



ACS RESPONSE TO THE DIGITAL ECONOMY FUTURE DIRECTION CONSULTATION PAPER

GENERAL OBSERVATIONS AND COMMENTS

The ACS welcomes the opportunity to comment on the Digital Economy Future Direction Consultation Paper. It covers a number of important issues that have been raised by industry as part of the digital economy consultation workshop program undertaken by the Department of Broadband, Communications and the Digital Economy in the latter part of 2008.

Some areas not covered in the Consultation Paper that might be worthwhile considering in developing a final response to the digital economy workshops and the Consultation Paper are:

- Developing a clearer definition of what is encompassed within the digital economy. This is particularly important in terms of clarifying reporting parameters and statistical data sets for measuring the digital economy and its impact.

It is important that we see the digital economy as being more than just connectivity. It's also about production and use (particularly intensity of use) of ICT across the entire economy, and about business and domestic participation.

It is a myth that Australia can have a strong digital economy by just being a strong user of ICT. We must also be a strong producer as well as a strong user. It has been demonstrated by many countries around the world that there is a strong correlation between production and use.

- There is a fundamental question around how the Government is going to ensure Australia is capable of prospering in a global economy that is digitally enabled. Many of our near neighbours and trading partners have developed national blueprints and manifestos with key strategic goals and benchmarks that give priority to their digital economies and direction to their ICT industry sectors. Most recently the UK has released "Digital

Britain” to highlight the importance of, and give focus and stimulus to, its digital economy.

Australia must also, as a national priority, develop a comprehensive national digital economy strategy that addresses government activity, the development of digital resources, skills and industry competencies, and sets out a blueprint to enhance our engagement in the global digital economy.

Without such a strategy, we are left with a series of well meaning but largely uncoordinated and unfocused Government reviews, activities and programs that do not reach their full potential.

Through the NBN, the higher education review, the innovation review, the review of temporary migration, the Gershon review, the current review of our taxation system, the 2020 summit and consultation forums and workshops on the digital economy, Australia has or will have many of the fundamentals in place that it needs for a thriving digital economy. What we need now is leadership and direction to drive the digital economy forward.

At a joint forum between ACS and the Committee for Economic Development of Australia, key ICT industry innovators, producers and users identified the Top Five issues where industry is looking for leadership to enhance Australia’s digital economy. Those issues were:

- The need to declare and commit to the digital economy as a national priority area and develop a coherent, national strategy around its development. There is no contradiction in Australia being both a resource economy and a digital economy;
- Enabling people and industry participation through enhanced skills development, improving ICT literacy, workforce skills and technical training in ICT;
- Develop a national digital security strategy that encompasses domestic and commercial users and covers content regulation and a national e-security framework. It should also promote enhanced confidence for businesses to migrate to online business models and facilitate greater participation in the global economy;
- Build the necessary business skills to enhance production, use, delivery and innovation within the digital economy. ICT and e-commerce should be viewed as key business enablers and not as ‘add-ons’ or costs.
- Determine Australia’s competitive advantages within the rapidly emerging global digital economy. Start where we already have comparative

strengths and then give these areas priority by developing appropriate policy, taxation, regulatory and other support necessary for them to flourish and to bring industry 'on side' to increase investment and innovation in these areas.

These are areas where Australia's ICT industry sector believes the Government policy response to the digital economy consultative process should primarily focus.

WHAT DOES SUCCESS LOOK LIKE

Australia has a relatively vibrant ICT/digital economy sector. The ACS Industry Report 2008 indicates there are around 282,000 ICT professionals employed in Australia, (of the 514,000 people performing ICT technical and professional tasks in the country). Over 60 per cent of the 282,000 are directly employed within the ICT industry while the balance interact with the ICT industry from their roles in business, Government, and academia.

Revenue generated by the Australian ICT sector is currently around \$85 billion, comprising Telecommunications (\$47B); consulting and software services (\$18B); distribution of hardware/software products (\$17.5B); and manufacturing of hardware/software (\$2.5B).

ICT goods and services accounted for around three per cent of Australia's total export earnings and while domestically produced equipment exports continue to decline from their peak of 200/01, they still account for 51 per cent of total ICT goods and services exports.

The success of our digital economy, and its consequent ability to generate revenue and employment, is strongly correlated to how we use the technology and the intensity with which we use it.

While Australia has established competencies and competitive advantage in some areas of ICT products and services, we are not maximising this potential.

Australia has not been as successful in producing, commercialising and marketing, (both nationally and internationally) its ICT innovations in comparison to other OECD countries. Our businesses do not seem to be effectively tapping into global networks. An Austrade¹ report found that **only three per cent of our SMEs** export their goods and services, suggesting that, given the right incentives and stimulus, our participation in the digital economy could significantly improve.

The result is that Australia is an increasingly strong user of other countries' ICT innovations and a poor exporter of its own, a fact only too well highlighted by our ICT trade deficit, which was around \$21 billion for 2006.

¹ <http://www.austrade.gov.au/Yes-Virginia-there-are-barriers-to-small-business-exporters/default.aspx>

There are many variables that measure the success of our digital economy and the statistics listed above provide some indicators that can be used in this way. Other key indicators that point to our success are:

- Technology assisted productivity gains within the various sectors of our economy;
- The value of digital economy-related services;
- The size of the sector and number of inputs in terms of graduates, workers and investment;
- Broadband speeds and use, and the number of transactions performed online;
- The amount of business conducted online;
- The intensity of online business use;
- Spending on ICT goods and services (commercial and domestic); and
- The proportion of the workforce engaged in ICT-enabling functions.

Some other possible benchmarks of success are:

- Australia's leadership in the creation of global standards for measuring ICT productivity growth;
- ICT exports in comparison to other OECD countries; and
- Broadband performance and intensity of use in comparison to other OECD countries.

Australia needs to be able to measure its digital economy. It must also be able to readily quantify the digital economy in its own right and the extent to which it is underpinning productivity in other economic sectors.

As suggested in the Consultation Paper, indicators such as the number of businesses connected to the internet, penetration of broadband and willingness to embrace new technology, while useful, are not sufficient and do not in themselves indicate 'success'. The digital economy must be seen as being much broader than just 'connectivity'.

The continuing evolution of ICT innovation means that achieving our potential in the digital economy will be an ongoing process and not a finite achievement. However, if we are to achieve our maximum potential, the ACS believes we will need a national strategy that has this as its goal.

OPEN ACCESS TO PUBLIC SECTOR INFORMATION

'Energising Australian Innovation', a 10 year strategic vision for the Australian ICT sector by the National ICT Industry Alliance, indicated that innovation in Australia is still largely centred around the concept of innovation as a new invention or breakthrough.

However innovation is not limited to new inventions. It covers a broad range of activities that involve application, adaptation and use of existing technologies and knowledge in different ways or creating new markets for existing products. It encompasses technical and non-technical applications and can result from combining existing technologies or processes or re-engineering technologies or existing products to create the next level of product or service for commercial exploitation.

The federal public sector is Australia's single largest purchaser of ICT goods and services and, as such, plays a strong role in fostering innovation in Australia's digital economy. The Digital Economy Consultation Paper provides a number of examples of creative adaptation of government information for use in innovative technology development. Increased access to public sector information for re-use, adaptation and re-engineering has the potential to significantly enhance innovation within our ICT sector.

Much of the information, programs and innovations developed by the government are already available in some form, although they are not always readily accessible. In terms of ICT products and services, the ACS strongly encourages implementing a public database of the technology solutions that have been commissioned by the Government and its agencies.

These solutions can be made available to other departments, industry or individuals for use as they are or for re-engineering for other applications.

In terms of formats to facilitate greater use of public service information, departments should adhere to a common open data standard to allow direct access by authorised external applications for data mining or re-use. Use of proprietary formats will be a barrier to access. In addition, the availability of raw data and online analysis tools is important so that business and the community can use and analyse the data for their own purposes.

To facilitate greater use of public sector information, the Government could adopt the US Government's policy of open access to public sector information.

The US policy in this area provides for:

- Extensive access to government information through its Freedom of Information Act;

- No government copyright and this is explicitly embedded in the US Copyright Act;
- No restrictions on exploitation or re-use of government information; and
- Maximum fees for government information being limited to reproduction and dissemination costs only.

Open access to public sector information could be facilitated through a licensing system similar to the Australian Commons License at <http://creativecommons.org/international/au> . The intent of Creative Commons is to provide free licences and other legal tools to mark creative work and allow others to share, remix or use the work commercially for other applications.

*The Guardian*² recently reported that the UK Advisory Panel on Public Sector Information has valued its public sector information resource as being worth hundreds of billions of pounds to the economy, if made freely available. It might reasonably be assumed that Australia's public sector information could also be a similarly valuable resource to our economy.

DIGITAL CONFIDENCE

The implementation of a comprehensive e-security strategy and framework for Australia will be essential to increasing the confidence of the community and industry in participating strongly in the digital economy.

The Digital Economy Consultation Paper identifies numerous areas where the Government is currently actively working on reducing the risk to critical infrastructure and enhancing online protection for the community and business.

The ACS supports current Government initiatives around revising Australian privacy laws to take into account advances in digital technologies and information exchange.

In terms of reducing the risk of fraud and data theft made possible by technological innovation, the ACS urges the Federal Government to conduct a Regulatory Impact Statement on the ICT sector as part of its efforts to improve public and business confidence in online environments through increased professionalism in our ICT workforce.

Trustworthy and secure technical environments are essential to engender public and business confidence in migrating to online business models.

The ubiquity and importance of online systems to our daily home and business lives means that it is time to tackle professionalism within the ICT sector in the same way as the medical, legal and accounting professions have acted to enhance public and business confidence in those professions.

² Cross, Michael, *The Guardian*, 15 November 2007.
<http://www.guardian.co.uk/technology/2007/nov/15/freeourdata.news>

ICT literacy at all levels of our community should also form an integral part of our e-security and online business confidence strategy, to maximise the ability for all citizens and businesses to effectively use ICT and online business models to their advantage.

The ACS believes that the combination of increased literacy and knowledge of the benefits and business opportunities made available by migrating to online business environments, professionalism and improved e-security frameworks will make a significant impact on the confidence of SMEs in doing business online.

MacGregor, Vrazalic and Harvie³ suggest a number of barriers to SME participation in the digital economy that support this contention. Some of the key inhibitors identified are:

- lack of capital to invest in technical enhancements;
- lack of technical expertise and knowledge;
- inadequate organisation, planning and short term management perspectives; and
- small management teams that are strongly influenced by the views of the owner.

Generally the study found three categories of barriers to SME adoption of e-commerce:

- supply barriers – finance, technical knowledge and expertise;
- demand barriers – e-commerce not fitting in with their clients; and
- environmental barriers – e-security.

A number of other studies examined by the ACS (eg Flynne & Purchase's study into Perception of Barriers to E-Commerce⁴) found similar inhibitors.

The urgency with which these inhibitors need to be addressed is highlighted by an Austrade⁵ report indicating that only around three per cent of Australia's SMEs export their products or services (compared to around one third of larger businesses).

This is a sobering statistic given that SMEs account for 99 per cent of businesses in Australia and a strong indicator that the Australian digital economy is still in its infancy. It clearly also indicates that SMEs have limited information about

³ MacGregor,R., Vrazalic, L., & Harvie, C., 'The Perception of Barriers to E-Commerce in Australian SMEs: Relationships to Small Business Cluster Membership', 4th SMEs in a Global Economy Conference 2007, 9 – 10 July 2007

⁴ Flynn, A., & Purchase, S., 'Perceptions of Barriers to E-Commerce', University of Western Australia <http://smib.vuw.ac.nz:8081/WWW/ANZMAC2001/anzmac/AUTHORS/pdfs/Flynn.pdf>

⁵ <http://www.austrade.gov.au/Yes-Virginia-there-are-barriers-to-small-business-exporters/default.aspx>

participation in global markets, and access to global networks and online distribution channels.

DEVELOPING AUSTRALIA'S KNOWLEDGE AND SKILLS BASE

The ACS strongly supports current government initiatives around improving ICT literacy within the general community, schools (via the Digital Education Revolution policy) and within industry, particularly in addressing ICT workforce skills gaps.

The ACS has, as an integral part of its mission, a role to advance professional excellence in information and communication technology. The ACS achieves this by:

- accrediting tertiary ICT courses;
- providing accreditation of ICT professionals;
- providing ongoing professional development for its members, such as the ACS Computer Professional Education Program;
- Professional Year Program for recent international student graduates; and
- through education programs such as the ACS Diploma in Information and Communication Technology.

ICT Skills Shortages – Supply And Demand

As noted in the Consultation Paper, the ICT sector facing persistent skills shortages that have developed around four major parameters:

- an ICT skills gap with job vacancies currently outstripping the number of suitable ICT professionals to fill them, even in the current financial situation;
- foreseeable long term growth in the ICT job market;
- declining student demand for tertiary ICT study programs; and
- students, parents and careers advisers have a poor perception of careers in ICT.

Exacerbating these issues are concerns around:

- a lack of common understanding of the ICT profession and low recognition of what constitutes the ICT profession; and
- there is often no clear career path articulated between tertiary ICT study programs and the jobs to which students aspire, so students are unsure of what study program would best suit their needs.

All sectors of the Australian economy are becoming increasingly dependent on ICT for their operations and their future productivity gains. Given this dependence, it is crucial that Australia ensures that it has the relevant ICT skills to carry its economy forward into the future.

A primary element of achieving this will be the effectiveness with which Australian ICT higher education and VET providers respond to the perceptions of students around ICT and student course content requirements. It will also depend on how well they are able to tap into, take account of and incorporate into their courses, the future skills needs of industry, to ensure that we have the people with the skills we will need at precisely the time when they will be needed.

Improving the Supply of ICT professionals

Higher education providers could better address some of the ICT skills concerns being raised by industry by developing short term certification programs that allow current ICT professionals to quickly pick up new skills or to re-train in new specialisations. This would increase the supply of ICT professionals in areas of strong demand.

Using the VET pathway could also help improve the supply of ICT skills. The Government currently has a strong focus on providing traineeships for the traditional trades to address chronic skills shortages in these areas. This model should be extended to ICT careers, allowing school students to move into ICT from year 10 and above through the VET pathway.

More information on improving the supply of ICT professionals and ICT courses can be found in the ACS submission to the Government Review into Australian Higher Education at

<http://www.acs.org.au/attachments/ACSSubmissiontoHigherEducationReview.pdf>

Demand for ICT professionals

The ACS report on ICT Skills Forecasting⁶ was released during August 2008. The report predicts a shortfall in ICT employment in Australia of around 19,000 by 2015, based on the assumption that ICT graduations remain at current levels and using current migration targets and factoring in economic cycle variations based on underlying growth. Even if ICT graduations increase by 2.5 per cent per annum from 2007 to 2015 (compounded and reaching 2001 levels by 2013), the report indicates there will still be a significant shortfall in ICT employment.

This ACS employment modeling work suggests that government, industry, the VET and higher education sectors must, as a matter of priority, look at ways of increasing Australia's ICT skills base. We can do this by providing alternative pathways for students into ICT careers, encouraging those in the workforce to consider ICT careers, encouraging women to consider careers in ICT or to return to an ICT career after maternity or other career breaks, and also by encouraging mature workers into ICT.

ICT Skills Supply/Demand Model

Better supply and demand forecasting would provide a useful way to identify the technologies and skills that are most likely to be needed in the future. This could

⁶ <http://www.acs.org.au/attachments/ICTSkillsForecastingReportAug2008.pdf>

be achieved through an ICT labour market forecasting model that can simulate demand and supply trends, likely demand/supply gaps and the sensitivity of these gaps to key parameters for the supply and demand of ICT professionals and skills in Australia.

Industry Leadership Group on ICT Skills

After the release of the report of the Federal Government ICT Skills Foresighting Working Group, 'Building Australian ICT Skills', in May 2006, the ACS and the Australian Information Industry Association (AIIA) jointly convened the National Industry Leadership Group to examine issues around the supply and demand for ICT skills in the Australian market.

The Industry Leadership Group (ILG) comprises wide ranging membership from industry, industry and professional associations, state and federal governments and higher education providers. It prepared a report compiling substantial research into the supply and demand relating to ICT labour in the Australian market.

In 2008, the ILG conducted the first National ICT Careers Week to highlight to students the benefits and career opportunities available from undertaking study in ICT. National ICT Careers Week was strongly supported by industry and academia with over 70 firms participating and holding events during the week. National ICT Careers Week 2009 will be held at the end of July. Strong support from the Federal Government will ensure it is even more successful than in 2008.

ENSURING AUSTRALIA'S REGULATORY FRAMEWORK ENABLES THE DIGITAL ECONOMY

To develop an appropriate regulatory framework that enables and encourages participation in the digital economy, we must first understand the behaviours of those who participate in it and the inhibitors/barriers that exist.

The ACS believes that, as part of its digital economy development process, the Government should identify and address the key barriers and inhibitors to enhancing our digital economy. Misguided regulation and policy has been reported as being one of the most significant inhibitors of investment in the digital economy⁷.

As discussed in the Consultation Paper, copyright and intellectual property laws are key areas for the digital economy. The issues raised in the Consultation Paper on copyright safe harbours were strongly debated in the digital economy forums and the issues were comprehensively addressed. The ACS does not have anything further to add to that debate at this point.

However, in addition to copyright and intellectual property laws, the ACS believes that careful attention should be given to establishing regulatory and taxation

⁷ http://www.disco-tech.org/2008/11/misguided_regulatory_policy_is.php

regimes that maximise investment in innovation and R&D in the digital economy, human capital development and in increasing competition around communications services.

The rapid increase in communications speeds and the intensity of use of communications technologies have exposed businesses across all industry sectors to extreme competition from all over the world. Innovation, agility and speed in industry and government are vital to competitiveness in the global digital economy.

The days of tweaking regulations to facilitate business as usual are rapidly approaching an end. Businesses must innovate to effectively compete in the global digital economy and the innovation model is changing radically. Our regulatory framework needs to change with this changing business paradigm.

Government, academia and business need to collaborate to create a regulatory and tax regime that stimulates ICT investment and encourages migration to internet-based business models and adoption of e-commerce-based business processes for supply chain, sales and distribution management.

Regulatory environments have a significant impact on the willingness of business to change⁸. Through regulation, the Government has a strong role to play in encouraging SMEs to adapt to these processes through providing information, building the case to migrate to online business models and through clarifying the benefits and the connection between ICT use and productivity growth. Regulation also has a strong role to play in encouraging increased investment within areas of the digital economy where there is currently significant under-investment (such as human capital development, ICT R&D, sustainable (green) ICT).

DIGITAL ECONOMY AND THE ENVIRONMENT

The ACS has been actively engaged in addressing the contribution ICT makes to our green house gas emissions.

The ACS undertook an emissions audit⁹ on the amount of carbon dioxide being generated by ICT usage by Australian Businesses. The results of the audit indicate that ICT use by Australian Businesses generated 7.94Mt of carbon dioxide in 2005, equivalent to 1.52 per cent of total national carbon dioxide emissions.

The ACS believes that leveraging technological solutions will be the key to reducing our domestic and commercial carbon dioxide emissions. To gain maximum economic benefits from this, Australian ICT professionals and businesses must be part of the vanguard – we must be leaders and not followers.

⁸ <http://www.ic.gc.ca/eic/site/ecic-ceac.nsf/eng/gv00436.html>

⁹ http://www.acs.org.au/acs_policies/docs/2007/greenictaudit.pdf

As well as designing ICT equipment and technologies that are more resource efficient, the innovative development of power and other resource use algorithms and programs for commercial and domestic application is a key area where ICT professionals can constructively contribute to reducing energy use and achieve significant cost savings both for commercial operations and domestic consumers.

To help ICT professionals in this area, the ACS has implemented a Green ICT Special Interest Group for its members and other ICT professionals interested in discussing and being part of the solution to the climate change issue.

In addition, the ACS supports an extension of the Star Energy Rating System to cover all domestic and commercial ICT equipment to assist ICT professionals and consumers in making more energy efficient choices.

Key areas where ICT can reduce carbon dioxide emissions include:

- Leveraging innovative technologies to reduce power consumption and lower carbon dioxide emissions;
- The use of soft phone clients on computer workstations and combining the communications server onto existing servers using virtualisation technology;
- The use of virtualisation technology to significantly reduce the number of servers within organisations.
- Moves to implement desktop virtualisation using ultra-small, secure clients on the desktop and linking the thin clients to their own virtual desktop machines residing on servers.

The ACS strongly supports the use of product stewardship schemes in reducing e-waste. The current Gershon reform and Digital Education Revolution programs provide an excellent opportunity for the Federal Public Sector to take a leading role in product stewardship and e-waste by only purchasing ICT equipment from suppliers with appropriate product stewardship and e-waste schemes in place. Given the Federal Government's significant market purchasing power in ICT, leadership in this area would have a strong flow on effect to the private sector.

The Byte Back program is a great example of product stewardship and has strong support from many of the major suppliers of ICT products.

MEASURING THE DIGITAL ECONOMY AND ITS IMPACTS

Australia needs to be able to effectively measure and report on the growth of its digital economy and its impacts as an economic sector in its own right, as well as its impacts on underpinning productivity growth in other sectors.

The digital economy should be measured in terms of an input/output framework, its contribution to productivity and its contribution to GDP.

To do this we need a sound economic model that is supported by a strong statistical base with agreed key indicators. Thus, we must clearly define what is included within the digital economy.

Some key indicators are set out in the “What does success look like” section of this submission. Other indicators to be considered are:

- ICT-supported productivity growth within our economy;
- The value of digital economy services;
- The size of the sector and number of inputs in terms of graduates, workers, investment and R&D;
- Broadband speeds and intensity of use (not penetration), transactions performed online;
- Total amount of business being conducted on line;
- Spending on ICT, both commercial and domestic;
- The proportion of the workforce engaged in ICT-enabling functions across the economy.

The ACS is currently working with the ABS and others to develop a comprehensive annual Statistical Compendium for the Australian ICT sector. In part, it is intended that this document will fill in some of the statistical gaps that currently exist and replace a number of reports that are no longer being produced by the ABS due to budget cuts (for example the ICT Satellite Account).