aiia
australian information industry association

SmartICT 2014: A vision for sustained national prosperity

Driving economic growth, productivity, global competitiveness and social benefit

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1. Executive Summary

SmartICT 2014 represents the current policy and advocacy priorities for AIIA and its members. It articulates AIIA's vision for a prosperous Australia, the critical role of digital technology and the ICT industry in achieving that vision, identifies current and potential impediments and suggests priority areas for action – for Government and for industry.

High-speed communication networks have become the indispensable infrastructure upon which modern societies and economies depend. The sum of pervasive broadband, ubiquitous connectivity, cloud computing, social media, increasing volumes of data coupled with high powered analytics, mobility and the emergence of 'the Internet of Things' have coalesced to transform how we live, work, learn, communicate, produce, trade, provide services and govern. No aspect of how we live today is untouched by digital technologies. The digital revolution is one of unprecedented social and economic reform and equally unprecedented potential.

AIIA's vision is for a prosperous Australia underpinned by economic growth, productivity, global competiveness and social benefit enabled by digital technology.

To realise this vision, SmartICT 2014 focuses on three priority strategic themes:

- Building a sustainable, innovative and globally competitive Australian ICT Industry
- Leveraging next generation broadband and enabling mobility
- Creating exemplar, exportable digital economy products and services

Each of these themes represents an opportunity to leverage the capability of digital technology more effectively in order to realise Australia's current and future growth objectives.

The first of these, *Building a sustainable, innovative and globally competitive Australian ICT industry*, focusses explicitly on the ICT industry. It argues the need for Australia to build the necessary skills base and supporting research, regulatory and innovation ecosystem to foster 'home grown' and innovative ICT capability. Such capability is a 'core competency' of an advanced digital economy and essential to competing effectively in the global, digital marketplace.

Theme two, *Leveraging next generation broadband and enabling mobility*, questions Australia's readiness to leverage Australia's investment in high speed ubiquitous broadband. It identifies the potential for lost opportunity and encourages a sense of urgency in executing a more ambitious digital economy agenda. It focuses on two specific sectors that make significant contributions to Australia's economy: the government sector and small and medium sized enterprises (SMEs).

Theme three, *Creating exemplar, exportable digital economy products and services*, focuses on the opportunity presented by Australia's service industries and new market and export capabilities. It discusses the potential risks to Australia's economy including a further deterioration of our trade deficit if we are not proactive in supporting trade exposed service sectors and identifies the opportunities offered by digital technology to mitigate these risks.

SmartICT 2014 is a call to action offering specific recommendations for change and the role of AIIA in driving that change.

Theme 1: Building a sustainable, innovative and globally competitive Australian ICT Industry

- Build awareness of the ICT sector in growing Australia's digital capability and driving Australia's success as a digital economy by supporting the development of a high quality, high value ICT industry sector.
- Ensure Australia develops the capability required to compete effectively in the global digital economy by explicitly supporting Australia's innovation ecosystem with the development of a highly skilled, agile, innovative ICT sector.

- Elevate and articulate the role of digital technology in achieving improved economic and social outcomes for all Australians by encouraging government (Australian Bureau of Statistics) and industry to work together to develop an instrument to measure and monitor the:
    - performance of the ICT sector; and
    - contribution digital technology makes to the Australian economy.

Theme 2: Leveraging next generation broadband and enabling mobility

- To clarify Australia's investment in high speed ubiquitous broadband, government and industry work together to articulate a clear set of national objectives that include a focus on measurable economic growth, improved firm level and national productivity, increased employment opportunities and clear social benefit.
- To drive confidence in Australia's commitment to be a world class digital economy, government must lead by example. This requires the adoption and use of digital capability across all levels of government and aspects of its operation.

Theme 3: Building exemplar, exportable digital economy product and service capability

- Support Australia's services sector to develop high value, exportable digital services by promoting the role of digital technology in building an internationally competitive, digitally driven service sector
- Strengthen Australia's digital service export capability through enabling domestic and trade policies.
- Build sustainable competitive export capability by leveraging digital technology to grow data driven product and service innovation

2. Introduction

2.1 About SmartICT 2014

Last year the Australian Information Industry Association (AIIA) released its Smart*ICT 2013 Election Platform Statement "Prosperity for all Australians"*. It envisioned "a society of connected and empowered citizens using Smart*ICT* to create a vibrant and globally competitive economy", and articulated six key areas for action for government:

- Shifting the focus to driving take up and use of our national broadband infrastructure, with a particular focus on Government use of *Smart ICT*;
- Stimulating growth and innovation by ICT start-ups and small business;
- Motivating small and medium sized enterprises to improve their productivity by 'getting' online and digitally capable;
- Addressing the ICT skills shortage;
- Growing our ICT capability through improved research and development (R&D) capability and capacity and forging better links between research and industry; and
- Acknowledging the 'value' of the digital economy by tracking and measuring its performance.

While much was achieved in 2013, particularly in support of ICT skills development, the Government's commitment to 'digital first' and the reconsideration of Employee Share Scheme policy options, significant work remains to be done if Australia is to leverage the potential of new technologies to drive growth and seize the opportunity for continued prosperity.

SmartICT 2014 builds on the foundations of AIIA's SmartICT 2013 policy statement and focuses on the role of digital technology in supporting those areas which are essential to a nation's prosperity: economic growth, productivity, global competitiveness and social benefit.

This agenda focuses on three key strategic themes for action:

- **Building a sustainable, innovative and globally competitive Australian ICT industry**
- **Leveraging next generation broadband and enabling mobility**
- **Creating exemplar, exportable digital economy products and services**

Each of these themes represents an opportunity to leverage the capability of digital technology more effectively for the benefit of all Australians.

SmartICT 2014 represents the current policy and advocacy priorities for AIIA and its members. It articulates AIIA's vision for a prosperous Australia, the critical role of digital technology and the ICT industry in achieving that vision, identifies current and potential impediments and suggests priority areas for action – for government and for industry.

SmartICT 2014 is a call to action offering specific recommendations for change.

2.2 About AIIA

The Australian Information Industry Association (AIIA) is the peak national body representing Australia's information technology and communications (ICT) industry. Since establishing 35 years ago, the AIIA has pursued activities aimed to stimulate and grow the ICT industry, to create a favourable business environment for our members and to contribute to the economic imperatives of our nation. *Our goal is to "create a world class information, communications and technology industry delivering productivity, innovation and leadership for Australia".*

We represent over 400 member organisations nationally including hardware, software, telecommunications, ICT service and professional services companies. Our

membership includes global brands such as Apple, EMC, Google, HP, IBM, Intel, Microsoft, PWC, Deloitte, EY and Oracle; international companies including Telstra, Optus; national companies including Data#3, SMS Management and Technology, TechnologyOne and Oakton Limited; and a large number of ICT SME's.

SmartICT 2014 has been developed in consultation with the AIIA Board, Councils, members and other stakeholders.

3. Context: The Hyper Connected Century

Key Facts

In 2013:

- *2.7 billion people, almost 40% of the world's population, are using the internet*
- *41% of the world's households are connected to the internet - half of them are in the developing world where household penetration has reached 28%*
- *90% of the 1.1 billion households not connected to the internet are in the developing world*
- *There were almost as many mobile phone subscriptions as people in the world (some 91%) with more than half in the Asia Pacific Region (3.5 billion out of 6.8 billion total subscriptions)*
- *The average age for the purchase of a first mobile phone is 13 years*
- *Mobile web adoption is growing eight times faster than web adoption did in the 1990s and early 2000s*
- *There are 14.3 trillion webpages live on the internet*

Sources: The World in 2013: ICT Facts and figures
http://www.itu.int/en/ITUD/Statistics/Pages/facts/default.aspx

3.1 The new world paradigm

It is estimated that by 2016 the Internet economy across G20 countries will be worth some $4.2 trillion. If it were a national economy, the Internet would rank as one of the world's top five economies behind the US, China, Japan and India and ahead of Germany. [1] It accounts for approximately 20% of growth in developed countries and for every job that is eliminated through related productivity gains, some 2.6 new jobs are created.[2]

In the five years since financial markets collapsed in 2008 the number of mobile phones sold has increased from 11 million to almost 400 million; Android apps have grown from zero to nearly one million; 3D printers have been 're-invented' and commoditised; and MOOCs (massive online learning courses) have emerged to disrupt traditional education and learning paradigms.[3]

At the same time traditional industry structures have been disrupted, social media is bringing together networks of individuals and the Internet is joining machines together through real time data transfer and communication – the growth of which is unprecedented (90% of the world's data has been generated over the last two years).[4]

90% of the world's data has been generated over the last two years

High-speed communication networks have become the indispensable infrastructure upon which modern societies and economies depend. The sum of pervasive broadband, ubiquitous connectivity, cloud computing, social media, increasing volumes of data coupled with high powered analytics, mobility and the emergence of 'the Internet of Things' have coalesced to transform how we live,

[1] Boston Consulting Group, (2014) *The Connected World, Greasing the Wheels of the Internet Economy*, p6
[2] Business Council of Australia, (2013) *Action Plan for Enduring Prosperity*, p33
[3] Accenture,(2014) *Remaking Customer Markets. Unlocking growth with digital*
[4] Ibid,p4

work, learn, communicate, produce, trade, provide services and govern. No aspect of how we live today is untouched by digital technologies.

3.2 Australia is slipping behind

The digital revolution is one of unprecedented social and economic reform and equally unprecedented potential. However, while Australia's GDP ranks relatively well within the G20's top economies and we emerged relatively unscathed from the global financial crisis, concern about the sustainability of the prosperity Australia has enjoyed and the 'inevitability' that we will be overtaken by more populous emerging economies – particularly in our region, is emerging.[5]

According to the most recent *State of the Internet Report* conducted by Akamai Technology[6] although Australia has better than average Internet connection speeds (5.5Mbps compared with the average of 3.6Mbps) it still ranks well below countries such as South Korea (22.1Mbps), Japan (13.3Mbps), Hong Kong (12.5.6Mbps), the Netherlands (12.5 Mbps), Switzerland (11.6Mbps), Czech Republic (11.3Mbps), Latvia (11.1Mbps), the US (9.8Mbps) and Belgium (9.7 Mbps). Even more pertinent is the 'digital divide' in Australia where we have greatly different speeds and access in country areas compared to major cities. Given ICT innovation can and should be geographically dispersed, this digital divide undermines the benefits that could be enabled by high-speed ubiquitous Internet.

In global terms, Australian connection speeds rank 43rd

In global terms, Australian connection speeds rank 43rd behind countries such as France, the UK, Romania, Spain, Slovakia, Ireland and Poland. At the same time, Australia's Internet, broadband and mobile affordability is ranked by the World Economic Forum (WEF) as in the bottom 30% of the 144 participating countries.[7] Australia also ranks comparatively poorly in government use of ICT and in areas such as business to business internet use, capacity for innovation and leveraging ICT to drive new organisational models[8], Australia has considerable work to do to rank amongst the top 15% of the 144 countries measured.

The report, *Entrepreneurial Ecosystems around the Globe and Early-Stage Company Growth Dynamics*, released at the recent Davos conference in Switzerland suggests that the conditions necessary to foster a robust start-up ecosystem are, in Australia, below par.[9] The lack of effective links between start-ups and larger companies to connect start-ups with global value and supply chains[10], limited access to capital, unsupportive tax arrangements, overly burdensome government regulations and poor cultural support for early stage companies are all identified as impediments.

In addition, in education, over the last decade Australia has suffered a 55% decline in ICT enrolments in tertiary training and education – including the very high end skills Australia needs to establish its competiveness in a global digital economy.[11]

Six years on, Australia has weathered the storm of the 2008 Global Financial Crisis better than many peer nations. Nevertheless, there is clearly no room for complacency if Australia is to secure a competitive position in the global digital economy.

5 Business Council of Australia, (2013) *Action Plan for Enduring Prosperity* and Phil Scanlan, The Australian, 7 January 2014. Digital Platforms vital for nation's growth.
6 http://www.akamai.com/dl/documents/akamai_soti_q213.pdf?WT.mc_id=soti_Q213
7 http://www3.weforum.org/docs/WEF_GITR_Report_2013.pdf
8 Ibid.
9 http://reports.weforum.org/entrepreneurial-ecosystems-around-the-globe-and-early-stage-company-growth-dynamics/wp-content/blogs.dir/34/mp/files/pages/files/nme-entrepreneurship-report-jan-8-2014.pdf
10 Ibid.
11 Department of Business and Innovation, Victoria (2012) *ICT Skills Snapshot – The State of ICT skills in Victoria*.

3.3 AIIA vision: 2014 and beyond

AIIA's vision is for a prosperous Australia underpinned by economic growth, productivity, global competiveness and social benefit enabled by digital technology.

SmartICT 2014 builds on the vision for sustained national prosperity powered by smart ICT outlined in our 2013 SmartICT platform.

AIIA's SmartICT 2014 agenda focuses on the role of digital technology in supporting what is essential to a nation's prosperity: economic growth, productivity, global competitiveness and social benefit.

To realise this vision, SmartICT 2014 focuses on three priority strategic themes:

- Building a sustainable, innovative and globally competitive Australian ICT industry
- Optimising next generation broadband and enabling mobility
- Creating exemplar, exportable digital economy products and services

Each of these themes represents an opportunity to leverage the capability of digital technology more effectively in order to realise Australia's current and future growth objectives.

The first of these, *Building a sustainable, innovative and globally competitive Australian ICT industry*, focusses explicitly on the ICT industry. It argues the need for Australia to build the necessary skills base and supporting research, regulatory and innovation ecosystem to foster 'home grown' and innovative ICT capability. Such capability is a 'core competency' of an advanced digital economy and essential to competing effectively in the global, digital marketplace.

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Theme three, *Creating exemplar, exportable digital economy products and services*, focuses on the opportunity presented by Australia's service industries. It discusses the potential risks to Australia's economy including a further deterioration of our trade deficit if we are not proactive in supporting trade exposed service sectors and identifies the opportunities offered by digital technology mitigate these risks.

The discussion of these themes concludes with a statement of the priority actions which must be executed to achieve the vision of prosperity which underpins the SmartICT 2014 policy agenda.

4. Building a sustainable, innovative and globally competitive Australian ICT Industry

4.1 Issues

For nations and business alike, digitally driven economic growth is the cornerstone for a sustainable future. While the role of information and communication technologies (ICT) in powering this opportunity is broadly understood, Australia's commitment to building its own, world class, competitive ICT industry, to create comparative advantage for Australia in the global digital economy is less clear.

This poses two risks. First, that we are not developing and growing capability in the area recognised as essential to economic prosperity in the 21st century, i.e. the development and application of sophisticated digital technology. Second, in comparison to the investment other countries are making in building digital technology expertise, we risk reducing our relative competitiveness.

The potential lost opportunity is even more startling when considered in the context of recent manufacturing closures in regional and rural areas. And yet, ICT innovation can create roles in geographically dispersed locations providing they have access to the necessary tools and the communications networks. Provision of highly effective ICT capability in rural centres would do much to overcome the impact of the changing nature of our economy – from retail, manufacturing and mining dependence to knowledge working.

The realisation of this opportunity is constrained by cultural factors including the view by some government and business that ICT is a cost overhead and simply an 'enabler' of capabilities. These negative perceptions have been amplified by the politicising of pricing and taxation issues, and the media narrative of ICT project 'failures'.

Digital technology is not an end in itself – rather it is a transforming and disruptive capability which can be applied by ingenious and industrious individuals across all sectors, to create and deliver business outcomes. AIIA strongly advocates the need for market competitiveness to drive accountability, innovation and growth of the industry.

We are not investing in the very industry which is critical to our advantage

In relegating ICT to 'enabler' status, we are not investing sufficiently in the very industry which is critical to our comparative advantage. Evidence of this is demonstrated in public and business policy including arrangements for incentivising innovation, research, education and tax policies. As discussed below, a range of existing provisions effectively undermine the opportunity to build the ICT capability necessary for today's global business environment.

Employee Share Schemes (ESS)

Employee Share Schemes (ESS) provide an effective mechanism to assist companies recruit, motivate and reward employees 'grow' their company. Across the ICT sector, the challenge of attracting and retaining appropriately skilled talent is especially acute. This is particularly true in the global economy where good people and good ideas are highly mobile.

It is of major concern to AIIA that recent analysis undertaken by Deloitte shows that current ESS arrangements (post 2009 legislative changes) have resulted in a significant decline in their use, particularly amongst tech start-ups, looking for ways to attract and retain quality talent to drive innovation and business growth.[12] While some 95% of the Deloitte survey respondents said they felt it is important to offer an ESS to growing their business, less than 65% have them, sighting administrative complexity and unfavourable tax treatment.

The fact that both larger companies (i.e. listed companies) and start-ups in other countries (e.g. the USA, UK, Israel and Singapore) are able to offer greater cash and/or access to ESS benefits, is a major impediment to holding innovative businesses in Australia. This is particularly true for innovative start-ups with limited access to capital and cash-flow, competing for staff and skills in a globally competitive market place.

As recently as January 2014, media reported the worrying trend of local technology companies moving their operations overseas, principally because they can access more favourable tax treatment to grow their business overseas.[13] Arguably these companies provide the foundation for the 'jobs of the future' that we need to be turning attention to and developing.

Crowd Sourced Equity Funding

The potential for $109 billion or 4% of GDP and 540,000 jobs by 2033

The contribution of early stage technology companies to a nation's innovative and entrepreneurial activity is globally recognised. For example, with the right support "*the Australian tech start up sector has the potential to contribute $109 billion or 4% of GDP to the Australian economy and 540,000 jobs by 2033 with a concerted effort from entrepreneurs, educators, the government and corporate Australian*".[14]

With limited venture capital and private equity funding opportunities (sources for new venture capital reduced by $2.4 billion, or 77% in 2013[15]), many Australian start-ups struggle due to lack of access to capital. While mechanisms such as crowd sourced equity funding (CSEF) have the potential to provide that capital, regulatory arrangements appropriate to the small amounts of capital involved and sophistication of the participants involved, are yet to be defined.

Supporting start-ups by facilitating their access to capital will not only lead to increased economic activity and employment opportunities, but help drive an entrepreneurial and innovative culture.

R&D Tax Incentive

Requirements in the R&D tax incentive legislation that disallow ICT related R&D in specific circumstances reinforces industry concern that the role of ICT in driving innovation and growth and ultimately the economy are poorly understood.

The 'Internal Administration' exclusion in the R&D tax legislation[16], can be read to imply that any ICT R&D undertaken by a company for its internal use – including where it is undertaking ICT related R&D to improve delivery of its services to customers – is ineligible for the tax incentive.

The Government's decision not to proceed with the R&D quarterly credit arrangements for small businesses undertaking R&D similarly disadvantages small, start-up tech companies seeking to innovate. These arrangements, which would enable eligible companies to realise their R&D tax

12 Deloitte, (February 2014) Submission on Employee Share Schemes and Start-up Companies: Administrative and Taxation Arrangements.
13 Australian Financial Review, Wednesday 8 January 2014, p1
14 PwC Consulting, (2013) The Startup economy. How to support tech starts and accelerate Australian innovation.
15 Reported Computer Daily News, 14 February 2014
16 Section 355-25 of the Income Tax Assessment Act 1997

incentive/credit progressively throughout the year would address cash flow issues that limit ongoing R&D activity and in some cases, ensure the ongoing viability of the company.

While not an issue for the majority of R&D tax claimants, proposed amendments to the Income Tax Assessment Act 1997 to limit the R&D tax incentive to companies with aggregated assessable income of less than $20 billion for an income year, potentially sacrifices high end R&D for the sake of short term cost savings.[17] Such a targeted exclusion is globally unprecedented and fails to recognise the critical importance of large companies to Australia's R&D system. More worrying is that it potentially discriminates specifically against Australian companies, including Australian ICT companies.

Investment in ICT innovation

By connecting leading university researchers to industry, and embedding the next generation of skilled ICT researchers across multiple industry sectors, National ICT Australia (NICTA) is taking the lead in emphasising the integral role of ICT in transforming our economy.

NICTA currently spins out a new technology company every three months: *overall ten times the number of new companies per $100 million invested than the national average of publicly funded research organisations.*

NICTA spins out a new tech company every three months, $3 billion in savings and revenue

An independent study indicated NICTA having an impact on the Australian economy in excess of $3 billion, with major cost savings demonstrated from projects in areas as diverse as infrastructure, transport, logistics, security and the environment, and new revenue generation through collaborating with ICT companies servicing both industry and government in addition to NICTA's own spin-outs.

Of equal importance is that NICTA is recognised as having some of the world's best research teams in areas such as data-analytics, supply chain optimisation and dependable software systems - areas of high demand and worldwide shortage that are critical to technological innovation. And given that it is currently producing a quarter of Australia's PhD graduates, NICTA's role in building the 'smart' pipeline of PhD graduates that will help create new industries of the future for Australia is pivotal.

Notwithstanding its success, NICTA remains a short-term government program – having to regularly make a fresh case to be refunded. This is despite its recognised success in linking the best researchers, which it attracts from across Australia and around the world, with industry and helping or creating new businesses at a rate at least comparable and often better than that of the world's most successful ICT R&D centres. Expectations that NICTA must be fully self-funding fly in the face of global recognition that such research cannot be wholly self-supporting. While companies will pay for research to solve their own problems, the cost of the underlying research infrastructure - the research platforms, skills (PhD students), industry cluster centres, pilot trials of new research, and associated activities that are integral to R&D, must be funded on a sustainable basis – typically by government over the long term.

NICTA's capability must be sustained to foster Australia's 'home-grown' research capability and national competiveness – consistent with the Minister for Industry Ian McFarlane's notion of 'industrial innovation', an area in which he believes the Government must be catalyst, by providing "seed capital for highly innovative industries"[18].

17 http://c.ymcdn.com/sites/www.aiia.com.au/resource/collection/94A1EE83-F0B6-4B38-A7C1-92F4D2136438/140120R&Dexclusion$20Bcompaniesfinal.pdf
18 See: http://www.smh.com.au/federal-politics/political-opinion/joes-not-for-turning-either-20140214-32r46.html#ixzz2u8YKkS00

Skills and Education

The consumption of technology has not translated into smart ICT skills creation.

The take-up of ICT related tertiary courses has halved

Despite increased industry demand for specific ICT skills, the take-up of ICT related tertiary course over the last decade has virtually halved.[19] While females once made up 25% of students commencing a technology degree, this is now closer to 10%[20] and with the number of women in ICT occupations declining in 2012 to less than 20% of the ICT workforce[21], the current outlook in terms of women in ICT is pessimistic, presenting a challenge for both industry and government.

The former Government's funding of the Digital Careers program[22] coupled with the development of the national ICT curriculum provides an important focus on growing Australia's ICT skill base through the primary and secondary school systems. More, however, is needed. While the national technology curriculum has been published and available to teachers to 'trial' it is still to be endorsed and supported with a national execution plan. Having such a plan, including support for teachers to integrate it into their lessons, is critical to its success. At the tertiary level, work is needed to ensure tertiary and in particular university ICT courses are contemporary, keep pace with technology trends, attract quality talent, represent teaching excellence and, relative to peer organisations, are globally competitive.

Notwithstanding that Australia's education levels are recognised as comparatively high internationally, the declining number of students graduating from ICT, science, engineering and math degrees is, in an increasingly knowledge-rich world, a disadvantage. While this is a systemic problem, and not isolated to Australia, given that fact that advanced economies such as the UK, US and others are accelerating action to address their skills shortage, it is imperative that Australia adopt a similar priority focus.

Our best and brightest graduates will choose to follow more exciting opportunities abroad

Unless we skill up the next generation of graduates and PhD students to become confident and adaptive ICT leaders and inventors, and embed them in industry, our best and brightest graduates will choose to follow more exciting opportunities abroad – a further dent to our intellectual capital and opportunity cost and loss as we export the critical skills we should be nurturing and using.

Measuring ICT's contribution to the economy

Australia currently does not measure the impact of ICT, specifically new digital technology, on our economy. Compared to other industry sectors (e.g. mining, the financial services sector, agriculture, transport, manufacturing etc.) we have a limited understanding of the quantitative contribution ICT makes to firm level and national productivity and growth.

Routine data collections are narrowly focused on the household and business use of ICT, internet activity and broad labour market statistics, supplemented by a biannual ICT Industry Survey. While there is no shortage of reports that use 'proxies' to measure the impact of ICT, the 'value' of the

19 ICT job numbers from the ACS Statistical Compendium, 2012 (see www.acs.org.au). ICT applications from the DIISRTE Higher Education reports.
20 Australian Financial Review, 3 February 2014
21 Australian Computer Society,(2014) *2013 Statistical Compendium*
22 See:
http://www.nicta.com.au/media/previous_releases3/2013_media_releases/$6.5m_boost_for_ict_education_through_launch_of_national_digital_careers_program

Internet or information economy[23], there is no nationally accepted and internationally aligned standard that measures and the impact of ICT, benchmarks and compares our performance in the digital economy and which can be used to inform policy and investment.

In an attempt to 'quantify' the digital economy, McKinsey talks about the contribution of technology in terms of 'digital capital'. This comprises two components: traditional tangible assets such as servers, routers, online-purchasing platforms, and basic Internet software, which generally appear as capital investment on company books and intangible assets - "*the unique designs that engage large numbers of users and improve their digital experiences; the digital capture of user behaviour, contributions, and social profiles; the environments that encourage consumers to access products and services; and the intense big-data and analytics capabilities that can guide operations and business growth. They also include a growing range of new business models for monetizing digital activity, such as patents and processes that can be licensed for royalty income, and the brand equity that companies like Google or Amazon.com create through digital engagement*"[24]. Drawing these together, McKinsey argues, provides a more accurate view of the real and economic impact of ICT digital technology.

AIIA's view is that lack of an appropriate measurement instrument sends a clear message regarding the 'value' of Australia's ICT capability in the context of the broader economy.

Recent reports of the potential for ABS to work with third parties to capture and report data statistics reflects a realisation of both the importance and scale of what is required to manage information in a digital world. A similar realisation is required in relation to the specific measurement of the ICT industry and the contribution of digital capability to the broader economy.

4.2 Risks

Not surprisingly, in the absence of reliable data the critical role of Australia's ICT industry and the contribution of digital capability to the broader economy is not well understood. AIIA's view is that unless we harness and exploit our ICT capability Australia risks losing:

- ICT capability (skills and innovation) needed to drive innovation and productivity across all industry sectors. This includes losing capability overseas and/or through diminished domestic capability;
- International investment attractiveness due to poor policy and, more broadly, inadequate innovation systems;
- The race for exemplary global digital technology capability, innovation and competitiveness;
- Potential export opportunities because ICT is not leveraged to grow innovation and specifically innovative goods and services powered by digital technology; and ultimately,
- International relevance as a leader in building and executing digital economy capability.

4.3 Required Action

It is not enough to simply bank the efficiency gains that digital transformation drives in those sectors in which we have a comparative advantage. To remain competitive in the new knowledge based, digital environment Australia needs to foster a high quality and high value ICT sector.

To build an ICT industry capable of supporting Australia's international competitiveness – across a range of sectors - requires a repositioning of ICT in the 'digital economy' value chain. It means

[23] For example reports such as: The Connected Continent, Deloitte Access Economics 2011; *A Snapshot of Australia's Digital Future to 2050,* IBISWorld 2013; *Internet Matters: The Net's sweeping impact on growth, jobs and prosperity*. McKinsey Global Institute. 2011

[24] http://www.mckinsey.com/insights/high_tech_telecoms_internet/measuring_the_full_impact_of_digital_capital

shifting the focus to building a robust, sustainable national ICT capability that can drive Australia as an advanced producer of ICT and related digitally enabled products and services. Support for a competitive 'home grown' ICT capability to facilitate across the board digital enablement is necessary to underpin the performance and competitiveness of all industry sectors with products and services we can take to the world.

Priorities

4.3.1 Build awareness of the ICT sector in growing Australia's digital capability and driving Australia's success as a digital economy by supporting the development of a high quality, high value ICT industry sector.

4.3.2 Ensure Australia develops the capability required to compete effectively in the global digital economy by explicitly supporting Australia's innovation ecosystem with the development of a highly skilled, agile, innovative ICT sector.

4.3.3 Elevate and articulate the role of digital technology in achieving improved economic and social outcomes for all Australians by encouraging government (Australian Bureau of Statistics) and industry to work together to develop an instrument to measure and monitor the:

- **performance of the ICT sector; and**
- **contribution digital technology makes to the Australian economy.**

5. Leveraging next generation broadband and enabling mobility

5.1 Issues

While there is much talk of the 'internet economy', digital technologies and the 'digital revolution', in Australia progress in seizing the opportunities for transformation and productivity is slow:

- **Government could adopt and apply digital economy capability to improve its productivity, citizen engagement or service performance; and**
- **SMEs are particularly slow to take up the opportunities of modern digital technology.[25] This is despite broad acknowledgement that they are likely to benefit most from new online web, cloud, mobile and social media technologies.**

As debate continues to focus on the building of infrastructure there has been little focus on the future we can build on our national broadband investment. Unlike countries such as Singapore that have clear national objectives for their broadband investment[26], Australia's broadband debate is at risk of being fuelled by a policy vacuum.

In the absence of a statement that clearly sets out the national objectives of a ubiquitous high speed broadband capability (jobs creation, industry development, growth target, infrastructure investment etc), the conversation continues to revert back to the 'how' rather than the possibility of the 'what'.

The lack of certainty of what will be available, where and by when and the focus on 'initial' down load speeds rather than on ubiquity of low latency services – the latter enabling the pervasive 'Internet of Things' and new levels of productivity currently impossible to envision – exacerbates this further.

The two areas which need to accelerate their digital capability development are the:

- Government sector which needs to lead by example and build confidence in managing the disruptive and transformational nature of technology driven change; and
- Small and medium enterprises, because of their significant contribution to Australia's economy and employment.

The first is necessary to demonstrate leadership and commitment to Australia's future in a globally competitive world and to ensuring national confidence in the difficult but necessary transformation process.

The second is imperative to ensuring Australia retains a resilient and robust SME sector – necessary for jobs growth and broader local, national and global economic sustainability.

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[25] For example: *Ahead of the Curve*, BCG,2013, *Connected Small Businesses. How Australian small businesses are growing in the digital economy*. Deloitte 2013

[26] Singapore's iN2015 goals include:

- *To be number 1 in the world in harnessing ICT to add value to the economy & society.*
- *To realize a twofold increase in the value add of ICT to S$26bn.*
- *To realize a three fold increase in the value of ICT exports to S$60bn.*
- *To create 80,000 jobs*
- *To achieve 90% broadband usage in all homes.*

Communications Authority of Singapore. "Realising the iN2015 Vision", 2010.

Government Use of Digital Technology

Recent history is evidence that digital transformation is largely being driven by commercially focussed entrepreneurs, competitive global markets and the expectations of internet savvy consumers.

However fostering open and competitive markets; establishing and maintaining infrastructure; taxation and macro-economic frameworks; and overall economic and political stability – principally the realm of government - provide the critical foundation for investment, growth and the ability to manage change effectively and equitably.

More important and of direct consequence to a transformation process is the role of government in leading by example. In the case of the digital economy this means using digital technology to deliver better services more efficiently, engage with citizens more effectively and improve the performance of their internal business.

Aggressive ICT and digital transformation strategies such as those adopted by the US and UK governments, and countries such as Singapore and South Korea have been core to driving digital business reform.

Estimates by the UK Think Tank Policy Exchange, for example are that by 2020 a digitally transformed government could be up to 8% more effective than if it continued doing business as usual. For the UK this translates to some £24 billion a year savings that could be directed to areas such as public service expansion (additional services) and/or deficit reduction. [27]

Digitally transformed government could be up to 8% more effective

With over 1,000 government services online[28], digitally enabled government in Australia is progressing. The Government's 'stretch' targets for government online service delivery by 2017 reinforce this.[29] Establishment of a 'dashboard' to publish key metrics on government ICT performance and league tables of agencies ranking performance on online engagement, and the intention to work more closely with both state governments and the private sector to achieve its digital economy objectives, similarly signals a determined resolve to modernize government.[30]

However, while the emergence of cloud services, collaboration tools, open and big data, analytics, real time web services, social media and open standards are changing how government can access and use information and deliver services there are few signs that the prospect of broadband infrastructure is fundamentally driving transformational business and service delivery reform.

Online service delivery, citizen focused and integrated services

Despite evidence such as in the UK Government's Digital Efficiency Report, that the average cost of a digital transaction is 20 times lower than the cost of a telephone transaction, 30 times lower than the cost of a postal transaction and 50 times lower than a face-to-face transaction[31] existing Australian Government service arrangements continue to drive citizens into offices and on to phones.

Services that are not end to end online, provide little incentive for citizens to change existing behaviours. Undertaking 'parts' of services

Services that are not end to end online provide little incentive to change

[27] Policy Exchange.(2013) *Smaller, Better, Faster, Stronger. Remaking government for the digital age.*
[28] Department of Communications (2013) *Advancing Australia as a Digital Economy*, p46.
[29] Coalition's Policy for e-Government and the Digital Economy, September 2013
[30] Ibid.
[31] Policy Exchange (2013) *Smaller, Better, Faster, Stronger. Remaking government for the digital age*. p33

– individual transactions – electronically, is no more efficient than engaging via traditional service channels.

Migrating current processes online without the necessary business process reform similarly reduces benefits for both the business and the customer. And requirements for typically analogue forms of identity invariably bring an otherwise inexpensive, quick and convenient online process to a halt.[32]

A key feature of NSW's 'Service NSW' initiative which has consolidated, rationalised and streamlined customer service channels is the focus from the outset, on evaluating and reengineering existing business processes rather than simply overlay them on new digital channels. A commitment to citizen-focussed services has been reinforced through active and ongoing engagement with the community and industry. Tranche one of the reform process has already delivered some 18 one stop shops, a single phone number and call centre for government information services and one website for online transactions.[33]

Queensland and Victoria are similarly adopting co-design approaches in the design of services. In Victoria this is complemented by a move to share citizen information between agencies to facilitate streamlined service delivery.

Cloud service policy

While the Government's Digital First policy and National Cloud Computing Strategy encourage the adoption of cloud computing by public sector agencies, 2013 changes to the Protective Security Policy framework require agencies wanting to use cloud to undertake complex threat-driven risk assessments signed off by the agency head and in some instances require ministerial approval.

As a result, arrangements are overly burdensome and create a barrier to cloud adoption by the Federal Government. In contrast the governments of NSW and Queensland have not only openly committed to cloud based service approaches but are reforming their procurement and policy frameworks to support its adoption.

Open Data

Rather than focus on transparency and accountability, which has to date largely driven the debate on open data, government needs to leverage the more powerful opportunity of unlocking the significant economic value of the data it collects.

Recent analysis by the McKinsey Global Institute estimates that open data has the potential to enable more than $3 trillion in additional value annually across seven key domains: education, transportation, consumer products, electricity, oil and gas, health care and consumer finance.[34]

Open data has the potential to enable more than $3 trillion value annually

Making government data more accessible stimulates innovative service solutions. By replacing traditional and intuitive approaches with data driven processes, open data can drive productivity; improve the efficiency and effectiveness of processes; inform the development of new and innovative products and services (that can equally be delivered by the non-government sectors); and create 'new' value for individual consumers and citizens.

In the market, open data can foster competitiveness, enable collaboration among business, government and individuals and drive innovation. Government has a key role in setting the tone for open data both by making its own data available and shaping the policy environment. Similarly

[32] Ibid. p37
[33] http://finance.nsw.gov.au/ict/sites/default/files/ICT%20Strategy%20Implementation%20Update%202013-14.pdf
[34] McKinsey Global Institute (2013) *Open Data: Unlocking innovation and performance with liquid information*

government has a role in educating the public about the potential benefits to the economy and to society of making data more open.

Data analytics

Data driven analytics enables government to develop rich, evidence based insights to inform future policy, compliance models and service delivery options. Policies that are implemented in combination with a view to solid data analytics means policies can be evaluated sooner rather than when it is too late to make a material difference.

Predictive analytics can enable data to be captured throughout the program rollout to provide visibility into how it will perform. As circumstances change, programs can be adjusted quickly, and in real time, maximizing the effectiveness of feedback loops and program effectiveness. This saves time and costs.

We are moving away from 'citizen centric services' designed around cohorts

In the area of service delivery, data analytics enables targeting of specific services to specific customer segments and ultimately, to specific individuals. We are moving away from 'citizen-centric services' designed around cohorts of individuals, e.g. low income families, people with a disability etc. to individualisation of services. Using sophisticated technology platforms and tools government services can cost-effectively become highly tailored to meet particular citizen needs. In the same way that retailers and other service businesses use data to hone their market, improve the effectiveness of their services and increase their efficiency, so too the opportunity applies to government.

Small and medium enterprises (SMEs)

In 2010-11 the SME sector contributed over half of Australia's private sector economic activity, employed over seven million people (more than two thirds of private sector employment), and contributed some $530 billion to the Australian economy.[35]

Digitally engaged SMEs are using the internet to grow revenue and staff

According to the 2013 Deloitte study, digitally engaged SMEs are:

- two times more likely to be growing revenue - earning two times more revenue per employee than those with low engagement (some $187,500 and $87,500 per employee respectively);
- four times more likely to be hiring than those with low digital engagement; and
- using the internet as a critical facilitator to achieve growth.

They are also three times more likely to be increasing investment in digital capability over the next year.[36]

Research conducted by the Boston Consulting Group across five countries (the US, Germany, China, India and Brazil) similarly highlights that SMEs building digital capability outperform their peers in the market. SME technology leaders across all sectors created jobs almost twice as fast as other small businesses and increased their revenue 15 percentage points faster than companies with lower levels of technology adoption.[37]

The impact of digital technology on business, in particular SMEs that make up a significant proportion of all economies and workforces, is not an isolated phenomenon. It is a global trend that presents opportunity for both SMEs and policy makers around the world.

[35] Deloitte (2013) *Connected Small Business. How Australian small businesses are growing in the digital economy*
[36] Ibid.
[37] BCG (2013) *Ahead of the Curve. Lessons on technology and growth from small-business leaders*

Post Australia's mining boom, the growth of industries outside the resource sector is critical to the continued growth of Australia's economy. Also clear is that digital engagement and capability development drives business growth. According to Deloitte, the effect is 'two-way' – "*Businesses that are growing are likely to have the time and money to invest in digital marketing strategies. At the same time, through diversification of income and by offering more effective ways of connecting and transacting with customers, digital strategies facilitate the growth of small business.*"[38]

SMEs: Opportunities and barriers

Despite this potential, digital engagement among SME's continues to be slow. While use of email and using the internet internally is relatively widespread, having a highly functional website that reaches out to customers, online ordering and B2B online transactions, shopping cart facilities, online marketing of products and services and tools such as search engine optimisation and search engine marketing are under-represented across the SME sector. Reasons for this include:[39]

- Privacy and security concerns, for example security related to hacking of business or customer information;
- Lack of awareness of the tangible benefits of high speed broadband and uncertainty of the relevance of digital engagement to their business. This includes unfamiliarity with technical terminology which fails to capture the 'functionality', and hence communicate the relevance and benefit of applications to business;
- Lack of access to ICT skills (SMEs have less capacity in terms of available skills and capabilities to take advantage of new opportunities from broadband);
- Time and/or resource constraints, uncertainty of risk and the potential imbalance between investment costs and returns;
- Perceived decrease in productivity due to distractions and interruptions through personal and junk emails;
- Concerns regarding lack of personal contact with customers or fear that that customers will not engage in an online transaction; and
- Uncertainty regarding what needs to be done to transition the business to digital.

The sum of ubiquitous broadband, cloud services, social media and mobility is shifting the business paradigm. With the potential for businesses to digitally connect to every potential client globally, traditional service models are being replaced with new, instant digital relationships and business and service models. While this provides Australian business the opportunity to lead new digital economy service model developments, and ultimately new export market prospects to drive market growth, new revenues and jobs, the concern is that if we are too slow to transform and too slow to market, opportunities will be lost and businesses will simply not survive.

5.2 Mobility

Internet access via mobile phone increased 33% in 2013

With 7.5 million Australians using the internet via their mobile phone during June 2013, an increase of 33% compared to June 2012 and some 510% since June 2008, mobility is clearly an increasing feature of online participation. Wireless, once the exception is now increasingly ubiquitous. The expectation is that not only can we use our phone anywhere, but we can do anything from anywhere and from whatever mobile device we have: "*The penetration of*

[38] Ibid.p6
[39] See: BCG,(2013) *Ahead of the Curve. Lessons on technology and growth from small-business leaders*; Deloitte (2013) *Connected Small Business. How Australian small businesses are growing in the digital economy;* CSIRO,(2013*) E-business use by small business in regional Australia: A preliminary qualitative study*.

communication and computing technology into society has fundamentally changed how we engage in the world"[40].

The fact that there are more than 1.3 mobile subscriptions per Australian – an over 100% adoption rate, reflects the commoditisation of technology and the tendency for many Australians to maintain multiple accounts and multiple devices.

Worldwide, employees are mobile – they're on the road, at meetings, and increasingly working from home or in spaces such as co-working facilities and coffee shops – anywhere there's an internet connection. While estimates of cost savings through, for example, downsizing accommodation and reduced absenteeism are impressive[41], of more importance is that agile working models such as telework and mobility are fundamentally shifting the way work is done in a digitally driven world with resultant workforce productivity and performance improvement.

A telework trial undertaken by the Commonwealth Bank realised a 27% increase in performance[42] while analysis by Deloitte Access Economics[43] found employers with flexible IT policies such as telework, could save as much as 39% of their staff attrition costs. The report also found that employers could recruit staff with desirable skills and experience independent of where they lived.

Telework trial found provide 27% increase in performance, 39% reduction in staff attrition

More recently, new models have emerged. Commercial co-working facilities where 'seats' are purchased on an 'as needed' basis, are being trialled as an alternative to the conventional notion that telework means simply working from home. Such models deliver the same benefits for employers seeking to downsize accommodation and reduce cost while also providing optimal workplace flexibility and convenience for employees who still have the option of working in a fully equipped professional workspace, closer to home and without the isolation some associate with telework.

According to recent research, some 63% of small businesses using mobile devices in their business say the technology saves then an average of 7.5 hours per week – the equivalent of nine working days a year. They use it to send/receive email (65%), search the internet (61%), for navigation purposes (46%), view bank account balances (44%) and look up customer information (35%).[44]

With US based research showing the exponential increase in the use of mobile media by children under the age of eight – the trend is only likely to increase. Research shows that for this cohort of children, use of a mobile media device for some type of media activity (e.g. games, videos, apps) has increased to 72% from 38% since 2011.[45]

With an increasing focus on mobility, how mobile solutions coexist with fixed broadband needs to be clarified, even emphasised as part of a robust digitally enabled system.

[40] Deloitte, (2014) *Setting aside the burdens of the past. The possibilities of technology-driven change in Australia*, p20.
41 Based on conservative assumptions, if the 4 percent of US federal employees already deemed eligible teleworked just two days a week, the savings could total $14 billion a year - http://www.federaltimes.com/article/20140205/MOB/302050011/Accountability-Key-Government-Telework
42 http://wa.psnews.com.au/Page_WApsn2112.html
43 Deloitte (2013), The Connected Workplace. War for talent in the digital economy.
44 Intuit (2014) The Mobile Nation: How younpreneurs are transforming small business
45 http://cdn2-d7.ec.commonsensemedia.org/sites/default/files/uploads/about_us/zero-to-eight-20131.pdf

5.3 Risks

Despite the acute and often critical attention on developing a national ubiquitous high speed broadband capability, there are few signs that Australia is 'ready' to leverage that investment.

In the absence of a statement that clearly sets out the national objectives of a ubiquitous high speed broadband capability (jobs creation, industry development, growth target, infrastructure investment etc), AIIA concern is that the focus will remain, as it currently is, on infrastructure at the expense of the much more important opportunity for transformation and growth. Lack of digital leadership by government sends inconsistent and contradictory messages to industry: the investment it is encouraging business to make in leveraging the broadband infrastructure it is building is not mirrored in its own actions. As a result confidence in both the financial investment and the capability being developed is undermined, reinforcing the concerns and scepticism of business and the hesitancy they have to transform sooner rather than later.

The risk for Government of the current pace of change is that Australia's economic performance continues to decline with a further negative and longer term impact for Australia's deficit – more debt for longer and with less prospect of regaining ground lost to more advanced nations.

The failure of the SME sector to engage effectively online presents a twofold risk: to individual businesses and to the economy.

As the expectations and internet 'savviness' of customers and trading partners increases, businesses that fail to meet these expectations will fall behind their more agile peers, inevitably becoming less relevant and competitive in the marketplace. The longer it takes a business to make the transition, the bigger the risk: bridging the gap between current operating practices and attempting to become an online business, will require a much larger investment of time and effort to build the skills, capabilities and business processes required to catch up with their competitors. Regaining competitive position will be increasingly difficult and for some impossible.

The risk for the economy is that the loss of businesses that cannot to make the transition will happen much more quickly than replacement SME capability to the market. Or worse still, that such capability is replaced by more aggressive and agile offshore competitors.

For so long as we continue to debate the nuances of how to deliver high speed ubiquitous broadband and neglect the nation building conversation about how best to use it for national economic benefit, the more our investment is at risk and the opportunity lost.

Ongoing debate risks our broadband investment and opportunities

5.4 Required Action

Australia's future hinges on the ability of all governments, businesses, organisations, households and individuals to access and effectively use and exploit high speed broadband capability. There are two immediate priorities:

- Digital enablement, execution and leadership by government; and
- Building the digital capability of SMEs.

Priorities

5.3.1 To clarify Australia's investment in high speed ubiquitous broadband, government and industry work together to articulate a clear set of national objectives that include a focus on measurable economic growth, improved firm level and national productivity, increased employment opportunities and clear social benefit.

5.3.2 To drive confidence in Australia's commitment to be a world class digital economy, Government must lead by example. This requires the adoption and use of digital capability across all levels of government and aspects of its operation.

5.3.3 To build the confidence of SMEs and support their transition to being digitally enabled, a proactive policy and action agenda needs to be developed and executed by government and industry.

6. Creating exemplar exportable digital economy products and services

6.1 Issues

The Australian economy is entering a critical phase, with a number of 'disruptive' trends and pressures which provide both opportunities and risks for Australian business. ICT can, when effectively leveraged by industry and government, support our response to these pressures, and be harnessed to drive a new period of productivity growth and expansion globally and specifically into the Asia Pacific region.

The resources boom has had a significant impact on the structure of the Australian economy. The rapid increase in global demand for commodities, and the corresponding strong growth in commodity prices, placed the Australian resources sector in an enviable position to benefit. Growth in exports, both in volume and value, led to historically high terms of trade and exchange rate[46]. Within the Australian economy, both capital and labour were drawn to the resources sector, and growth in non-resources sectors slowed[47]. Economic conditions for tradable services, particularly exporting industries, worsened with the higher exchange rate.

A critical outcome of the resources boom has been the impact on productivity. Australia's productivity growth – the envy of the developed world in the 1990s – has slowed dramatically in the last decade (primarily due to significant falls in mining and agriculture productivity). While increasing terms of trade has, so far, sustained incomes, despite slower productivity growth, this is not sustainable. In the long run, productivity growth is essential. These underlying structural challenges are emphasized when considering these key trends:

- Between 2005 and 2012, 58% of our income growth has been the result of 'boom' factors, rather than productivity growth
- 35% of income growth has come from resources sector, as has 99% of productivity decline
- Productivity declined 0.7% annually between 2005 and 2012, compared with growth of 2.4% between 1993 and 1999.[48]

Productivity growth is the key driver of long term increases in living standards – recovery of productivity growth in the post-resource boom period is essential for the Australian economy[49]. With the decline in mining sector growth' the challenge is for other sectors and industries to drive productivity growth in the Australian economy, and to renew their focus on exports to ensure our terms of trade are maintained.

While Australia recorded a trade surplus of some $134m in the last quarter of 2013, our overall goods and services deficit was still around $7.2b for the year.[50] For 2012 – 13 Australia's services trade deficit was some $11.5m.[51]

As previously discussed in this paper, the use of connective ICT is pervasive across the global economy. Ubiquitous high speed broadband, with connection rates continuing to improve, allows an

46 Bishop et al. (2013) 'The Resources Boom and the Australian Economy: A sectoral analysis', in RBA Bulletin, March Quarter 2013.
47 Bishop et al. (2013) 'The Resources Boom and the Australian Economy: A sectoral analysis', in RBA Bulletin, March Quarter 2013.
48 McKinsey Global Institute (2012), Beyond the Boom: Australia's productivity imperative, August.
49 Carmody, C. (2013) 'Slower productivity growth – a developed economy comparison', Economic Round up Issue 2 2013, The Commonwealth Treasury.
50 http://www.tradingeconomics.com/australia/balance-of-trade
51 http://www.dfat.gov.au/geo/fs/aust.pdf

increasingly diverse range of services to be provided in a digital format. Online delivery models, both for services and products, open up a range of opportunities for businesses to access markets which they previously would not have been able to without establishing a physical presence. Digitisation presents an important opportunity, and also a risk, for Australia's service industries.

Export and ICT must become central to all we do.

6.2 Service Industry

Services are critical for the Australian economy: the services sector employees approximately 86% of Australia's workforce and contributes approximately 72% to GDP[52]. What is often overlooked is that services also contribute approximately 18 per cent of Australia's exports.

Our services sector contributes 86% of our workforce, 72% of GDP, 18% of export

Increasing sophistication and convergence of communication and computing capability is further shifting the balance to service oriented economies: we 'buy' technology services through the cloud and use the cloud to deliver new types of services (e.g. business services, retail services, data services, financial services etc.).

With digitisation comes an opportunity for our services industries to access international customers through digital delivery methods and for new types of high value services to be developed and exported.

There are three important elements of this opportunity:

1. There is a range of services industries, including health, education, consulting services and financial services which can take advantage of digital delivery models to access markets globally and specifically in the Asia Pacific region. Digital technology enables them to deliver services into markets not previously accessible. Digital service delivery also has the capacity to improve productivity in these sectors.
2. Underpinning these digital service delivery models are innovative ICT businesses. Developing solutions for digital delivery of services is a key area where Australian ICT businesses have a strong opportunity for growth – both supporting Australian business and exporting these solutions, including across the Asia Pacific region.
3. As supply chains become increasingly global, leveraging smart digital capability to focus on niche, high value service opportunities that open new export opportunities. This includes into potentially new service markets and leveraging new opportunities is areas we already have a comparative advantage.

It is imperative that government and industry focus on improved productivity across the services sector – driven primarily through innovation – and a renewed export focus. Digital technology is a key to how the services sector can respond to these opportunities.

The best opportunities are in high value, knowledge intensive services which are not heavily 'commoditised' (and therefore are not highly price sensitive). These types of services must be underpinned by:

Best opportunities are in high value, knowledge intensive services

- Innovation – which is essential to develop services which are recognised as high value which 'break new ground' in delivery to customers.
- Highly skilled professionals – who are the developers of new concepts and ideas, and who translate these into new services or new delivery approaches.

52 Australian Government Department of Foreign Affairs and Trade (2012) Trade at a Glance 2012, p.18.

New market and export capabilities

With the pervasiveness of the 'Internet of Things' - where everything is 'smart – new market opportunities are also emerging. Embedded technology developments such as sensor networks and 'wearables'[53] are opening new data-related service opportunities to the market and with limited barriers to entry there is ample opportunity for Australian businesses to compete in this growing market place.

The value of embedded technologies, sensors and wearables is not in the devices, which are relatively inexpensive to manufacture, but in the fact that they are largely data driven: the 'smarts' being in the collection, interpretation and application of the data itself.

It is estimated that the wearable market for example, is poised to grow from some 14 million devices shipped in 2011 to over 171 million by 2016.[54] Smartwatches, bracelets, smart eyewear and 'clip-ons' are tipped to revolutionise everything from health management, medical training, mining and field service industry operations to parents remotely monitoring the safety of their children.

Having already demonstrated our 'big data' and analytics credentials through initiatives such as the Square Kilometre Array (SKA)[55] and Sense.T[56] initiatives, Australia is well placed to drive deep, smart data driven innovation.

Trade Agreements

Access to export markets is also heavily influenced by international trade agreements and regulations. These present a potential barrier to Australian businesses accessing markets in international markets. There may be restrictions on access to infrastructure, or administrative or compliance costs which deter new entrants to markets. It is critical that these barriers are identified, and prioritised by government.

6.3 Risks

The current economic and climate, as detailed above, presents both an opportunity and a threat for our ICT sector. High exchange rates have eroded competitiveness of Australian businesses in export markets. To overcome this hurdle, businesses need to focus on higher value-add services and products, where there is less competition on price, and a strong focus on innovation and quality (as noted above).

With increasing digitisation, our services industries are progressively more exposed. Ubiquitous high speed broadband, however, opens up Australian services markets to innovative delivery models – digitisation allows global providers to access consumers without being physically located in the same locality, or country.

Australian services businesses also have opportunity to develop exportable, digital services globally and specifically within our own Asia Pacific Region. Inaction presents a threat to Australian services industries. If we do not take advantage of ubiquitous broadband, other providers will.

53 Wearable devices with embedded microprocessors
54 http://www.businessinsider.com/wearable-devices-create-a-new-market-2013-8#ixzz2tX8jjVJV
55 The Square Kilometre Array, or SKA, is a global next-generation radio telescope project involving institutions from over 20 countries. The SKA will be the largest and most capable radio telescope ever constructed. During its 50+ year lifetime, it will expand our understanding of the universe and drive technological development worldwide. See http://www.ska.gov.au/Pages/default.aspx
56 Sense-T is creating the world's first economy-wide intelligent sensor network that integrates different data sources to build a digital view of Tasmania. Sense-T will give business, governments and communities the tools to make better decisions - to help us do more with less. See http://www.sense-t.org.au/

Similarly, failure to recognise and capitalise on the opportunity to innovate with emerging technologies risks further lost opportunity: as a driver of knowledge-based innovation and entrepreneurship and ultimately export capability.

It is important that our mindset be on taking opportunities, and growth, rather than fear over potential competitors in Australian markets.

A key risk to achieving success is a lack of confidence in the capacity and skill of Australian businesses to be competitive in export markets. This is underpinned by negative perceptions around our abilities to be globally competitive and to drive new solutions through innovation. We shouldn't assume that Australian services firms, and Australian ICT firms cannot have an export focus.

6.4 Required Actions

Digital technology is a key driver of productivity, value add and competitiveness. Increasing digitisation means that Australia's services industries – in particular financial services, health and business services – need to embrace ICT in order to deliver innovative digital services solutions to the region.

For the services sector, this involves embracing digital service delivery. These should take advantage of broadband communications infrastructure in a way that leverages the most innovative methods available. With the increasing 'commoditisation' of service delivery this innovation, coupled with entrepreneurship, is critical to ensure competitiveness.

Priorities

6.3.1 Support Australia's services sector to develop high value, exportable digital services by promoting the role of digital technology in building an internationally competitive, digitally driven service sector

6.3.2 Strengthen Australia's digital service export capability through enabling domestic and trade policies.

6.3.3 Build sustainable competitive export capability by leveraging digital technology to grow data driven product and service innovation.

7. Conclusion

As noted at the beginning of this paper, SmartICT 2014 represents the current policy and advocacy priorities for AIIA and its members. It articulates AIIA's vision for a prosperous Australia, the critical role of digital technology and the ICT industry in achieving that vision, identifies current and potential impediments and suggests priority areas for action – for government(s) and for industry.

SmartICT 2014 is a call to action for government(s) and all industry.

While we acknowledge that the focus of this agenda is limited to the role of the ICT industry, it is nonetheless a critical component of the overarching strategy required to ensure Australia's ongoing national prosperity.

8. AIIA's Plan for 2014

The following aims to summarise the high level actions identified in this agenda and provides an overview of AIIA's plan to take these forward.

Theme 1: Building a sustainable, innovative and globally competitive Australian ICT Industry

Action	AIIA will …
Build awareness of the ICT sector in growing Australia's digital capability and driving Australia's success as a digital economy by supporting the development of a high quality, high value ICT industry sector.	• Work with government and AIIA members to raise awareness of the role of the ICT sector in delivering the capability required to drive sustained productivity, growth and competitiveness. • Encourage government to purchase products and service from firms that have a significant local presence.
Ensure Australia develops the capability required to compete effectively in the global digital economy by explicitly supporting Australia's innovation ecosystem with the development of a highly skilled, agile, innovative ICT sector.	• Encourage government to take a staged approach to revert the current ESS to pre 2009 arrangements, with an initial focus on start-ups and SMEs. • Recommend to government that in the context of the 2014 review of the R&D Tax Incentive, disincentives and barriers to ICT R&D in existing R&D legislation and policy are addressed. • Work with stakeholders (NICTA, government, the tertiary sector and industry) to develop a funding model to support the sustainability and growth of NICTA. • Advocate that appropriate support, guidance and tools are provided to schools and teachers to ensure the successful implementation of the new ICT school curriculum. This includes working with ACARA and the Group X program to identify how that support and guidance can be provided. • Support measures aimed to improve the digital literacy and capability of SMEs.

Theme 1: Building a sustainable, innovative and globally competitive Australian ICT Industry

Action	AIIA will …
Elevate and articulate the role of digital technology in achieving improved economic and social outcomes for all Australians by encouraging government (Australian Bureau of Statistics) and industry to work together to develop an instrument to measure and monitor the: • **performance of the ICT sector; and** • **contribution digital technology makes to the Australian economy.**	• Work with the ABS and the ICT industry to develop an appropriate measurement and reporting framework to benchmark and monitor the: ○ Performance of the ICT sector; and ○ Contribution digital technology makes to the Australian economy.

Theme 2: Leveraging next generation broadband and enabling mobility

Action	AIIA will …
To clarify Australia's investment in high speed ubiquitous broadband, government and industry work together to articulate a clear set of national objectives that include a focus on measurable economic growth, improved firm level and national productivity, increased employment opportunities and clear social benefit.	• In consultation with industry stakeholders, provide advice to government on the development of national objectives to support Australia's investment in ubiquitous high-speed broad infrastructure.

Theme 2: Leveraging next generation broadband and enabling mobility

Action	AIIA will …

To drive confidence in Australia's commitment to be a world class digital economy, Government must lead by example. This requires the adoption and use of digital capability across all levels of government and aspects of its operation.	• Advocate the need for an explicit whole of government business transformation agenda that incorporates:
	  ○ Increased co-operation across all levels of government to optimise the opportunities of digital technology and achieve a high performing digital economy
	  ○ Digital services designed with 'citizens' top of mind, incorporating the technologies used by today's consumers
	  ○ Systems architected for interoperability and data sharing
	  ○ Platforms and technologies that support agility and dynamic change
	  ○ Sharing of infrastructure and service capability
	  ○ Modern concepts of content development and content publication (including through cross program service offerings)
	  ○ Mobility, including mobile, agile work models
	  ○ Prioritisation of high volume transactions for development of end to end capability
	  ○ A requirement that the business processes for all new online services is mapped and reviewed prior to development
	  ○ Rationalisation of less cost effective service channels
	  ○ Resolution of online digital identity management, having regard to lessons learnt from other countries, including sharing of relevant credentials with the private sector
	  ○ A review of burdensome cloud computing service approval processes and replaces them with practical risk management measures.
	  ○ Adoption of an open data by default policy across government
	  ○ Data driven policy and service development, including across agency boundaries
	  ○ Benchmarking of national and state government 'digital' performance against international peers
	• Work with Government to expand govhack (http://www.govhack.org/) to include data from states, territories and federal government and to focus on problems from industry

Theme 2: Leveraging next generation broadband and enabling mobility

Action	AIIA will …

To build the confidence of SMEs and support their transition to being digitally enabled, a proactive policy and action agenda needs to be developed and executed by government and industry.	• Work with policy makers to encourage capability development and innovation by supporting market driven standards and interoperability.
	• Continue advocating for the development of a strong skills base by placing a high priority on secondary, tertiary and vocational education in science, technology, engineering and math subjects.
	• Identify options to support the education of SMEs to make the transformation to being 'digital'. This includes:
	  ○ Supporting measures aimed to improve the digital literacy and capability of SMEs such as expansion of the recently launched initiative between Infoxchange and Australia Post (http://www.infoxchange.net.au/news/infoxchange-and-australia-post-helping-australians-realise-their-digital-potential)
	  ○ Ensuring the focus of the Government's Enterprise Connect Program (which initially had focussed primarily on manufacturing) has a much stronger emphasis on helping SMEs build their digital capability
	• Raise awareness of the tangible and quantifiable benefits of digital enablement.

Theme 3: Building exemplar, exportable digital economy product and service capability

Action	AIIA will …
Support Australia's services sector to develop high value, exportable digital services by promoting the role of digital technology in building an internationally competitive, digitally driven service sector	• Drive a focus on developing deep service innovation capability and the need to move to higher-value, technology-enabled services initiatives • Increase awareness within the ICT sector of export opportunities through service digitisation • Work with stakeholders to address negative perceptions about export opportunities through industry knowledge and capacity building

Strengthen Australia's digital service export capability through enabling domestic and trade policies.	• Work with Government and with peer organisations such as the Australian Services Roundtable (ASR) to address trade barriers for services and ICT in regional trade negotiations. • Encourage development of R&D focused on digitisation of services. • Work with stakeholders to provide direct advice to Austrade on priority sectors and markets required to build and export digital service capability.
Build sustainable competitive export capability by leveraging digital technology to grow data driven product and service innovation	• Drive awareness of emerging technology developments and work with government and industry to promote development of innovative data driven products and services.