADBAND\\_NETWORK\\_Regulatory\\_Reform\\_for\\_the\\_21st\\_Century\\_Broadband\\_low\\_res\\_web.pdf](http://www.dbcde.gov.au/data/assets/pdf_file/0006/110013/NATIONAL_BROADBAND_NETWORK_Regulatory_Reform_for_the_21st_Century_Broadband_low_res_web.pdf); last accessed: 25 June 2009).

noted, by failing to provide an ability to sell online, traditional retailers were disenfranchising Australian consumers, particularly those in remote areas.<sup>46</sup>

Lack of customer demand or readiness is not identified by Australian businesses as a barrier to the development of a fully fledged e-commerce or online marketing strategy. Instead, businesses cite as barriers to e-commerce concerns about people hacking into the system and the cost and time to introduce a new technology.<sup>47</sup> Both of these reasons suggest a lack of confidence about security and a lack of appreciation of the benefits, which in many cases may outweigh the costs of adopting greater online presence.

One recent initiative is the Tourism e-kit developed by the Australian Tourism Data Warehouse, a joint initiative of the Government Tourism Organisations from all Australian States and Territories and Tourism Australia.<sup>48</sup> The kit provides practical advice to businesses in the tourism industry about how to utilise the benefits of the digital economy. Within 14 days of its launch, there were more than 10 000 downloads of the entire program and thousands of downloads of the single tutorials.<sup>49</sup> This demonstrates that easy-to-understand, short modules highlighting e-business skills may be extremely useful to industry. Industry associations, with their sophisticated understanding of the characteristics and needs of their membership base, are particularly well placed to provide this assistance.

The Government can also assist Australian businesses to identify how to incorporate technology more effectively into their processes. The Australian Government has dedicated \$251 million over five years for the Enterprise Connect initiative, which provides business advisory services to SMEs to help increase their productivity, including advice and assistance to create or improve their level of e-business.

To further promote the benefits of the digital economy, the Australian Government announced the Small Business Online Program<sup>50</sup> in the 2009–2010 Budget through which SMEs can take advantage of e-business opportunities and to expand their online presence.

## Digital skills

Equipping Australia with the necessary knowledge and skills base to maximise the benefits of the digital economy also requires a focus on the availability of specialised ICT skills. Ensuring that local and international companies have access to a pool of highly trained ICT professionals is important for our economy. It promotes research and development, generates revenue for Australia and attracts international investment and knowledge transfer.

The Australian Government has various programs designed to allow industry to provide input on its skill requirements so that Australian graduates are suitably trained for the digital economy. Industry can provide input through the Government's Productivity Places Program (PPP), which provides for new training places in skills that employers want.

Industry can also contribute to priority-setting and curriculum development for vocational ICT courses by advising Innovation and Business Skills Australia (IBSA) of their needs.

<sup>46</sup>Australian Industry Group, *Future Directions – Digital Economy Consultation Paper*, (Feb 2009) p.15 (available at: [www.dbcde.gov.au/\\_data/assets/word\\_doc/0019/112384/Australian\\_Industry\\_Group\\_Ai\\_Group.doc](http://www.dbcde.gov.au/_data/assets/word_doc/0019/112384/Australian_Industry_Group_Ai_Group.doc)); last accessed: 25 June 2009).

<sup>47</sup>Sensis, *e-Business Report: the Online Experience of Small and Medium Enterprises*, p. 30 (June 2008) (available at: [www.about.sensis.com.au/media/pdf/SBA-Archive/sba/tae/2008\\_Sensis\\_e-Business\\_Report.pdf](http://www.about.sensis.com.au/media/pdf/SBA-Archive/sba/tae/2008_Sensis_e-Business_Report.pdf)); last accessed: 25 June 2009).

<sup>48</sup>See [www.atdw.com.au/tourism\\_e\\_kit.asp](http://www.atdw.com.au/tourism_e_kit.asp)

<sup>49</sup>Stan Beer, 'Government funded e-marketing kit hits 10,000 downloads in days', iWire 21 October 2008 (available at: [www.itwire.com/content/view/21275/53/](http://www.itwire.com/content/view/21275/53/)); last accessed: 25 June 2009).

<sup>50</sup>The Hon Dr Craig Emerson MP, 'Budget Boosts Small Business Incentives and Support by More Than \$500 million' Media Release 12 May 2009 (available at: [http://minister.innovation.gov.au/Emerson/Pages/BUDGETBOOSTSSMALLBUSINESSINCENTIVESANDSUPPORTBYMORETHAN\\$500MILLION.aspx](http://minister.innovation.gov.au/Emerson/Pages/BUDGETBOOSTSSMALLBUSINESSINCENTIVESANDSUPPORTBYMORETHAN$500MILLION.aspx)); last accessed: 25 June 2009).

Industry also has a role to play in providing on-the-job training through corporate training programs and work experience and internship placements. Within Australia, industry also undertakes various initiatives to promote the attractiveness of ICT studies and to encourage the development of ICT training and education. For example, various industry and educational groups participate in the National ICT Careers Week,<sup>51</sup> which promotes the career opportunities available to ICT graduates under the banner Start Here, Go Anywhere.

## Industry: adopts smarter use of technology to improve our environmental sustainability

The deployment of smart technology can enable more efficient use of our resources, systems and infrastructure in areas such as electricity, transport, health, water irrigation systems and high speed broadband infrastructure.

The Australian Government has several initiatives designed to pilot and promote smarter use of technology to manage our environment and infrastructure. It is anticipated that successful demonstration of these technologies will result in significant flow-on innovation and technology uptake across Australia.

### Smart technology

One example of smart technology is smart meters, a more advanced meter than the standard mechanical meter, that identifies consumption in more detail than a conventional meter. Smart meters communicate consumption information via a network back to the local utility for monitoring and billing purposes. They can be used to measure household gas, water and electricity and may allow continuous measurement, time-of-day pricing information.

Widespread deployment of smart meters has the potential to significantly reduce the amount of energy used by Australian households.<sup>52</sup> In addition, studies show that visibility into energy consumption assists in reducing greenhouse gas emissions.<sup>53</sup>

To demonstrate the ability of technology to utilise our existing energy infrastructure smarter, the Australian Government will invest \$100 million in 2009–10, as the National Energy Efficiency Initiative (Smart Grid, Smart City<sup>54</sup>). Through this initiative, an integrated, commercial scale, smart grid will be constructed in one Australian city, town or region. This smart grid will see the electricity transmission and distribution network equipped with digital sensors and remote controls; with integration of renewable energy sources such as solar and wind and smart meters communicating information to and from the household. Such a self-aware energy network will enable greater energy efficiency, reduced emissions and better use of renewable energy sources such as solar power.

Intelligence can also be built into our physical infrastructure. 'Smart infrastructure' is capable of ongoing monitoring so that changes in physical structure or their environment are identified before a crisis occurs. As Infrastructure Australia notes in its recent Report to the Council of Australian Governments, making the most of existing infrastructure can avoid many of the negative environmental and amenity costs associated with building new infrastructure. In particular, 'technology can provide opportunities to unlock capacity in existing assets'.<sup>55</sup> In Minnesota, US, for example, the St. Arthur Falls Bridge, which collapsed in 2007, has been rebuilt with sensors and other technology that constantly monitor the concrete for any weakness or structural damage.<sup>56</sup>

<sup>51</sup> See [www.acs.org.au/ictcareersweek/](http://www.acs.org.au/ictcareersweek/)

<sup>52</sup> Department Resources, Energy and Tourism, 'Smart Meter Decision Paper MCE' 13 June 2008, (available at: [www.ret.gov.au/Documents/mce/\\_documents/Smart\\_Meter\\_Decision\\_Paper\\_MCE\\_13\\_June\\_200820080613153900.pdf](http://www.ret.gov.au/Documents/mce/_documents/Smart_Meter_Decision_Paper_MCE_13_June_200820080613153900.pdf); last accessed: 25 June 2009).

<sup>53</sup> M. Dennis & H. Jones, 'Broadband Communication Enables Sustainable Energy Services', *Telecommunications Journal of Australia*, vol 57, no. 2/3, 2007, 25.1, at 25.7.

<sup>54</sup> A Sustainable Nation, p.10 (available at: [www.environment.gov.au/about/publications/budget/2009/ebo/pubs/budget-overview-09-10-sustainable.pdf](http://www.environment.gov.au/about/publications/budget/2009/ebo/pubs/budget-overview-09-10-sustainable.pdf))

<sup>55</sup> Infrastructure Australia, A Report to the Council of Australian Governments, December 2008, p 29-31 (available at: [www.infrastructureaustralia.gov.au/files/A\\_Report\\_to\\_the\\_Council\\_of\\_Australian\\_Governments.pdf](http://www.infrastructureaustralia.gov.au/files/A_Report_to_the_Council_of_Australian_Governments.pdf); last accessed April 30, 2009).

<sup>56</sup> Steve Hamm, 'The Bridge to Smart Technology,' *BusinessWeek* Feb. 19, 2009 (available at: [www.businessweek.com/magazine/content/09\\_09/b4121042656141.htm](http://www.businessweek.com/magazine/content/09_09/b4121042656141.htm); last accessed June 22, 2009).

## Teleworking and video-conferencing

Advanced communications technologies, including videoconferencing, allow people to communicate as effectively and efficiently as face-to-face communications. These technologies make it unnecessary to commute to the office everyday, drive or fly for a face-to-face meeting.

One of the primary benefits of teleworking is that it enables greater workforce flexibility. It allows employers to attract and retain skilled people who may live in another city or people who are unable to be at a central work location due to family responsibilities or a disability. However, teleworking also offers environmental benefits. By decreasing the need to commute, it can reduce greenhouse gas emissions.

Similarly, video conferencing can remove the need to travel for face-to-face meetings, and increase productivity by saved travel time. The Australian division of Cisco claims that it achieved a 16 per cent reduction in air travel in a single year after it adopted videoconferencing and other telepresence facilities.<sup>57</sup> In 2008 Microsoft Australia saved \$18 000 on a single quarterly management meeting of 130 people using its videoconferencing products Live Meeting and Roundtable.<sup>58</sup> In addition, in February 2009 the Australian Government announced that TelePresence technology<sup>59</sup> would be deployed across 20 Australian Government and state government locations for use in inter-government meetings such as the Council of Australian Governments and Ministerial Councils. The purpose of this deployment is to reduce costs and greenhouse emissions.

While many aspects of this technology have existed for a while, it appears that knowledge and organisational attitudes may stand in the way of their more widespread adoption. A report by the Economist Intelligence Unit, based on a global survey of 345 private sector senior executives, noted slow adoption of telework despite the availability of the required technologies to achieve it.<sup>60</sup> In addition, the Sensis Insights Teleworking Report June 2007<sup>61</sup> surveyed the use of teleworking in SMEs in Australia and found that while 22 per cent reported the use of teleworking, they cited technical, administrative and supervisory issues as presenting barriers to greater adoption of telework.

Awareness raising may assist in addressing organisational and behavioural issues. The guidelines for implementing telework policies on the Telework Australia website<sup>62</sup> may be useful for industry to overcome current barriers to greater adoption of teleworking.

## Minimising the environmental impact of ICT

While technology can facilitate more environmentally sustainable ways of doing business, it also raises new challenges. One report estimates that the ICT sector is responsible for about two per cent of global greenhouse gas emissions.<sup>63</sup> ICT devices also comprise an increasingly large proportion of the world's waste. These impacts need to be addressed by coordinated strategies that minimise the potentially adverse environmental consequences of the success of the digital economy.

Steps need to be taken to reduce the impact of data centres, which are part of the key infrastructure that enables the digital economy. Data centres are energy-intensive and savings are possible both in the power used to run the computer equipment and the equipment used to keep the data centre cool. Already various industry participants are incorporating techniques to run data centres on a more energy-efficient basis.<sup>64</sup>

<sup>57</sup>Climate Risk, Towards a High-Bandwidth, Low Carbon Future, (2007) p 46 (available at: [www.telstra.com.au/abouttelstra/csr/docs/climate\\_full\\_report.pdf](http://www.telstra.com.au/abouttelstra/csr/docs/climate_full_report.pdf); last accessed: 25 June 2009).

<sup>58</sup>Microsoft IT Showcase, 'Microsoft Uses Roundtable to Improve Productivity, Lower Costs and Reduce Carbon Footprint', October 2008 (available at: [www.microsoft.com/casestudies/ServeFileResource.aspx?4000006799](http://www.microsoft.com/casestudies/ServeFileResource.aspx?4000006799); last accessed: 25 June 2009).

<sup>59</sup>The Hon Lindsay Tanner MP, 'Australian government signs teleconferencing deal with Cisco and Telstra', Media Release, 27 February 2009 (available at: [www.financeminister.gov.au/media/2009/mr\\_082009.html](http://www.financeminister.gov.au/media/2009/mr_082009.html); last accessed: 25 June 2009).

<sup>60</sup>Economist Intelligence Unit, Managing the company's carbon footprint (February 2008).

<sup>61</sup>Sensis, The Sensis Business Index: Teleworking, (July 2007) (last accessed: [www.innovation.gov.au/Industry/InformationandCommunicationsTechnologiesICT/Documents/SensisTeleworkingJuly2007.pdf](http://www.innovation.gov.au/Industry/InformationandCommunicationsTechnologiesICT/Documents/SensisTeleworkingJuly2007.pdf); last accessed: 15 April 2009).

<sup>62</sup>Case studies and other information about teleworking are available at [www.teleworkaustralia.net.au/resources/cases/australia/](http://www.teleworkaustralia.net.au/resources/cases/australia/) and [www.innovation.gov.au/Industry/InformationandCommunicationsTechnologiesICT/Pages/Telework-usingtechnologytochangewhereandwhenwework.aspx](http://www.innovation.gov.au/Industry/InformationandCommunicationsTechnologiesICT/Pages/Telework-usingtechnologytochangewhereandwhenwework.aspx) viewed 15 April 2009

<sup>63</sup>Gartner, 'Green IT: The New Industry Shockwave', presentation at ITXPO Conference, April 2007.

<sup>64</sup>See, for example, Google ([www.google.com/corporate/green/datacenters/](http://www.google.com/corporate/green/datacenters/)) and MacDataCentre ([www.macdatacentre.com/](http://www.macdatacentre.com/))

E-waste (consumer electrical and electronic equipment waste) is also a growing problem. Product stewardship can assist in minimising e-waste. Product stewardship recognises that manufacturers, importers, governments and consumers have a shared responsibility for the environmental impacts of a product throughout its full life cycle.

In November 2008, Australian governments, through the Environment Protection and Heritage Council (EPHC), agreed to develop a new National Waste Policy for Australia to 2020. This policy, which will be finalised by November 2009, will provide a framework of guiding principles and relevant strategies, such as a national product stewardship framework. To assist discussions, the Australian Government released a National Waste Consultation paper in April 2009,<sup>65</sup> which includes consideration of the issues of product stewardship and e-waste.

There are some industry-led schemes that promote the recycling of e-waste. For example, the Australian mobile industry runs the MobileMuster scheme which offers free recycling for all mobile phone brands in Australia. The industry claims that more than 90 per cent of the materials in mobile phones, batteries, accessories and chargers can be recovered and the small amount of potentially harmful substances safely treated. For 2007–08, the scheme collected an estimated 755 196 handsets and batteries.<sup>66</sup>

## Industry: develops sustainable online content models

Online content serves an important role in the digital economy in several respects. As the OECD notes:

*'digital content can provide new impetus for the digital economy, encouraging innovation, raising the level of skills, triggering dynamic developments and innovations in existing industries and creating new markets.'*<sup>67</sup>

While content is a key driver of digital economy growth, technology has a disruptive effect on the entertainment and media industries. The array of entertainment options available is fragmenting the market and the trend to digital teaches viewers new habits. These challenges are being felt by the content industry globally and in Australia. This is reflected in comments made during Disney Corporations' first earnings call for 2009 when Chief Executive Officer Robert Iger announced the company's first-quarter profits fell 32 per cent on lower DVD sales and a drop in advertising at its broadcast and cable properties. He noted:

*'Competition for people's time is increasing...[t]his clearly has had an impact on broadcast television and may have a long-term potential impact on the DVD business. We don't believe the changes we are seeing in consumer behavior can all be attributed to a weak economy, and we feel it is important for us to address them as more than just cyclical issues.'*<sup>68</sup>

<sup>65</sup>See [www.environment.gov.au/wastepolicy/index.html](http://www.environment.gov.au/wastepolicy/index.html)

<sup>66</sup>See [www.mobilemuster.com.au/annual\\_collection\\_figures](http://www.mobilemuster.com.au/annual_collection_figures)

<sup>67</sup>Organisation for Economic Co-operation and Development, Digital Broadband Content 19 May 2006, p 6 (available at: [www.oecd.org/dataoecd/54/36/36854975.pdf](http://www.oecd.org/dataoecd/54/36/36854975.pdf); last accessed: 25 June 2009).

<sup>68</sup>R. Scott Raynovich, 'Disney Dinged by Flight from DVDs, Economy' Contentinople, February 4, 2009 (available at: [www.contentinople.com/author.asp?section\\_id=430&doc\\_id=171532](http://www.contentinople.com/author.asp?section_id=430&doc_id=171532); last accessed: February 25, 2009).

This trend towards digital is also reflected in recent figures released by the Australian Recording Industry Association which shows that in 2008, while physical sales were down 12 per cent, digital album sales were up nearly 100 per cent in dollar value and 261 per cent in unit terms over the year.<sup>69</sup>

The digitisation trend is changing customer habits and expectations. Increasingly, they expect an on demand experience, that is, the ability to enjoy what they want, when they want, on the device they want. This has been facilitated by digital video recorders and music and video sites that offer on-demand content for streaming or downloading.

Another disruptive impact from the digitisation of media has been on business models and revenues. Online revenue sources are increasingly contributing to the content industries bottom line. However, as Jeff Zucker of NBC Universal has commented, sustainable, long-term business models may not be possible if analog dollars are replaced by digital pennies.<sup>70</sup> This reflects concern that the current rates of return for online content are not matching offline figures.

The development of new and successful business models for the online environment is primarily an industry responsibility. Internationally, new models are emerging including, movie studio Warner Bros' shrinking the release windows between DVD and online versions of its movies,<sup>71</sup> the development of the streaming video site Hulu<sup>72</sup> and the hybrid model adopted by Nine Inch Nails with their album Ghosts.<sup>73</sup>

There are several examples of Australian online content providers competing in this difficult environment. Examples are, the music and video downloads from Apple iTunes store and BigPond Music and BigPond Movies as well as the music discovery site bandit.fm.

The popularity of the online content offerings of the Australian Broadcasting Corporation (ABC) and Special Broadcasting Service (SBS) provides further examples of successful forays by Australian organisations into digital content. In 2008, the ABC had 49 million audio podcasts downloaded, another 18 million video podcasts were downloaded and an average of 2.3 million users a month visited its websites.<sup>74</sup> Similarly, from the SBS website 887 000 radio and television programs were downloaded in 2007–08 and an average of 598 000 unique users per month visited the SBS websites.

### Case study: Animal Logic—from a start in advertising to an Oscar

Animal Logic is a digital visual effects company that started working on commercials and has since diversified into animated feature films and is planning a move into digital games. The company produced Australia's first digitally animated feature film Happy Feet which was not only a box office success but won critical acclaim and an Oscar.

Attracting the best animation skills is critical for Animal Logic's success. Animal Logic is working to grow animation direction capability locally. It has an extensive in-house curriculum and runs an internship scheme and a work experience program for secondary students. However, the company complements this in-house training with importing talent from overseas.

<sup>69</sup>Australian Recording Industry Association, 'ARIA releases 2008 wholesale sales figures', 11 March 2009 ([www.aria.com.au/2008SalesFigures.htm](http://www.aria.com.au/2008SalesFigures.htm)).

<sup>70</sup>Michael Learnmouth, 'Zucker Says Apple Deal Rotten', Variety, 27 October 2007 (available at: [www.variety.com/article/VR1117974910.html?categoryid=1009&cs=1](http://www.variety.com/article/VR1117974910.html?categoryid=1009&cs=1); last accessed: 25 June 2009).

<sup>71</sup>Saul Hansell, 'Warner Brothers to Rent Movies Online Sooner' New York Times 30 April 2008 (available at: <http://bits.blogs.nytimes.com/2008/04/30/warner-brothers-to-rent-movies-online-sooner/>; last accessed: 25 June 2009).

<sup>72</sup>See [www.hulu.com/](http://www.hulu.com/)

<sup>73</sup>Michael Masnick, 'Serving Your Fans: The Trent Raznor Case Study', (February 2009) (available at: [www.youtube.com/watch?v=Njuo1puB1lg](http://www.youtube.com/watch?v=Njuo1puB1lg); last accessed: 25 June 2009).

<sup>74</sup>Paul MyIntyre, Media Held Back by Download Limits, Sydney Morning Herald, 19 February 2009, (available at: <http://business.smh.com.au/business/media-held-back-by-download-limits-20090218-8big.html>; last accessed: 25 June 2009).

The continued growth of broadband infrastructure supports Animal Logic's business growth. In its ongoing advertising work, broadband capability allows commercials at a higher resolution and quality, which facilitates greater creativity and production values. With the rollout of a high-speed broadband network such as the National Broadband Network, the ability to improve content production quality will only increase. Bandwidth requirements always grow to fill the available capacity. It can also give the company greater flexibility in how it manages its production facilities.

The Government's significant investment in building Australia's world-class digital infrastructure, such as the National Broadband Network, provides a critical platform to enable Australian content companies to compete in this online world.

In addition, the Australian Government's Creative Industries Innovation Centre provides business advisory services to SMEs in the creative industries sector such as music, visual and performing arts, graphic design, games and interactive media.

Several rightsholder groups in Australia argued that a role for Government exists in addressing the apparent popularity of peer-to-peer file sharing of music and movies, without the necessary permissions of the relevant copyright owners. File-sharing is cited by the content industry as a barrier to further investment in sustainable and innovative content initiatives in Australia. However, some of the solutions proposed by rightsholders to address file-sharing have been criticised as raising issues of due process and consumer rights.

The Australian Government recognises a public policy interest in the resolution of this issue. The Government is currently working with representatives of both copyright owners and the internet industry in an effort to reach an industry-led consensus agreement on an effective solution to this issue.

## Community: enjoys digital confidence and media literacy

As households take up broadband, people increasingly become 'heavy users' of the internet.<sup>75</sup> It is important that when Australians engage with the digital economy, they have the requisite digital confidence and skills to do so safely and productively.

### Consumer digital confidence

The increase in time spent online by Australians is arguably the result of two trends. Firstly, the generations of 'digital natives'—those who do not know life without a computer, the internet and MP3s. 'Digital natives' first log-on earlier in their lives than previous generations and rarely log-off. They participate online differently to older generations, '[d]igital natives' almost never distinguish between the online and offline version of themselves'.<sup>76</sup>

In addition to digital natives developing a lifelong clickstream 'digital immigrants' who learn and adopt the internet and related technologies later in life<sup>77</sup> are also spending more time online.

It is important that Government and industry collaborate to ensure that people are as capable and confident interacting and engaging via the internet as they are offline.

<sup>75</sup>Supra n 41, p. 8.

<sup>76</sup>John Palfrey & Urs Gasser "Born Digital: Understanding the First Generation of Digital Natives", (2008) p.20.

<sup>77</sup>Id. p 4.

The Australian Government promotes consumer digital confidence by measures targeted to address three key online risks to consumers—privacy, e–security and cyber–safety. The Government is currently reviewing Australia's privacy laws to identify areas that need to be updated for the 21st Century. It has also undertaken a range of e–security awareness raising and education initiatives to improve the e–security of home users and SMEs. For example, the Government's e–security website, Stay Smart Online<sup>78</sup> provides information on protection against e–security threats such as malicious spam, phishing and spyware that can lead to identity theft and financial loss.

To reflect the growing importance of cyber–safety within the Australian community, the Australian Government has committed funding of \$125.8 million over four years for a Cyber–Safety Plan to combat online risks and help parents and educators protect children from inappropriate material. The Cyber–Safety Plan includes funding for education and information measures, law enforcement, help line and websites, Internet Service Provider filtering, consultative arrangements with industry, child protection bodies and children, and further research to identify possible areas for additional action. ACMA also provides a range of cybersafety information and resources designed to meet the needs of children, parents, teachers, and library staff. This includes advice for young children through resources such as Cybersmart Detectives, Cyberquoll, and Cybernetrix. It also includes Cybersafety Outreach, involving professional development and presentations in metropolitan and regional centres throughout Australia.

A recent ACMA report<sup>79</sup> found that consumers currently place a high reliance on informal methods of training and acquiring knowledge about the internet and do not have significant concerns about their online security. ACMA concludes that while 'concerns over online security are not currently a barrier to participation' there is a 'potential need for more formal and continuing education to address knowledge gaps about appropriate and available technical and behavioural measures to mitigate online risks.'<sup>80</sup>

## Digital media literacy

Digital media literacy ensures that all Australians are able to enjoy the benefits of the digital economy: it promotes opportunities for social inclusion, creative expression, innovation, collaboration and employment.

The focus of digital media literacy policy and programs is on the development of three core skillsets:

- the technical ability to engage at a basic level with a computer and the internet, for example creating documents and emails
- the ability to understand and critically evaluate digital media and to understand and critically evaluate digital media content, and
- the ability to create content and communications.

The Australian Government is building Australia's digital media literacy amongst schoolchildren by committing \$2 billion over five years to the Digital Education Revolution. The aim of the Digital Education Revolution<sup>81</sup> is to prepare Australian students for further education, training and employment and to equip them with the skills they need to live, work and succeed in an increasingly digital world by providing ICT equipment, broadband connections and access to training.

<sup>78</sup>See [www.staysmartonline.gov.au](http://www.staysmartonline.gov.au)

<sup>79</sup>Australian Communications and Media Authority, Australia in the Digital Economy, Report 1: Trust and Confidence (March 2009) p. 1–2 (available at: [http://acma.gov.au/WEB/STANDARD/pc=PC\\_311655](http://acma.gov.au/WEB/STANDARD/pc=PC_311655); last accessed: 25 June 2009).

<sup>80</sup>Id.

<sup>81</sup>See [www.deewr.gov.au/Schooling/DigitalEducationRevolution/Pages/default.aspx](http://www.deewr.gov.au/Schooling/DigitalEducationRevolution/Pages/default.aspx)

### Case study: the Podkids—learning digital skills and connecting with the world

The Podkids started in 2006 when Orange Grove Primary School in West Australia decided to start using the one computer available at the school to make a podcast—an internet radio show. The idea was to create a school newspaper where the students would talk about what they were doing at school and conduct interviews with their parents and teachers but in audio format. When the group first uploaded their podcasts to [www.podkids.com.au](http://www.podkids.com.au) they thought only parents and some educators would want to listen in. However, today the Podkids have listeners in over 50 countries with at least 50 000 downloads in countries as diverse as the United Kingdom, Japan, the Philippines, Greece, Trinidad and Tobago, Lithuania, Burkina Faso and Nigeria.

In Podkids Episode 16 the students talk about what having a computer allows them to do—Maths 300 and Mathletics, helping with music instruction by allowing kids to create their own music, and learning spelling. Asked how computers have changed their experience, one response was that ‘it’s fun for once.’ Several students also noted that using a computer allowed them to save paper, ‘so we won’t have to cut down trees and won’t harm the animals.’ Another commented that ‘the internet is never boring.’

In mid-2007, the school community agreed that from the start of 2008, every school student in years four to seven at Orange Grove Primary School would have their own computer. The 1:1 student/computer ratio has ‘transformed everything’. Recently, the Podkids demonstrated their advanced digital skills by creating a series of ‘stop-motion animation’ films using clay and lego and the cameras built into their laptops. The Podkids were only able to create something as time-intensive as stop-motion animation because they had their own laptop.

## Community: experiences inclusive digital participation

As digitally enabled social and economic transactions become an increasingly integral part of our economy, the detriment to those not engaged with the digital economy rises. The issue becomes particularly acute where the characteristics of the digitally excluded overlap with those of the socially excluded.<sup>82</sup> As one study noted:

*‘Technology and social disadvantage are inextricably linked. This means that social policy goals will be increasingly difficult to realise as mainstream society continues to embrace changes in our information society while those on the margins are left further behind—disengaged digitally, economically, and socially.’*<sup>83</sup>

<sup>82</sup>For a discussion on the characteristics of social exclusion, see for example, Department of Prime Minister and Cabinet, Social Inclusion: Origin, concepts and key themes, October 2008 (available at: [www.socialinclusion.gov.au/Documents/1Economicimplications.pdf](http://www.socialinclusion.gov.au/Documents/1Economicimplications.pdf); last accessed May 10, 2009).

<sup>83</sup>UK Department for Communities and Local Government, Digital Inclusion: An Analysis of Social Disadvantage and the Information Society, (Oct. 2008), p15.

Recent data suggests that not all community groups are equally participating online. One ACMA report noted:

*'While a majority of Australians use the internet and participate online to some degree, there are still an estimated 2.6 million Australians who do not use the internet. While the level of internet use is only one measure by which we can determine inclusion, it clearly shows that not all sections of the community are equally involved in the digital economy.'*<sup>84</sup>

The Australian Government has a number of initiatives in place that are designed to increase access to online services by all Australians. To respond to the needs of senior Australians the Broadband for Seniors initiative provides training in the use of the internet and in particular to help them stay connected to family and friends.

To promote media accessibility, the Australian Government is currently exploring strategies to encourage and facilitate access to electronic media by people with hearing or vision impairments and will respond on the issue in mid-2009.<sup>85</sup> In addition, the Government is undertaking a feasibility study into whether a disability equipment program that is independent of telecommunications carriers should be established.<sup>86</sup>

Several other initiatives are targeted to improve the up-take of online services in regional and rural areas. The National Broadband Network will respond to one current source of inequity—inadequate access to broadband infrastructure in regional and rural areas. The Rural and Regional National Broadband Network Initiative<sup>87</sup> will fund coordinators to help drive broadband take-up in regional communities and fund ABC Local online to help establish community websites and portals to create 'virtual town squares' for communities to share experiences. In addition, the Digital Regions Initiative<sup>88</sup> will co-fund innovative digital enablement projects with state, territory and local governments to improve the delivery of education, health and emergency services in regional, rural and remote communities.

The Australian Government also provides support for Indigenous Australians in remote communities to access computers, the internet and training to be able to participate in the digital economy.<sup>89</sup>

Industry also has an important role to play in promoting digital inclusion. This includes incorporating accessibility into the design of ICT as well as corporate programs to promote and support access and skills development among otherwise digitally excluded groups.

## Community: benefits from online engagement

New and emerging Web 2.0 platforms and tools, such as blogs, wikis and social networking platforms, provide innovative and additional ways for community engagement.

The rise of user-generated content provides new ways for Australians to engage, collaborate and interact online. The top twenty websites visited by Australians includes Facebook (ranked fourth), MySpace (ranked sixth), YouTube (ranked eighth), Wikipedia (ranked tenth) and Blogger (ranked

<sup>84</sup>Australian Communications and Media Authority, Australia in the Digital Economy, Report 2 -- Online participation (May 2009) p30 (available at: [http://acma.gov.au/WEB/STANDARD/pc=PC\\_311655](http://acma.gov.au/WEB/STANDARD/pc=PC_311655); last accessed: 25 June 2009).

<sup>85</sup>See [www.dbcde.gov.au/media\\_broadcasting/television/television\\_captioning\\_discussion\\_paper](http://www.dbcde.gov.au/media_broadcasting/television/television_captioning_discussion_paper)

<sup>86</sup>See [www.dbcde.gov.au/communications\\_for\\_consumers/telephone\\_services/access\\_for\\_people\\_with\\_disabilities/independent\\_disability\\_equipment\\_feasibility\\_study](http://www.dbcde.gov.au/communications_for_consumers/telephone_services/access_for_people_with_disabilities/independent_disability_equipment_feasibility_study)

<sup>87</sup>Senator the Hon Stephen Conroy, 'Budget 2009: Rural and Regional NBN Initiative to drive broadband benefits to communities', Media Release 12 May 2009 (available at: [www.minister.dbcde.gov.au/media/media\\_releases/2009/043](http://www.minister.dbcde.gov.au/media/media_releases/2009/043); last accessed: 25 June 2009).

<sup>88</sup>See [www.dbcde.gov.au/communications/digital\\_regions\\_initiative](http://www.dbcde.gov.au/communications/digital_regions_initiative).

<sup>89</sup>See [www.dbcde.gov.au/communications/indigenous\\_communications\\_program](http://www.dbcde.gov.au/communications/indigenous_communications_program).

nineteenth),<sup>90</sup> all of which rely on user-generated content. These platforms can strengthen existing communities, for example, through the development of hyperlocal news sites, but also allow new communities to develop.

### Case study: Youdecide2007 – Australia's first citizen journalist experiment

Youdecide2007 was the first experiment in Australia with a collaborative, citizen journalism. It was established to run during the 2007 Australian Federal election campaign. The Youdecide2007 website was designed to enable citizen journalism coverage of the election. The site attempted to recruit citizen journalists from every Australian electorate to foster the development of locality-based content or hyperlocal news.

At its peak, the site attracted over 12 000 readers a week, more traffic than all major political parties' sites except the Australian Labor Party. Youdecide2007 published 230 stories, which were a mixture of citizen and staff-generated material. These stories came from 50 of Australia's 156 electorates. Youdecide2007 also broke stories that were picked up by the national press.

For government, there is the potential for these technologies and platforms to facilitate and enhance greater transparency and accountability, as well as more direct and open engagement between citizens and governments, particularly for policy development.

Governments all over the world are experimenting with and exploring Web 2.0 technologies and platforms.<sup>91</sup> Specific examples include the Digital Britain Forum<sup>92</sup> in the UK, which provided an opportunity for citizens to comment on the Digital Britain interim report<sup>93</sup> and included a blog. Another example is the US President Barack Obama, who ran an online town hall style forum on the White House's website in March 2009. The forum welcomed questions from citizens and allowed them to vote for questions they wanted answered. Over a hundred thousand people participated and more than three million votes were recorded. The President then answered some of the popular questions in a press meet which was also streamed live on the White House website.<sup>94</sup>

Several Australian Government agencies are learning by doing and hosting blogs. For example, the Department of Defence's blog through which the Department communicates about defence related topics.<sup>95</sup> In December 2008, the Department of Broadband, Communications and the Digital Economy hosted a Digital Economy Blog for people to provide comments on the topics being explored in this paper.<sup>96</sup>

Numerous Australian Government agencies have also established YouTube channels.<sup>97</sup> In addition, Australian state, territory and local governments are also successfully engaging with citizens online for policy development. For example, the City of Melbourne hosted the Future Melbourne wiki to garner public input to help shape future planning for the city.<sup>98</sup>

<sup>90</sup>Supra n 80, p 16.

<sup>91</sup>See for example, an illustrative list of examples of international government agencies using Web 2.0 technologies and platforms <http://government20bestpractices.pbwiki.com/United+States+Government>

<sup>92</sup>See for example, <http://www.digitalbritainforum.org.uk/>

<sup>93</sup>Digital Britain, The Interim Report (January 2009) (available at: [www.culture.gov.uk/images/publications/digital\\_britain\\_interimreportjan09.pdf](http://www.culture.gov.uk/images/publications/digital_britain_interimreportjan09.pdf); last accessed: 25 June 2009).

<sup>94</sup>See [www.whitehouse.gov/openforquestions/](http://www.whitehouse.gov/openforquestions/)

<sup>95</sup>See [www.defence.gov.au/defenceblog/2009/0119\\_0125.htm](http://www.defence.gov.au/defenceblog/2009/0119_0125.htm)

<sup>96</sup>See [www.dbcde.gov.au/communications\\_for\\_business/Digital\\_economy/digital\\_economy\\_consultation/future\\_directions\\_blog](http://www.dbcde.gov.au/communications_for_business/Digital_economy/digital_economy_consultation/future_directions_blog)

These examples show that governments are experimenting with innovative means to engage with their citizens using Web 2.0 tools. The challenge, however, is to make the most effective use of these tools to promote efficiencies, transparency and constructive dialogue. As one commentator acknowledged in relation to the Digital Economy Blog:

*'it's probably worth remembering: as untried as government consultation blogs are at the federal level in Australia, so too are citizens unused to being able to engage with their government in this way. **They** may be new at it, but so are **we**—and both sides still have a lot to learn about the other.'*<sup>99</sup>

The Australian Government has established a Government 2.0 Taskforce to assist in making government more consultative, participatory and transparent. The Taskforce will also advise on strategies to maximise the extent to which government utilises the views, knowledge and resources of the general community.

<sup>97</sup>See for example, Department of Environment, Water, Heritage and the Arts: <http://au.youtube.com/user/DeptEnvironment>; The Child Support Agency: <http://au.youtube.com/user/ChildSupportAgencyAu>; Department of Defence: <http://au.youtube.com/user/DefenceJobsAustralia>; the Royal Australian Air Force: <http://au.youtube.com/AirForceHQ>; the Australian War Memorial: <http://au.youtube.com/user/AustWarMemorial>.

<sup>98</sup>See [www.futuremelbourne.com.au/wiki/view/FMPlan](http://www.futuremelbourne.com.au/wiki/view/FMPlan)

<sup>99</sup>Snurb, 'What if you build it and they do come?' gate watching 19 December 2008 (available at:<http://gatewatching.org/2008/12/19/government-consultation-online-what-if-you-build-it-and-they-do-come/>; last accessed: 25 June 2009)

# Conclusion

---

The task of transforming Australia's economy and society into a successful digital economy is a significant one that requires a long-term focus. This paper outlines areas for Government, industry and the community to work on to ensure that Australia is well on the path to a successful digital economy.

Government, industry and the community must approach the task recognising that this is a process which touches all aspects of our economy and society. Australia is not alone in realising the magnitude of this challenge. As the OECD has noted:

*'ICT policies are now becoming less sector-specific and more a part of the mainstream economic policies that concern the economy and society as a whole.... OECD countries with long-term strategies for information societies typically emphasise the role of ICTs and the internet as key enablers of wider societal change'.<sup>100</sup>*

This *Australia's Digital Economy: Future Directions* paper aligns with other important Government initiatives to enable Australia to become a more innovative nation with world-class infrastructure that supports smart, effective and rewarding use of technology throughout all aspects of our economy and society. This paper complements the *Powering Ideas* report which outlines an innovation agenda for the 21st Century. It provides the vision underlying the Government's existing commitments to establish a company to build the National Broadband Network and switching existing television services to digital-only.

The National Broadband Network, in particular, will allow Australia to become a global leader in terms of capacity and enjoy truly high speed carrier grade video, data and voice services. This will have significant implications for industry in terms of new services, applications and business models. To assist Australia's research community and commercial sector to fully map the applications and business models which will thrive in Australia's high-speed future, the Government will host a *National Broadband Network: Realising the Vision* forum before the end of 2009.

It is also important that industry and the public continue to provide feedback and suggestions for new ideas about how to progress the future of Australia's digital economy or additional case studies. For those with comments or suggestions, please forward them to [DEFutureDirections@dbcde.gov.au](mailto:DEFutureDirections@dbcde.gov.au) or send to:

Assistant Secretary, Digital Economy and Convergence Branch  
Department of Broadband, Communications and the Digital Economy  
GPO Box 2154  
CANBERRA ACT 2601

It is not our intention to publish any comments we receive. However, should we wish to do so, we will contact you to seek your permission.

With the initiatives outlined in this paper and through these ongoing discussions, the Australian Government is confident that, in keeping with the true spirit of the online world, we can continue to collaborate, discuss and engage in the most productive way possible to maximise the economic and social benefits of the digital economy for Australia.

## Key Government initiatives

The following table summarises the key initiatives being undertaken by the Australian Government to advance the digital economy and progress the areas identified in this paper. For more details about these and other initiatives, including those of industry, please refer to *Australia’s Digital Economy: Future Directions–Final Report* which is available at [www.dbcde.gov.au/digital\\_economy/final\\_report](http://www.dbcde.gov.au/digital_economy/final_report).

<p style="text-align: center;"><b>Infrastructure</b></p> <ul style="list-style-type: none"> <li>• National Broadband Network</li> <li>• Digital television switchover</li> <li>• Spectrum management, including consideration of the future management of 15 year spectrum licences</li> </ul>	<p style="text-align: center;"><b>Consumer digital literacy and confidence</b></p> <ul style="list-style-type: none"> <li>• Digital Education Revolution</li> <li>• Privacy law review</li> <li>• Cyber–Safety Plan</li> <li>• E–security review and policy framework</li> </ul>
<p style="text-align: center;"><b>Innovation and Web 2.0</b></p> <ul style="list-style-type: none"> <li>• Innovation Agenda</li> <li>• Government 2.0 Taskforce</li> <li>• National ICT Australia</li> <li>• Information Technology Industry Innovation Council</li> </ul>	<p style="text-align: center;"><b>Online content</b></p> <ul style="list-style-type: none"> <li>• Creative Industries Innovation Centre</li> <li>• Facilitate the development of an appropriate solution to the issue of unauthorised file sharing</li> </ul>
<p style="text-align: center;"><b>Digital confidence and skills</b></p> <ul style="list-style-type: none"> <li>• Enterprise Connect</li> <li>• Small Business Online Program</li> <li>• Productivity Places Program</li> <li>• Innovation and Business Skills Australia</li> </ul>	<p style="text-align: center;"><b>Digital inclusion</b></p> <ul style="list-style-type: none"> <li>• Rural and Regional National Broadband Network Initiative</li> <li>• Digital Regions Initiative</li> <li>• Broadband for Seniors</li> <li>• Media Access Review</li> <li>• Indigenous Communications Program</li> </ul>
<p style="text-align: center;"><b>Smart technology</b></p> <ul style="list-style-type: none"> <li>• Deployment of TelePresence</li> <li>• National Energy Efficiency Initiative</li> <li>• National Waste Policy</li> </ul>	

## Contact information

If you would like a copy of the *Australia's Digital Economy: Future Directions—Final Report* and/or the *Snapshot*, or any other information sent out to you, please call the Department on 02 6271 1000 between 9.00 am and 5.00 pm (Monday to Friday) or email [DEFutureDirections@dbcde.gov.au](mailto:DEFutureDirections@dbcde.gov.au).

Alternatively, the *Australia's Digital Economy: Future Directions —Final Report* and the *Snapshot* can be accessed from the Department of Broadband, Communications and the Digital Economy's website at: [www.dbcde.gov.au/digital\\_economy/final\\_report](http://www.dbcde.gov.au/digital_economy/final_report)

The *Australia's Digital Economy: Future Directions —Final Report* and the *Snapshot* have been published in multiple formats including Rich Text Format (RTF), Portable Document Format (PDF), Open Document Format (ODF) and Hypertext Mark-up Language (HTML).

Further information on the consultative process for the development of the *Australia's Digital Economy: Future Directions—Final Report* and the *Snapshot* is available from [www.dbcde.gov.au/digital\\_economy](http://www.dbcde.gov.au/digital_economy).

## Attribution-Noncommercial-No Derivative Works 2.5 Australia

### You are free:



**to Share** – to copy, distribute and transmit the work

### Under the following conditions:



**Attribution** – You must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work).



**Noncommercial** – You may not use this work for commercial purposes.



**No Derivative Works** – You may not alter, transform, or build upon this work.

### With the understanding that:

**Waiver** – Any of the above conditions can be **waived** if you get permission from the copyright holder.

**Other Rights** – In no way are any of the following rights affected by the license:

- Your fair dealing or **fair use** rights;
- The author's **moral** rights;
- Rights other persons may have either in the work itself or in how the work is used, such as **publicity** or privacy rights.

**Notice** – For any reuse or distribution, you must make clear to others the license terms of this work. The best way to do this is with a link to this web page.

